

IEEE

ELECTROMAGNETIC COMPATIBILITY GROUP

NEWSLETTER



ISSUE NO.82 SUMMER, 1974

EDITOR: ROBERT D. GOLDBLUM

GENERAL CHAIRMAN'S MESSAGE



VICTOR SIEGFRIED

Dear Fellow Engineers:

Greetings from the San Francisco G-EMC Chapter. We want to welcome you to attend the 1974 International Symposium on Electromagnetic Compatibility, to be held on July 16-18 at the San Francisco Hilton Hotel and Tower. This is truly an International Symposium with 10 of the 57 technical papers from abroad and 2 from Canada. Our Symposium theme is *EMC Spans the Spectrum* which denotes the breadth of interests to be found in these papers.

By now, you have received your advance program and can see for yourselves the diversified range of these offerings. Twelve sessions (two in parallel) cover vital topics in EMC. A session on Electromagnetic Vulnerability introduces this term as applied to a weapons system. (Harpoon missile). Another is on the Federal Spectrum Management work of the Office of Tele-communications, U.S. Department of Commerce. Noise Immunity in Control and Communication Systems has a CMOS compatibility paper and goes into optoelectronics as a means of improving isolation. Environmental Interference Characteristics shows proliferation of EM pollution and asks *What are we doing to ourselves?* A session on EMI Effects and Control Methods treats with facility design problems and with biomedical effects in cardiac pacemakers. Communication link interference occupies another session and system compatibility is described for ATS-F, F-15 and E-4A systems.

An intriguing Figure of Merit proposal is introduced in another session, and three sessions deal with interference measurement and control analysis and filtering.

These sessions and the exhibits of at least 15 manufacturers in our field of endeavor will make this a most worthwhile symposium to attend. Many delightful features of San Francisco and its nearby surroundings await your exploration.

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IEEE ACTIVITIES

ARTHUR P. STERN NOMINATED FOR THE PRESIDENCY

Mr. John Guarrera, President of the IEEE has announced the names of the candidates who will appear on the election ballot for 1975 offices within the Institute. The ballots will be mailed to all members by September first.

Mr. Arthur P. Stern, Vice President and General Manager, Advanced Products Division, The Magnavox Company, Torrance, Ca., has been nominated for the Presidency. Mr. Stern joined Magnavox in 1966 and has directed advanced communication, control and information technology, and systems activities. He has also been a nonresident staff member of M.I.T. A member of IEEE's Board of Directors for three years, Mr. Stern is currently Vice President - Regional Activities. He has also served as Secretary of the Institute.

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FOR YOUR INFORMATION

FIELD SERVICES is the new official name for the Membership Services Department. The Student Activities Department will henceforth do business as the Student Services Department. Both new names have been used unofficially for some time, but these will now appear in all IEEE use. The Field Services Department encompasses: Region/Section/Chapter Support; Committee/Corporate Support; Student Services; and Membership Development. It also furnishes administrative assistance to the Life Member Fund and Long Range Planning Committees.

IEEE CONGRESSIONAL FELLOW Ronal Larson is working with several staff members of Congressman Olin Teague's House Committee on Science and Astronautics. Dr. Larson has been involved in the Committee's hearings on the Administration's science policy structure and Congressman Mike McCormack's subcommittee on energy. The IEEE Congressional Fellow is one of six engineering and science Fellows sent to Washington each year.

MEMBERS may request their names removed from lists used for commercial mailings. Address your request to Headquarters. The 1975 dues bill will be designed to facilitate handling members requests.

IMAGE OF ENGINEERS - is it high or low? Results of a survey conducted by the National Science Foundation (NSF) appeared in Machine Design's November 15, 1973 issue. Engineers' prestige ranked fourth behind physicians, scientists, and ministers. It ranked ahead of lawyers, architects, bankers, accountants and businessmen. This same group of professions were surveyed in 1947 and engineers were seventh. By 1963, they were fifth in line. In weighing the scores developed by the survey, engineers have maintained approximately the same prestige factor in all surveys, but other professions have seen a marked decline.

CONFEREES TENTATIVELY DECIDE TO
"GUT" ENGINEERS' PROVISION
ON PROCUREMENT REGULATIONS

In an unexpected turn of events, a small group of conferees swung the pension conference on May 29, 1974 and achieved a tentative decision to "gut" one of the provisions for which the engineering societies have been working for over two years. This is the provision to require amendment of government procurement regulations to protect pension rights of technical professionals working under government contracts.

