IEEE ELECTROMAGNETIC COMPATIBILITY GROUP

NEWSLETTER

ISSUE NO. 79, Fall, 1973 **EDITOR** ROBERT D. GOLDBLUM

CHAPTER OF THE YEAR AWARD

A Chapter of the Year Award has been established by the Ad Com to recognize outstanding performance by a Chapter organization in serving its members and in establi shing goodwill for the Group. One award will be made each year at the G-EMC Symposium for the one year period ending on December 31. The Award will be in the form of a suitable certificate, in multiple, to be presented to each elected officer of the Chapter. Reporting of the chapter activities for scoring purposes will be coordinated with chapter reporting to the EMC Group Newsletter. The scoring report will only be accepted in written form with a 50 point bonus for reports received on or before the established due dates.

The new scoring schedule is presented below.

1. Chapter Meetings and Technical Activities
   Credit 100 points multiplied by the percentage of listed chapter members in attendance.
   Credit 100 points multiplied by the ratio of non-members in attendance to listed chapter members up to a one to one ratio. Listed chapter members are the members of record according to the IEEE Headquarters reports issued during the award period. Dinner, luncheon, field trip and lecture series meetings shall be counted.

2. Special Events
   Credit 100 points for the sponsorship of a G-EMC Symposium and 50 points for joint sponsorship of a technical symposium.
   Credit 25 points for a social meeting.
   Credit 25 points for joint sponsorship of a meeting.

3. Chapter Newsletter
   Credit 25 points for each issue.

4. G-EMC Newsletter Report
   Credit 50 points for each report filed before the deadline. This report will include Chapter of the Year point scoring information.

5. Awards Program
   Credit 25 points for an awards program to recognize outstanding service at a chapter level.
   Credit 25 points for participation in the G-EMC awards program. This is credit for national awards nominations made to the G-EMC Awards Committee.

6. Membership
   Credit 200 points multiplied by the percentage of increase or decrease in membership of the Chapter for the calendar year. This may be a negative value.

(continued)

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Second class postage paid at New York, N.Y., and additional mailing offices.

7. Advance Planning
Credit 25 points when a complete annual program is issued to each chapter member before the first meeting is held.

The final scoring will be made by the Awards Committee on the basis of written reports received by the G-EMC Newsletter chapter news editor before established deadlines. Consideration may be given to unusual circumstances or activities of the chapters. The judgment of the Awards Committee will be considered final.

MAIL

Dear Bob:

Your EMC Newsletter No. 78 for the summer of 1973 was very inspiring. We know you and your staff devote many hours to publishing this letter and we of the Central Texas Section want to extend our thanks and appreciation.

Particularly, the EMC Group Membership Roster was helpful to our group for contacting people to assist in the upcoming International EMC conference in San Antonio in 1975. Naturally, our work begins now in order to try to come up with a unique, informative and educational conference.

The format for the Newsletter is splendid and a picture of events (from chapters on personnel) always give a final touch for publication. I think all chapters ought to receive a G-EMC Opinion Poll every year so that the incoming officers can provide what the chapter members want to see and hear.

I would suggest each chapter go through this roster and try to determine if new or inactive members need a stimuli to return. (Notice Gene Cory is not registered in Central Texas EMC!)

Thank you, Bob, for the time and devotion to produce the Newsletter. Remembering the effort we will expend in the Central Texas Section for the International EMC Conference in 1975, may we call on you to publish developments of the program and public relations information for dissemination to the EMC community?

In closing, let me thank all the staff of the EMC Newsletter for a superb job well done!

Sincerely

Carl C. Lambert
Vice Chairman 1973/74
Central Texas Section

ENGINEERING SOCIETIES SUPPORT LEGISLATION FOR METRIC CONVERSION

At hearings of the House of Representatives Subcommittee on Science, Research, and Development, Dr. Donald Marlowe, past President of ASME, supported the systematic conversion from customary units to SI (Metric) units, through a coordinated national plan. Dr. Marlowe, accompanied by Dr. Robert Briskman, Chairman of the IEEE Standards Board, and Ernest R. Leffel, Chairman of the ASCE Committee on Metrication, spoke on behalf of the Engineering Societies. He supported the concept of an independent Presidential Commission to develop and direct a conversion plan. However, he cautioned the conversion would have varying impact on different industries and that the time period for conversion should be left for development by the commission. He urged "that substitution of metric be accomplished in such a way that it becomes the predominant, but not the exclusive measurement language within a target date of ten years after establishment of the conversion commission".

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CHAPTER CHATTER

by Charlie Anderson

And it came to pass in the 17th year since the gathering of the peoples of EMC under the banner of one Tribe, that there was a great tribulation in that Tribe. For the worthy Scribe Marty, of the Sect of the Bermans, who wrote down the doings of the Clans of EMC for the Journal of the Tribe spake unto the Chief Scribe of the Journal saying, "Verily, I should no longer be a Scribe of the Journal, for I am now of the Tribe of those who contemplate the mysteries of the innermost heart of all things, to wit, the Tribe of E-MC^2". And the Chief Scribe of the Journal of the Tribe of EMC and the Elders of the Tribe did fall into much sorrow; and there was weeping and wailing and quaffing of the spirits of grain. And they said among themselves: "Who shall take up the work of our brother who has gone unto the Tribe of E-MC ^{2}?" And then the Chief Scribe of the Journal of the Tribe of EMC spake unto the Elders, saying, "Behold, there is among the brethren of the Clan of our Tribe who inhabit the littoral of the land that is called New Jersey one who is called Charles, of the Sept of the Andersons, who has been Scribe of a gazette of that Clan. I shall speak unto him and ask him to take up the pen of our brother who is now of another Tribe." And it came to pass that the Brother of the Clan of the Jersey Coast replied unto the Chief Scribe of the Journal of the Tribe of EMC, saying, "With fear and trembling shall I take up the pen of the brother who has departed our Tribe. For verily, he wielded a mighty pen and will in sooth be a hard act to follow, as the peoples of the Tribe of Thespians speak". And when these tidings had been spread to the Tribe of EMC, the Elders thereof shed tears into their chalices of the spirits of the grain, and the young braves of the Tribe wept into their goblets of the essences of fermented grain; and they said among themselves, "How shall this upstart from the Clan of the Jersey Coast presume even to lift the pen of our brother who is now of another Tribe?" And the whole of the Tribe of EMC awaited the tidings of the Clans of that Tribe, as they should be set down by the new Scribe, to judge whether he should be worthy to record the comings and goings and gatherings of the Clans and the peoples thereof.

(And if you gals and guys think I can maintain that style, you've got a lot of EMI in your junction boxes.)

(Response to my mailing of the Chapter report forms for this issue hasn't been too good so far - only Central Texas, Jersey Coast, New York/Long Island, Pacific Area, and Phoenix have replied at deadline.

Central Texas

Central Texas came through with both a formal report from the Chapter's Acting Secretary and a fine chatty letter from Winnie Lambert (Vice Chairman Carlos' able helpmate). Officers for the coming season are: Dick Schulz, Chairman; Carl Lambert, Vice Chairman; Octavius Jouffray, Secretary. Winnie Lambert's wonderful letter mentioned a "beginning mix-together", so things appear to be going well for the Texans.

New York/Long Island

Having recovered somewhat from their labors in connection with the Symposium, NY/LI reelected last year's slate of officers, and has started planning for the coming season, according to Tony Zimbalatti. (Let's hope they include another joint Jersey Coast/New York-Long Island meeting at the Playboy Club!).

Phoenix

Closing out before the summer lull, Phoenix had a dinner meeting at their favorite spot, the Rodeway Inn. Gerry Rothhammer and Dick Reed of Singer Instrumentation were on hand with a display and demo of their company's EMI and spectrum monitoring equipment. Twenty-two attended.

STOP PRESS: Just got another mailing from Phoenix, reporting their first Fall meeting on September 19. Edward Conklin of Kitt Peak Observatory gave a talk on Radio Astronomy to an audience of 47 (sounds as though some of the chapters are going to have to go some to beat that kind of enthusiasm). They will elect their 1974 officers at their December meeting, at which time they will have Harry Berger, the DoD Area Frequency Coordinator from Ft. Huachuca, as their speaker.

Pacific Area

Bob Ford reports all sorts of doings in his fantastic GEMC PAC Newsletter. He tells of some interesting experiences of the PAC area EMCers, who certainly seem to run into all kinds of interference problems. Recommended among other things is a review of ECAC's report ESD-TR-68-103 if you have occasion to select interference-free frequency combinations for VHF/UHF transceiver sites. He also describes an intriguing bit of EMI bird-dogging by AFCS's field EMC team at an installation in Thailand. (continued)

PAC Areas's Vice-Chairman, Bob Kugler, has returned to the ZI, to be stationed in Washington (Washington Chapter please note).

Bob Ford included one little joke which I must pass on: Did you hear about the sophisticated computer? Whenever a tough problem is fed into it, it asks for a martini. (Lots more but we don't have room.)

Jersey Coast

Many of the Jersey Coast Chapter members assisted with the arrangements and otherwise contributed to the CISPR meeting, which preceded the Symposium. John O'Neil was the Arrangements Chairman. He and his Committee, with much help from staff personnel of Monmouth College and Ft. Monmouth did a fine job. Congratulations to all involved!

Chapter officers for the '73/'74 season are: John Soboleski (in charge of chairs); Joseph Chislow (in charge of vice); Paul Major (in charge of money).* Jack Rubin, of Ft. Monmouth, was Nominating Committee Chairman. The Chapter sponsored a Student Orientation Night on 1 May for students of the area colleges. This was held at Honeywell's Monmouth Airport facility and was such a success that it will probably become an annual affair.