The provision was included in both the Senate and the House bills, but in slightly different forms.

In the Senate Bill, the Secretary of Labor was to promulgate the regulations, and they would then become effective in each contracting agency unless the head of the agency involved found the regulations not to be in the interest of his agency.

Under the House version, the same was true, except that either House of Congress could veto the new procurement regulations by a simple resolution adopted within 90 days after the regulations were promulgated.

Thus, both versions provided for procurement regulations, and yet the conferees agreed to drop the whole thing and substitute a simple study of the problem by the Department of Labor.

In any event, it was a massive sell-out, and if there is to be any letter-writing, letters should be directed to all conferees (listed below) because no one voted to save the engineers' provision. Senator Javits, who sponsored it originally, was absent from the conference at the time the vote was taken, and he may be persuaded to ask the conferees to reopen the question, particularly if our letters and our publications make it clear we care about this provision.

These are the conferees:

Senators:

Harrison A. Williams (D, N.J.)
Jennings Randolph (D, W.Vir.)
Jacob K. Javits (R, N.Y.)
Richard S. Schweiker (R, Pa.)
Russell B. Long (D, Tx.)
Wallace F. Bennett (R, Utah)
Carl T. Curtis (R, Neb.)
Gaylord Nelson (D, Wis.)

Congressmen:

Carl D. Perkins (D, Kty.) 7th dis. Hindman
Frank Thompson (D, N.J.) 4th dist. Trenton
John H. Dent (D, Pa.) 21st Ligtner
Phillip Burton (D, CA) 5th Dist. San Fran.
Albert H. Quie (R, Minn.) 1st Dennison
John N. Erlenborn (R, Ill.) 14th Glen Ellyn
Ronald A. Sarasin (R, Conn.) 5th, Beacon Fs.
Al Ullman (D, Ore.) 2nd Baker
James A. Burke (D, Mass.) 11th Milton
Martha Griffiths (D, Mich.) 17th Detroit
Daniel Rostenkowski (D, Ill.) 8th Chicago
Herman Schneebeli (R, Pa.) Williamsport, 17
Harold R. Collier (R, Ill.) 6th Riverside
Joel T. Broyhill (R, Va.) 10th Arlington

So far, not one of these conferees has put up a fight to defend this provision in the bill, even though both Houses of Congress have already accepted it, in different forms.

Every one of these conferees has engineers in his home district, and each of them can be made aware that engineers know what is going on, are following this bill carefully, and that, if this provision is dropped, the engineers in each conferee's home district will know who fought for it, who fought against it, and who sat by and did nothing.

In addition, to the extent that the engineering journals carry this story, these conferees will know that the work of a conference, which takes place behind closed doors and is often unreported, cannot be hidden in this case.

NEW PENSION CORPORATION TO OFFER SEVERAL
PLANS

In a move emphasizing unity within the scientific and technical professions in the United States, Pensions for Professionals, Inc. (PFP) and Pensions for Technical Professionals, Inc. (PTP) announced their intent to merge their activities aimed at promotion of improved retirement benefits for engineers and scientists. They have established a "Caretaker" organization, called PFP/ptp Corporation, to coordinate the continuing activities of both corporations, while efforts are made to reach final agreement on a new corporate entity.

Like its predecessors, the new corporation plans to provide a complete program of planning, administration, and marketing of pension plans having uniquely beneficial provisions for the 1.6 million technical professionals in the United States. These engineers and scientists are employed by large and small industries. Additionally, there are self-employed consultants and engineers employed in various nonprofit agencies.

The general philosophy and objectives in this pioneering effort include: further development of a broad spectrum of pension plans providing short-term vesting and thus increased mobility; accumulation on pension-fund contributions in individual accounts of participants, and a degree of control over the investment of funds in fixed or equity accounts; monitoring of new pension legislation and regulations; and enlistment of additional societies.