Thursday, 21 June saw the last luncheon meeting before Summer recess. H. Janet Healer, of the Office of Telecommunications Policy, spoke on the Biological Effects of Electromagnetic Energy: the Government Program. About 25 attended this meeting, which was held at Rosie O'Grady's House of Great Repute in Eatontown. Also, on June 6th, the Jersey Coasters held a joint meeting with the local Bio-Engineering Society Chapter. Lt. Tom Giordano of Ft. Monmouth talked about the Ecom program on acoustic noise in aircraft, with particular reference to the CH-47 helicopter. Over 30 heard his talk, which followed a luncheon meeting at Colt's Neck Inn.

* Note: This is verbatim from the June issue of New Jersey G-EMC Newsletter.

JUNIOR'S GONNA BE AN ENGINEER

April 73/Quality Management & Engineering

"Hey, Ike, my kid wants to be an engineer. One of those guys that draws on a board ya' know. What do you think about that?" I guess it's OK, Mike, those guys have all those degrees 'n everythin', they make a good buck, ya' know."

Just what does that engineer do to deserve that good "buck"? For one thing, he participates in the design and qualification of reliability systems for sophisticated defense programs that protect our large cities from nuclear attack. His annual salary is almost equal to the lowest paid patronage parasite on that large city payroll.

He creates and builds prototypes of complicated medical equipment that enable the medical profession to achieve more accurate analyses than ever before. This equipment has become an indispensable tool of the physician, who frequently reports an annual wage exceeding $100,000.

He is frequently the Expert Witness in product liability trials and, more often than not, it is his testimony that wins the case for the plaintiff. The attorney, who takes the case on a contingency basis, walks away with a third of the amount of the money awarded.

He may be the reluctant star witness who must defend his company in a lawsuit precipitated by an irresponsible decision made by a marketing manager, who makes double the salary of the frustrated design engineer.

He supervises the inspection and testing of fail-safe devices that ensure the safety of a bulldozer operator, who grosses more dollars in nine months than the average quality assurance engineer does in twelve.

He has contributed significantly to better reliability of consumer products. And if he finds time to free himself from household chores on the weekend, he may watch his favorite $150,000-a-year athlete swing an ash club at a leather covered sphere on the colored TV tube that he helped to perfect.

He also has the opportunity of temporarily changing his occupation during a recession by becoming a cab driver, a gas jockey, or a meter reader.

"By the way, Mike, do you realize there's now a shortage of engineers .... I wonder why?"

"Probably 'cause the courses are too tough or somethin' like that. Think I'll tell my kid to change his mind and be a lawyer or a doctor .... maybe a plumber, ya' know."

Loren "Chick" Walsh,
Editor

BOOK REVIEWS

EMI CONTROL METHODS AND TECHNIQUES, Volume 3 of the Handbook Series on Electromagnetic Interference and Compatibility, by Donald R. J. White, 788 pages, clothbound, Published by Don White Consultants, Inc., 14800 Springfield Road, Germantown, Md. 20767.

This is the fourth volume to be published in the five volume handbook series. Volume 2, on test methods and procedures, is promised for late 1973. In Volume 3 the author has underscored the tutorial throughout, emphasizing fundamentals wherever possible so that the reader can understand the rationale. Also, the how-to-do-it is illustrated wherever possible, so that much of the heretofore "black magic" is removed by a wealth of figures, tables and examples.

The text material is well organized. The author opens with an explanation of interference situations, both inter-system and intra-system. The chapters which follow delve into EMI sources and receptors, applications and performance criteria, and inter-system prediction and control. This leads to a series of chapters dealing with control methods such as grounding, bonding, shielding, cabling, wiring and harnessing, connectors and fittings, packaging and gasketing, filters and filtering, suppression devices, and a final section on EMI control in components, circuits and equipments.

All of the features of previous volumes are included in this volume. There is a list of abbreviations and symbols in the front of the book. Illustative examples are used in each chapter as appropriate to explain the methods used. A bibliography of recent literature is attached to each chapter and to make this handbook a useful reference work, there is an extensive index.

A helpful feature of this book is the section of chapter one "How to use this handbook". The objective of this section is to steer the reader to the material he needs. The first step in locating a solution is to identify the problem as either an inter-system or intra-system EMI situation. The author has prepared a flow diagram for each of these situations. Through these flow diagrams the reader identifies his problem, and is directed to the specific chapters applying to his problem.

Your reviewer is impressed with the wealth of material useful to the practicing EMI engineer; from the free space propagation loss chart with 4/3 Earth radius profiles to shielding effectiveness charts and a table of element values of Butterworth Low-pass filter prototypes. Chapter 5, Inter-System EMI Prediction and Control, is an impressive treatise with a discussion of transmitter models, receiver models, antenna models, propagation models with a description of amplitude culling, frequency culling and EMI prediction.

Chapter 9, Architectural Grounding, Wiring and Shielding, is of current interest now that building tenants are becoming aware of electromagnetic compatibility as a tenant-landlord contractual concern. The author's detailed discussion of structural grounding will be helpful to the architect/engineer. Further advice is given on building wiring and lighting techniques with discussion of building materials for shielding and door and window design.

Your reviewer recommends this handbook to the practicing EMI engineer, to electrical/mechanical engineers who do design work to EMI/EMC specifications, and to managers who are responsible for the EMI/EMC requirements of a project. This book is a worthwhile reference on EMI/EMC subjects in any library. It should be particularly useful to the engineer with the task of preparing an EMI/EMC control plan.

A Sequel to the Review of Nomographs for Electronics

One of our readers, Mr. Edward E. Wetherhold, of Honeywell, wrote in to submit his careful evaluation of "Nomographs for Electronics". Mr. Wetherhold had found many errors in the book which he had called to the attention of both the author and the publisher in the hope that some action would be taken to prevent distribution of this book until correction was made. To quote our reader, "Their inability and/or lack of interest in comprehending the significance of the errors in the text caused me, in exasperation, to write to the IEEE Forum. My letter was published in the June IEEE Spectrum and may be found under the heading of 'Defective Texts' on page 12." Mr. Wetherhold concludes by saying, "This book should never have been published in its present form. Unless your reviews become more critical and thorough, your readers will continue to be defrauded by the sloppy and unethical publishers."

(continued)

I will summarize some of the errors pointed out by our reader. Some of the errors are typographical or errors that are typical when transposing rough text into printed form. This occurs when part of the denominator of an equation slips into the numerator. Other errors involve transposition of values in a tabulation and abbreviation of decibel as Db instead of dB. The value of time constant given is 63.3% instead of 63.2% and, in some cases, the values chosen for the examples lead to answer values that are "ridiculous".

Mr. Wetherhold's field of expertise is electric wave filters and he has examined the chapters on filters quite thoroughly. He finds errors in the basic equations and the most important error of all -- the author and/or editor forgot to include the schematic diagrams of the high-pass and low-pass filters. After the values of L and C have been determined from the nomographs how does one connect the L and C elements to make the desired filter? Mr. E. E. Wetherhold can be addressed at Honeywell, Inc., P.O. Box 391, Annapolis, Md. 21404, by anyone who owns the book and would like a list of specific errors.

"NOISE GUIDE" TO BE ISSUED

Major manufacturers and users of U.S. industrial control equipment have been working voluntarily for several years on "A Noise Guide for the Installation of Electrical Equipment to Minimize Electrical Noise Inputs to Controllers from External Sources". The overall effort is being coordinated by the Industrial Control System Subcommittee of the Industrial Application Society of the IEEE.

Industrial firms participating are Alcoa, Allen-Bradley Co., Burndy-Husky Products, Inc., Cincinnati Milacron, Inc., Cutler-Hammer, General Electric, Giddings & Lewis Machine Tool Co., Reliance Electrice Co., Square-D Co., and Westinghouse Electric Co. Liason exists with the American Petroleum Institute, IEEE-G-EMC, the FCC, the Hydro Electric Power Commission of Ontario, the Oak Ridge National Laboratory, and the University of Cincinnati. The first draft of the "Noise Guide" will hopefully be issued in 1973.

The Guide is a first attempt at practical industrial interference control. By mutual consent of the contributors, it is concerned mainly with system installation to minimize interference from neighboring systems. This limitation was imposed in order to obtain a practical tool in a reasonable time with voluntary workers from both manufacturers and users of control equipment.

VDE ELECTROMAGNETIC INTERFERENCE SPECIFICATIONS

The following VDE EMI Specifications are currently being translated from German to English and will be available approximately November 1, 1973.

VDE 0875/7.71 Specification for EMI Suppression of Appliances, Machinery, and Systems with Power Input of DC to 10 KHz. Published in July, 1971. Supersedes VDE 0875/8.66.

VDE 0872/7.72 Specifications for EMI Suppression of Radio and Television Receivers. Published in July 1972. Supersedes VDE 0872 Teil 1/8.63.

VDE 9871/3.68 Specifications for EMI Suppression of High-Frequency Appliances and Systems.

VDE 0874/3.59 Guidelines for EMI Suppression.

VDE 0876/12.55 Specifications for Electromagnetic Interference Meters

VDE 0877 Teil Guidelines for Electromagnetic Interference Measurements, Part 1, How to measure EMI Voltages 100 KHz to 30 MHz.

VDE 0877 Teil Guidelines for Electromagentic Interference Measurements, Part 2, How to measure EMI Field Strengths, 100 KHz to 300 MHz.

Specifications on EMC requirements of transmitters published and controlled by the Deutsche Bundespost, Fernmeldetechnisches Zentralamt are also available. For more information, contact:

McDonald Associates
933 Sixth Street
Santa Monica, California 90403

WALSH FUNCTION BIBLIOGRAPHY SECOND EDITION OUT

The rapid increase in the literature on Walsh functions during the year 1972 is reflected in the second edition of this bibliography. The entries are arranged by author with a brief abstract. Additional listings are by category and by date. Publication is by the Johns Hopkins University, Applied Physics Laboratory, 8621 Georgia Ave., Silver Spring, Md. 20910. The bibliography can be identified as "TG 1198A, February 1973, An Annotated Bibliography on Walsh and Walsh Related Functions, by J. N. Bramhall".