PFP/ptp Corporation is currently developing five separate pension plans. Features of plan #1 (called the IEEE plan or PTP plan or Engineers-Only, Immediate-Vesting, Multi-Employer plan) are immediate vesting and a profit-sharing option. It is a money purchase type plan with fixed income or equity portfolio investment options. Plan #2 (called the PFP plan or Multi-Employer, Non-Exclusive plan) features vesting consistent with the Joint Society Guidelines and a profit-sharing option. The third plan (called the Keogh or H.R. 10 plan) features immediate vesting and money purchase with options as in plan #1. The Non-Qualified Individual Investment Pension plan (plan #4) features a single purchase, terminal annuity contract negotiated on a group discount basis. It will be offered with any preferential accumulation account that can be added under the current law as well as immediate vesting. The final plan (called the Qualified Individual Retirement Account) features an immediate vesting, money purchase plan with investment options as described in plan #1.

Participants in PFP are: American Chemical Society, AIAA, American Institute of Chemists, American Institute of Chemical Engineers, American Nuclear Society, American Society of Civil Engineers, American Society for Metals, American Society for Microbiology, and the ASME. The American Physical Society had signed a letter of intent to participate in PTP with the IEEE.

The proposed merger of these two organizations will bring to bear the concerted effort of all interested engineering & scientific societies to produce a comprehensive national pension program for their own members as well as others in the profession.

Pensions For Professionals was incorporated in December, 1970, by the American Chemical Society to serve as a medium for cooperation among all interested professional societies in providing improved retirement benefits for professionals. This followed several years of committee work, surveys by knowledgeable consulting agencies, and discussions with many professional and technical societies regarding the pension needs of engineers and scientists.

Pensions for Technical Professionals was incorporated by the IEEE in December, 1973, to implement a multiemployer, immediate-vesting pension plan which will be made possible by current national pension reform legislation awaiting final approval in the Congress and by recent IRS pension rulings.

1974 IEEE

SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY

SAN FRANCISCO JULY 16-18, 1974

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ON ELECTROMAGNETIC COMPATIBILITY
August 1974

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EMC PERSONALITY PROFILES

By William G. Duff



Leonard William Thomas, Sr.

Leonard is one of the well known "senior citizens" of the EMC community. He was born in Birmingham, Alabama on May 11, 1909 and received his B.S.E.E. degree from Alabama Polytechnic Institute (now Auburn University) in May, 1931.

His career in electronics began with the repair and installation of automobile radios for the magnificent salary of \$15 per week. Next, he worked as an engineer for broadcast stations in Birmingham, Alabama, and Washington, D.C. In 1942, Leonard went to work for the Navy Department, Bureau of Ships, as an engineer, and immediately became involved with radio noise reduction problems on Marine Corps Landing Craft. Some of Leonard's more significant contributions to the EMC community while with the Navy included: initiation of a program to develop a family of RFI measuring instruments over the range of 30 Hz to 50GHz; development of measurement methods for standardized use of these instruments; establishment of Navy and DoD RFI/EMC Standards; development of a series of training programs in RFI; initiation of a series of design handbooks on the control of RFI.

From 1961 until his retirement in 1970 Leonard was a Principal and Supervisory Electronics Engineer at the Electromagnetic Compatibility Analysis Center in Annapolis, Maryland. He was responsible for management, planning of EMC situations of systems, components, and services. Since

his retirement from government service, Leonard has remained active as a consultant in the EMC field.

Throughout his career, Leonard has been very active in the IEEE and other organizations. Some of his more significant EMC community services include: charter member of the Washington, D.C. Chapter of IEEE G-EMC; Secretary of IEEE EMC Group; Chairman of Constitution and Bylaws Committee of IEEE G-EMC Adcom; Vice-Chairman of IEEE-EMC Committee on Standards; Navy representative to American National Standards Institute (ANSI); U.S. representative to International Special Committee on Radio Interference (CISPR); Registered Professional Engineer, District of Columbia, and member of National Society of Professional Engineers.

Leonard and his wife Vida May have led a very active personal life. In addition to raising two daughters (Dorothy May, and Sarah Ellen) and a son (Leonard W. Thomas, Jr.) they have both been very active in civic and church activities. Vida May was elected Mother-of-the-Year for the District of Columbia in 1969. Both daughters are now married and Dorothy has two daughters of her own. (Guess that makes Leonard a grandfather). Leonard Jr. is with the U.S. Air Force as an electrical engineer. Would you believe he is a member of the IEEE-G-EMC and is currently deeply involved in EMC problems. Work hard Junior, you have a big pair of shoes to fill.