AFSC DH 1-4 REVISED

The second revision of the second edition of the Air Force Systems Command Design Handbook 1-4, Electromagnetic Compatibility, was issued in January, 1973. Revision number 3 was issued in July. In the latest revision, Design Note 3C5, Electromagnetic Pulse (EMP) and Design Note 6A4, Statistical Tests for Electro-Explosive Initiators (EEIs) have been added. Also, Design Note 3D6, Sub-Note 3 (1), Guidance for Selecting EEIs has been added. For additional information, contact Mr. Marth, 4950/TZH, Wright-Patterson AFB, Oh. 45433.

HINTS AND KINKS FOR YOUR MIC PACKAGE DESIGN

An article with the above title appeared in the March, 1973, issue of "Microwaves". This 4 page article containing many illustrations, was written by Sanford S. Lehrfeld, President of Tek-Wave Inc. The first two paragraphs are excerpted as follows:

Here are some ideas on how to "frame" your substrate, fasten it down, how to connect various input and output launchers to the frame and how to minimize EMI/RFI.

Reliability and performance of a microwave integrated circuit often depends as much on the "framing" of the circuit substrate as upon the circuit itself. Framing is needed to provide rigidity, for heat sinking, to provide a means for attaching connectors, for environmental protection and for minimizing electromagnetic interference (EMI/RFI).

RESULTS OF THE AD COM ELECTION BALLOT

As you know, a ballot for the election of six AdCom members for the Electromagnetic Compatibility Group was issued on August 1, 1973. The ballots returned have been counted, and the following members have been elected for the term beginning on January 1, 1974:

Don B. Clark
Joseph J. Fisher
Eldon S. Hughes
Jacqueline R. Janoski
James C. Toler
Howard L. Wolfman

We wish to thank all nominees for their willingness to serve and for permitting their names to be included on this ballot.

1972 LIGHTNING AND STATIC ELECTRICITY CONFERENCE DOCUMENT

A transcription of the discussions held in the workshop on MIL-B-5087B has been released. This is a verbal transcript of the panel discussion co-chaired by J. D. Robb and J. A. Plumer. It includes the comments and prepared statements as well as the questions from the floor and general discussion. For additional information, contact John D. Robb, Lighting and Transients Institute, 3011 Foshay Tower, Minneapolis, Minn. 55402. Tel: (612) 335-0434.

GETTING NOISE IMMUNITY IN INDUSTRIAL CONTROLS

An article with the above title appeared in the June 1973 issue of IEEE Spectrum. Co-authored by H. M. Schlicke & O. J. Struger of the Allen-Bradley Co., the article fills six pages including many illustrations. The article centers around the use of interference filters in industrial controls. Reprints of this article (No. X73-062) are available at $1.50 for the first copy and 50¢ for each additional copy. Send remittance and request, stating article number, to IEEE, 345 E. 47th St., New York, N.Y. 10017, Attn: SPSU.

LARRY CUMMING DIES

Laurence Gordon Cumming (A'27, SM'46, F'66, FL'67), one of the early pioneers in radiobroadcasting, died recently at the age of 71. As secretary of the IRE Technical and Professional Groups from 1946 to 1962, he was instrumental in organizing what has become the Group structure of IEEE. Following the merger that created IEEE in 1963, Mr. Cumming served the institute as Field Secretary for two years. He was also secretary of the Joint Technical Advisory Committee from 1948 to 1965 and has been very active as a member of the G-EMC AdCom for 10 years.

HAROLD R. SCHULTZ DIES

Harold R. Schultz, who has been very active in EMC affairs for many years, especially in his association with the SAE AE-4 EMC Committee, passed away in June of this year. He leaves his wife, Lena, and two grown children. At Hal's request, donations may be made to the American Cancer Society of Los Angeles County, 9581 W. Pico, Beverly Hills, Ca.

MEETINGS & EVENTS

CALL FOR PAPERS

You are cordially invited to attend the IEEE EMC Symposium for 1974 to be held in San Francisco, California, on July 16-18, 1974. The theme of the Symposium is "EMC Spans the Spectrum".

Technical papers are solicited for this Symposium. Topics suggested for sessions include:

- NOISE IMMUNITY IN SOLID STATE DIGITAL SYSTEMS
- POWER AND COMMUNICATION NOISE PROTECTION
- INTERFERENCE CONTROL IN DATA TRANSMISSION
- RF BIOLOGICAL HAZARDS - CONSUMER PROTECTION
- EMC STANDARDS AND SPECIFICATIONS
- SPECTRUM USAGE--PROBLEMS AND MANAGEMENT
- EMC MEASUREMENTS, TESTING AND ANALYSIS
- INTERFERENCE AND NOISE CONTROL IN CIRCUIT DESIGN

Summaries of potential papers of approximately 300 words must be submitted by Jan. 5, 1974 . Authors will be notified of acceptance by Feb. 1, 1974. Completed typed versions of papers ready for the symposium record will be due March 15, 1974.