MEETINGS & EVENTS

BIOLOGICAL EFFECTS COURSE

A five day summer session course entitled "Biological Effects, Hazards, and Medical Uses of Non-Ionizing Radiations" will be offered by M.I.T. on July 29 - August 2, 1974.

With the increasing use of ultrasound, laser, and magnetic fields in clinical medicine, and the growing interest of Federal regulatory agencies in the potential hazards associated with the use of these and other non-ionizing radiations, this Program should prove interesting and useful to clinicians, medical technologists, physical and biological scientists, and engineers. It will be presented so as to be intelligible to people from these diverse backgrounds. Dosimetry, field distribution in biological tissues, biomedical applications, biological effects and the underlying biophysical mechanisms and hazards of ultrasound, lasers, microwaves, and magnetic fields will be discussed; the time allotted will be proportionate to the importance of the topic. Use of non-ionizing radiations in biophysical research will be discussed. Special consideration will be given to practical matters such as intensity measurement and safety regulations. The biophysical mechanisms and hazards will be compared with those of ionizing radiations.

Tuition for the course is \$400 and dormitory accommodations will be available at reduced rates. For additional information write to: Office of Summer Sessions, Room E19-356, M.I.T., Cambridge, Ma. 02139. Refer to course number 2.77s.

EM WAVE PROPAGATION COURSE

A five-day course entitled "Electromagnetic Wave Propagation for Communication Link Design" will be offered by the George Washington University on September 16-20, 1974.

It is designed for managers, scientists, and engineers who need a better understanding of the theory and practical application of propagation characteristics affecting the design and performance of communication systems. The fee is \$395.

For further information, write to the director, Continuing Engineering Education, George Washington University, Washington, D.C. 20006, or call (202) 676-6106.

CALL FOR PAPERS 1975 INTERNATIONAL RADAR CONFERENCE

Papers are being solicited for presentation at the 1975 International Radar Conference sponsored by the IEEE and S-AES, to be held in Washington, D.C., April 21-23, 1975.

Papers on all aspects of radar and radar systems are of interest. Suggested topics include: effects of the radar's environment including clutter, cross section and signature, scattering, multipath, glint, and propagation effects; detection theory including automatic detection theory; resolution and accuracy; waveform design; signal and antenna array processing; overall radar performance and simulations to determine it; radar techniques; radar applications surveillance, navigation, tracking, mapping; airborne and automobile radar; air traffic control; radar test equipment; major radar components such as transmitters, receivers, and displays. Each paper will be allowed a maximum of typically 3000 words and six figures. Papers submitted for judging should conform with this constraint but may be in standard typescript. Authors should submit three copies of their drafts to Dr. Merrill Skolnik, Naval Research Laboratory, Code 5300, Washington, D.C., 20375, no later than November 15, 1974. For additional information contact Mr. R. T. Hill, Chairman, 202-692-7142.

HP-65 IN EMC TRAINING SEMINARS

During this fall 1974, Don White Consultants, Inc. will introduce the HP-65 programmable calculator to its courses. Some special cards for the HP-65 will cover:

System Cards:

- Inter-system EMI prediction and analysis
- Intra-system EMI prediction and analysis
- Probability of EMI (and EMC)

Subroutine Cards:

- Transmitter Models
- Receiver Models
- Antenna Models
- Propagation Models
- Cable-Coupling Models
- Ambient-to-Cable Models
- Common-mode Impedance Models
- Conducted EMI Models

For additional information contact Mr. Mueller, Don White Consultants, Inc., 14800 Springfield Rd., Germantown, Md. 20767. (301) 948-0028

SPECS AND STANDARDS STATUS

Steve Caine reports the status of DoD Specs and Standards as follows:

MIL-STD-220 is being revised by ECOM. A draft is expected in late 1974.

MIL-STD-285 is scheduled for revision to update testing requirements and procedures. No firm completion schedule.

MIL-STD-449D was issued 22 Feb 1973 and is available from the Navy Document Center, Phila.

MIL-STD-461/462 draft revisions were circulated in 1970 and 1971. Evaluation of comments are almost complete. Prior to issuance, the tri-service working group will fulfill its commitment to meet with the representatives of the AIA, EIA & SAE EMC committees to indicate the disposition of the Industry comments. The revisions will be published as "B" issues of each standard early this fall and will incorporate the requirements now published in the various notices of MIL-STD-461A. Other significant revisions are expected.

MIL-STD-463 is also under revision. USAEOM is preparing a proposed draft which will be circulated by July 1974.

MIL-STD-469 will undergo revision to reflect the Radar Spectrum Engineering Criteria (RSEC) issued by OTP in its Manual of Regulations and Procedures for Radio Frequency Management. Since revisions of RSEC are planned the revision of MIL-STD-469 is at least 6 months away.

MIL-E-6051 is applicable to aerospace and weapons systems. Navy and Army activities are in need of a system EMC document and therefore either a revision to MIL-E-6051 or a new system standard may appear on the scene in 12 to 18 months.

MIL-HDBK-237 presents guidelines to military activities and Industry for establishing an EMC program for a particular project and outlines the role of each of the EMC standards which may be applicable for the project. The document was issued in April 1973 and was originally planned as an overall EMC program standard (MIL-STD-460).

MIL-R-9673 (USAF) concerns radiation hazards to personnel. A draft revision was circulated 12-18 months ago. Comments were such that the revision project was cancelled.

MIL-STD-1541 (USAF) and 1542 (USAF) were issued by SAMS0 in October 1973 to cover EMC requirements for space systems and associated ground facilities.

MIL-STD-1310 (NAVY) The "C" revision was issued in November 1973. It covers shipboard grounding and bonding methods for EMC and safety.

MIL-STD-1385 (NAVY) covers the Navy's requirements to preclude hazards from electromagnetic radiation. Issued in April 1972.

MIL-STD-1605 (Ships) was issued in April 1973 by the Naval Ship Engineering Center and defines the procedures for conducting Shipboard EMI surveys.

MIL-HDBK-238 (Navy) was issued in August 1973 as a compilation of the Navy's radiation hazard criteria and procedures for precluding such hazards.

MIL-HDBK-235 (Navy) was issued in June 1972 by the Naval Electronics Systems Command. It is intended to provide guidance and establish a uniform approach for the protection of Navy electronics from the adverse effects of the electromagnetic environment. Examples of systems, subsystems and equipments to which the handbook may be applicable are: (1) aerospace and weapons systems; (2) ordinance; (3) support and checkout equipment and instruments for (1) and (2); and (4) any other electronic equipment or system which may be exposed to a high intensity EM environment during its life cycle. The handbook may also be used to tailor the radiated susceptibility limit RS03 of MIL-STD-461 and the requirements of MIL-E-6051.

AIR CRAFT ELECTRIC POWER STANDARD

The EMC (G-46) Committee of the EIA has been reviewing a preliminary draft of the proposed MIL-STD-XXX "Electric Power, Aircraft, Characteristics of". This standard was prepared by Jim Wilson of the Naval Research Laboratories, Wash., D.C. 20360 and was a topic of discussion during the recent G-46 meeting held in San Antonio in April. The proposed standard moves toward identifying EMI associated with electrical systems. Sample definitions are as follows:

Frequency Transient. The frequency transient is the locus of values of the short-interval frequency $1/T$ when it deviates from a value equal to the steady-state frequency. It may also be represented as the locus of instantaneous frequency values upon their departure from the steady state value.

Distortion Spectrum. The distortion spectrum quantifies the AC distortion or the DC distortion (ripple) in both amplitude and frequency. The envelope of the upper limit of the rms frequency-component amplitudes is plotted as a function of frequency. The limits for amplitude modulation frequency components, as well as those for harmonics and non-harmonics, are included within this envelope.

Voltage Spike. The voltage spike is defined as a transient voltage super-imposed on the instantaneous voltage, the total duration of which will ordinarily be less than 1 millisecond. The spike waveform may include single or multiple impulses or alternating wave trains.

HERB SACHS WINS ELECTION

In a stunning upset, Herb Sachs of Sachs/Freeman Associates, a prohibitive underdog, unseated incumbent District 4 councilman Robert Davis in Bowie, Maryland. Davis became the first elected incumbent in the city's history to be defeated by 108 votes, 1530 to 1422. Sachs, who campaigned on a platform of fiscal responsibility, said that he was the candidate "who recognized the needs of the people in South Bowie the most". Herb Sachs is an elected member of the IEEE G-EMC Administrative Committee. (Taken from the "Bowie Blade", April 4th, 1974.)