Summaries should be submitted to Alan K. Johnson. 439 Molino Ave., Sunnyvale, Cal. 94086.

PRECISION ELECTROMAGNETIC MEASUREMENTS CONFERENCE

The 1974 Conference on Precision Electromagnetic Measurements will be held from 1 to 5 July 1974, at the Institution of Electrical Engineers, London, England. This will be the ninth conference in the biennial series which began in 1958 and is the first to take place outside the United States. The change of venue on this occasion is a recognition of the increasingly international character of the Conference, reflected in the theme of the 1974 meeting which is "the advancement and application of precision electromagnetic measurements against a background of international scientific cooperation".

(continued)

The program will continue to cover the fields traditional to CPEM of dc and ac electrical measurements, time and frequency, rf and microwave measurements. In the light of the growing diversification in applications of electrical measurement techniques, a number of additional topics have been proposed for the 1974 Conference.

Conferences on Precision Electromagnetic Measurements are sponsored by the NBS Institute for Basic Standards, the IEEE Group on Instrumentation & Measurement, URSI, IEE, the National Physical Laboratory and the Scientific Instrument Manufacturer's Association. For additional information, contact:

Mr. Lawrence E. Gattere
National Bureau of Standards
Boulder, Co. 80302
(303) 499-1000
or
The 1974 CPEM Secretariat
c/o The Conference Department
The Institution of Electrical Engineers
Savoy Place, London WC2R OBL
England

USAECOM EMC COLLOQUIUM

Plans are being formulated for the conduct of an Electromagnetic Compatibility colloquium at US Army Electronics Command, Fort Monmouth, New Jersey, in late spring 1974.

This two day meeting will be concerned with the subjects of EMC Instrumentation, Measurement Techniques and Standards and Specifications. It is anticipated that the first day will be devoted to representatives of industry, technical societies and government outlining their current efforts and future plans in these three areas. During the second day the "users", both industry and government, will discuss their problems when testing in accordance with current requirements.

Invitations will be extended to all Army commands, members of technical societies and others concerned with the problem of achieving EMC.

All members of G-27 are invited to attend this meeting. Further information will be furnished well in advance of the date of the meeting.

Meet you in Montreux May 20-22, 1975

SIDE EFFECTS

HEARING AID AND BATTERY-POWERED WATCH SPELL TROUBLE

The following case study is a true story that rightly falls in the product liability category. However, even after the case was settled, many questions were still unresolved. What is your analysis? Did the product defect cause the person to lose control?

In the late 60's, a man was driving his car down the street and suddenly lost physical control. As a result, his vehicle crashed into another. He was injured, people in the other car were injured and property was damaged. The man was taken to a hospital and seemed to make a normal recovery until he was given his personal effects when ready to leave the hospital.

His personal effects included a battery-powered watch. Upon putting it on his wrist, he collapsed. The man had a hearing defect and normally wore a hearing aid. It was discovered that if he was wearing the watch but not the hearing aid (or vice versa) he was fine. However, when he wore both the hearing aid and the watch, he collapsed. The watch became the prime suspect. An investigation of the watch showed that the insulation around the battery had deteriorated. The man was given a mechanical watch to wear and, in combination with his hearing aid, no problems resulted.

Claims were made against the watch company based on the deteriorated insulation. The line of reasoning-- the battery in the watch was touching the case due to faulty insulation and, in combination with the normally grounded hearing aid, set up an electric circuit that caused the man to lose physical control of his car, resulting in the crash.

What were the results? Much discussion centered around the question of voltages involved and skin resistance. It was argued that the low voltages used in the watch and the hearing aid could not cause an electrical impulse strong enough to cause a collapse. However, the watch manufacturer's insurance company eventually paid off the claim which amounted to some $6,000. Perhaps the insurance company considered it a nuisance claim and paid it off just to clear its files. Or, did they know something that the other side didn't?

What is your opinion? Could enough current flow into the man's brain to cause a loss of physical control? Send your comments to A. V. Nelson, Evaluation Engineering, 1282 Old Skokie Rd., Highland, Ill. 60035.

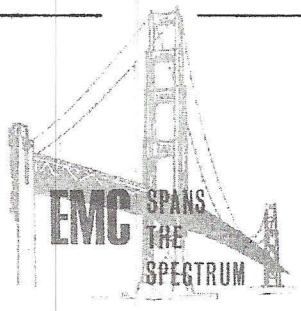
BIOLOGICAL EFFECTS OF RF ON RODENTS

A report entitled "Biological Effects of RF in Rodents Exposed to Pulsed Electromagnetic Radiation" dated June 1973, written by W. D. Skidmore & S. J. Baum, has been released by the Armed Forces Radiobiology Research Institute (DNA), Bethesda, Md., under the number SR 73-10. The following has been excerpted from the report:

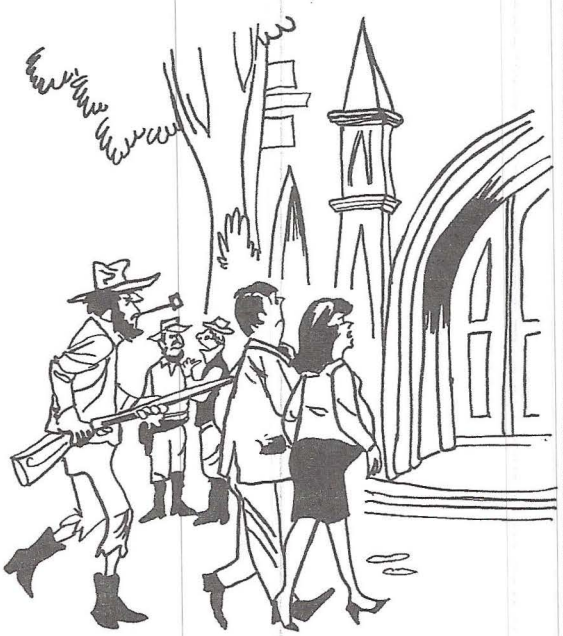
Rodents were exposed to electromagnetic pulse (EMP) radiation to test the hypothesis that rapid changes in electric and magnetic fields would induce injuries in biological systems with high cell turnover rates. The AFRRI EMP simulator provided five pulses per second with a peak electric field intensity of 447 kV/m with a 5 nsec rise time and 5-600 nsec 1/e fall time. Exposures, totaling 5.1×10^7 pulses, were continuous except for approximately 1 hour daily for biological sampling and animal care during 20 weeks. Biological assays were periodically conducted in exposed and nonexposed animals at appropriate intervals.

Exposures of rodents under these conditions indicated no apparent acute injuries based on blood chemistry, blood counts, bone marrow cellular determination, chromosomal aberration, embryology, histology, leukemia, and mammary tumor determinations. Differences between EMP exposed and nonexposed animals were occasionally observed in some blood counts.

It appears that one could safely predict that humans exposed under similar conditions would show no acute injurious biological effects. It is suggested that existing proposed safety standards might be reevaluated, particularly in regard to acute effects. However, since the present experiment has been conducted for only 20 weeks after the onset of EMP exposure, no assessment could be made for the appearance of late somatic effects (e.g., tumors and cancers) possibly induced by early damage at the molecular level. Such injuries usually would be manifested toward the latter part of the life-span in rodents (2nd year).



ELECTROMAGNETIC COMPATIBILITY (EMC) MAY RAISE BLUE SKY, QUESTIONABLE AND CONFUSING THOUGHTS IN THE MINDS OF MANY PEOPLE IN THE OPERATIONAL AND DEVELOPMENT COMMUNITY. CONSIDER FOR A MOMNET THAT.....



IF IT IS FORCED UPON YOU, IT IS OFTEN RESENTED. IT MAY BE MISINTERPRETED.
IT IS USUALLY ACCEPTED WITH RELUCTANCE AND BECOMES A NECESSITY ONLY AFTER A PROBLEM OCCURS.

PROPER PRECAUTIONS CAN BE TAKEN AND PLANS CAN BE EXECUTED AT THE PROPER TIME TO THE SATISFACTION OF ALL CONCERNED.

AS A RESULT OF PROPER PLANNING, A HIGH DEGREE OF COMPATIBILITY WILL BE ACHIEVED THROUGHOUT A LONG AND USEFUL LIFE.

MICROWAVES TO SUBSTITUTE FOR DDT?

With DDT virtually banned for control of mosquitos, more of the ugly fellows have been around lately. Ernie Ruda of CALSPAN Inc. thinks he may have just the right sleep potion to turn the sting onto the pests themselves. The answer, according to Ruda, may be microwave radiation.

Only tried on laboratory samples so far, Ruda says that encouraging results were obtained by directing K-band microwave energy onto a raft of mosquito eggs and larvae for a period of from 1 to 3 minutes. The energy concentration was about 2 mW/cm^2. Ruda wouldn't speculate on the mortality percentage of larva and unhatched eggs, because of the many complex factors involved, but he did claim significant results. He shot the egg rafts with "rifle" bursts of 0.5 us pulses at the rate of 2000 per second. The rf frequency was 24 GHz.

So far, little has been done to study means for practical application of microwave energy for effective mosquito control; however, speculation would suggest scanning beams from helicopters and from land vehicles, manpacks or boats.

MC GRAW-EDISON IS BUILDING NEW TRANSIENT NETWORK ANALYZER

The McGraw-Edison Co. expects to complete shortly the installation of a new analog transient network analyzer designed to simulate and study surge phenomena on extra-high-voltage and ultra-high-voltage electrical transmission systems.