NEW VOICE FOR TRAPPED MINERS

A research program which has been completed by NBS is aimed at providing miners tolling far below ground with a dependable means of calling for help. The work, sponsored by the U.S. Bureau of Mines, was prompted by the fact that underground disasters such as cave-ins and explosions also frequently disrupt phone wiring, the miners' traditional link to survival. Now, engineers have conducted research into electromagnetic noise measurement and EM interference in working mines. This research will help establish communication by EM waves broadcast through the earth instead of the more vulnerable phone system. The data resulting from the project permit accurate predictions of which Voice Frequency (VF) signals will be intelligible.

To aid this program, portable equipment was devised for on-site EM noise measurement in coal mines. This is essential data, for mine electrical machinery creates intense noise fields that interfere even with wired phone systems. NBS engineers visited several mines to test their equipment, to determine what measurements are needed and to acquire data describing EM noise conditions in working mines. The earth so effectively attenuates radio waves (about 1-100 MHz) that they are useless for through-the-earth communication. Lower frequency EM waves propagate farther, though. Signals within the band designated Voice Frequency (VF = 300-3000 Hz) have been detected through 457 meters (1500 ft.) of earth when noise fields at the receiver are not so intense as to mask the signal. Thus VF systems deserve thorough consideration.

The tape-recorded data NBS gathered constitute the most extensive mapping to date of EM noise in a coal mine. When processed, this data furnished: 1) amplitude probability distributions (APD) at several frequencies, 2) broadband noise spectra and 3) the time, location and antenna-orientation dependence of the received noise fields.

OVEN INJURY SUIT IS WON BY LITTON

Thomas King, 54, lost a \$200,000 personal injury suit against Litton's Microwave Cooking Products division in Superior Court here last week.

Mr. King, whose suit against Litton Industries' Minneapolis microwave oven operation was brought in 1970, alleged that radiation leakage from a Litton unit caused him to become "legally blind" over a year-and-a-half period.

A jury of seven women and one man found for both Litton and Kent Trading Co., a San Francisco exporter which sold the oven to Mr. King.

Trial attorney for Litton, Marvin A. Jacobs, said he believed the case to be the first damage action in U.S. courts alleging radiation damage from a microwave oven.

Mr. King claimed that the Litton unit inflamed a cataract on one eye and created a new cataract on the other eye.

PARTICIPANTS ARE NEEDED FOR WORKSHOP ON EDUCATION PROGRAM

IEEE's Committee on Social Implications of Technology and the Education Group are co-sponsoring a workshop on "Engineering in the Service of Society: New Education Programs". The two-day workshop will be held on August 26, 27, 1974, at the Carnahan House, University of Kentucky, Lexington.

Significant forces for change in engineering education will cause various modifications in traditional curricula during the '70's. This workshop will focus on those programs which attempt to answer societal needs, such as environmental studies, health care delivery, transportation systems, energy conversion, etc. Students, working engineers, and potential employers, as well as educators are encouraged to apply. Both critics and proponents of these inter-disciplinary programs are sought.

The workshop will be chaired by Dean John Truxal of SUNY, Stony Brook. For further information contact the Program Chairman, Prof. John S. Jackson, College of Engineering, University of Kentucky, Lexington, Kentucky 40506, or phone 606-258-5820.

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AND RADIATION JULY 16-18, 1974

CHAPTER

CHATTER



by Charlie Anderson

Washington: (Fine long report from George Hagn, Washington Chapter Secretary.) On 16 May, Stuart L. Bailey spoke to 43 members and guests on "What Ever Happened to Spectrum Engineering?" Mr. Bailey, who is Chairman of the JTAC, recalled the 1968 publication by IEEE of the monumental document, "Spectrum Engineering - the Key to Progress." (Representing about 40 man-years of work by leading experts, that report is still "must" reading for anyone involved in EMC, or any aspects of telecommunications.) Reviewing the status of the numerous recommendations in that document, Mr. Bailey noted the following:

Establishment by OTP of the Electromagnetic Radiation Management Advisory Council (ERMAC) to look into the effects of non-ionizing radiation (the so-called "side-effects")

FCC's Spectrum Management Task Force, which has begun measuring channel occupancy in the Chicago area to obtain a data base for land mobile frequency assignments in metropolitan areas.

OTP's efforts via the Department of Commerce Office of Telecommunications to obtain occupancy data (they also have a monitoring van).