A transient network analyzer, of TNA, as it is known in the industry, is an electrical model of the critical parts of an electric power system. Transmission lines, transformers, reactors, capacitors, surge arresters, and other equipment are represented by miniature components. The analyzer is used to help utility engineers predict what will happen to a transmission system under actual conditions.

The McGraw-Edison's analyzer is being installed at the company's Power Systems Division in Canonsburg, Pa. Division President W. W. Renberg states that when it becomes fully operational, McGraw-Edison's TNA "will be the most advanced of three such analyzers in the United States generally available to the electric utility industry". He explains that design and operational aspects have been enhanced through the use of digital computer programs developed by McGraw-Edison's system engineering section. One of the features is direct modeling of electrostatic and electronmagnetic unbalance factors.

(continued)

In addition to simulating surge conditions on cable and overhead systems, McGraw-Edison's TNA analyzes overvoltage conditions in distribution systems, particularly the effect of transient voltages on the design of underground cable installations.

The TNA, which was designed and built by Power Technologies, Inc., Schenectady, N.Y., resembles a moderately sized digital computer. It has rows of 6 foot high cabinets and a console for operator controls.

COMMITTEE OF TECHNICIANS AND TECHNOLOGISTS

A special ad hoc committee of technicians and technologists is being formed at the request of the Executive Committee of IEEE. The charge to the committee is as follows:

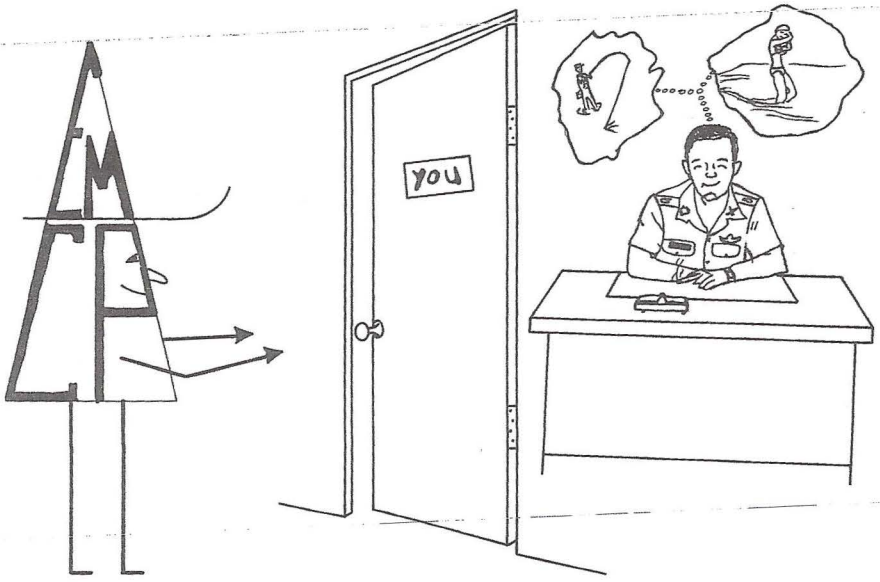
Identify the issues with respect to technicians and technologists, examine possible solutions to problems identified, and make recommendations for implementation by the IEEE in the following areas:

1. Membership
2. Services provided by entities of the Technical Activities Board, the Regional Activities Board, and the Publications Board of the Institute
3. Identify the economic status, employment patterns, and opportunities for the future in the economy
4. Education related service.

To properly identify all of the issues involving technicians and technologists, the committee must have members from a wide variety of backgrounds (i.e. industry, educational, etc.). If you have an involvement with this issue and are willing to serve on this committee, please contact Mr. Jack Kinn, IEEE Headquarters, 345 East 47th Street, New York, N. Y. 10017. Please call him if you have any further questions with regard to the functions of this committee.

IN THE SAME LIGHT, IF IT IS CONSIDERED AT THE WRONG TIME, IF ADVICE AND RECOMMENDATIONS ARE NOT CONSIDERED OR IF PROPER PRECAUTIONS ARE NOT TAKEN - THE RESULT MAY BE RECOGNITION OF ADDITIONAL PROBLEMS INCLUDING A REALIGNMENT OF PLANS AND PROGRAMS.

HOWEVER, IF POSSIBLE FUTURE PROBLEMS ARE RECOGNIZED AND PROPOSALS ARE CONSIDERED AND ACCEPTED, PROPER PLANNING CAN BE UNDERTAKEN.



THIS APPLIES TO THE MILITARY ALSO! WHERE EMC REQUIREMENTS ARE CONCERNED, WE SHOULD ALL BE MORE LIKE MY VULTURE FRIENDS - - -

THE TIME TO CONSIDER EMC IS AT PROGRAM CONCEPTION - LONG BEFORE ANY OPERATIONAL INTERFERENCE PROBLEMS OCCUR ! ! !

Developed by the ECAC
U.S. Marine Corps Deputy Director
Lt. Col. R. Williams

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