JTAC's Committee 71.1, under Dr. Peterson of SRI and Stanford U., which is reviewing the status of man-made noise and its impact on the use of the spectrum. This will provide an up-date of the "unintended radiation" section of the '68 JTAC report.

The speaker observed that "Spectrum Engineering - the Key to Progress" had been the key to some action; in contrast to some reports which only gather dust. Program Chairman Al Paul, of FCC, arranged this meeting and those listed below for DC Chapter's '73/'74 season: September '73, J. P. Greenway, Communications Engineer with the Washington Metropolitan Area Transit Authority spoke on "Electromagnetic Compatibility and the Washington Metro System".

November '73: A.C. Doty and R.E. Zimmerman, of the Motor Vehicle Manufacturers' Association spoke on "Degradation of Communications Caused by Automobile Ignition Noise". January '74: Harry Stemple, of Collins International Service Company's Arlington VA office, spoke on "EMC and the Common Carriers". March '74: Henning Harmuth, of Catholic Univ., spoke on "Walsh Functions and EMC".

The May meeting also saw the following slate of officers elected for the '74/'75 season: Chairman: John Leopold of RCA, Vice Chairman: George Hagn of SRI, Secretary: Thomas Doeppner of GRC. Al Paul has again been named Program Chairman (Looks as if they could anticipate another good season of program lineups).

San Francisco: Andy Nalbandian and Vic Turesin report that plans and preparations for the July Symposium are on or ahead of schedule. The following are the officers for the '74/'75 season: Chairman: Victor Turesin of Lockheed, Vice Chairman: George Stump of GTE/Sylvania, Secretary: Wilson Chu also of GTE/Sylvania, Treasurer: Richard Kelkenberg of Lockheed. Their May meeting, held jointly with the S-AES and G-EM chapters, took place at the Paul Masson Winery. Vic reported a "full house". Since over 200 attended, that doesn't sound like an exaggeration.

As previously reported, the June meeting will feature Dr. John Bohn, of Watkins-Johnson, speaking on "Multi-purpose RFI/EMC/Tempest Measurements Capability". First Fall meeting, scheduled for September will have Maise Hamaoui, of Fairchild Semiconductors, talking about active filters. Strong support for the Professional Activities Committee is planned, with two or more meetings to be devoted to various aspects of that area.

Chicago: Norm Wehling reports that returns for their election are still coming in. Howie Wolfman will be the new Chairman and Colin Wilmot will be Vice Chairman. The race for Secretary is so tight that it's still not decided as of this writing.

Phoenix: The March meeting, featuring David Schaff of ITT Cannon speaking on filter-pin connectors, was attended by 25 members and guests. Carl Jespersen reports that their June meeting will have O. Melville Clark, of General Semiconductors, presenting the topic "Methods, Techniques and Hardware for Suppression of EMP Transients". Phoenix plans their first meeting of the Fall for sometime in September - no speaker or topic as yet. Note to Fred Nichols: Phoenix has not yet received their 1972 Chapter-of-the-Year award.

Tucson: Jerry Sorkin says that they are reorganizing at the moment. He has been elected Chairman for '74/'75, with Vic Lunnell as Secretary-Treasurer. Bob Seach may become the Program Chairman, but is currently deep in new job responsibilities.

Central Texas: From Ocky Jouffray came the following: The Chapter was active in connection with the EIA G-46 Committee meeting of 22-26 April. On the 24th, Southwest Research Institute hosted a Chapter meeting. This was a classified symposium led by W. F. Johnson of Litton, which covered Tempest Testing Philosophy. Sponsorship was by USAF's Security Service. Over 40 attended, with Lockheed, Boeing, Fairchild and Collins, among others, being represented. A nominating committee has been set up to pick next season's slate but no names as yet.

Denver: Bud Taggart reported that their mail ballots for next year's officers just went out, but no returns so far.

Jersey Coast: The April meeting (again at Rosie O'Grady's House of Great Repute) had O. Melville Clark of General Semiconductor speaking on uses of semi-conductors in EMP protection. The June meeting will feature the election of next season's officers and an open discussion on several topics. The most timely and interesting will concern FCC's soon-to-be enforced rules and regulations affecting electronic and electrical equipment. Joe Chislow, of Bell Labs, will serve as discussion leader for this topic.

EMI CONTROL PLANS MADE SIMPLE

Hish Associates, 9710 Cozycroft Ave., Chatsworth, Ca 91311, has published a guide for the engineer, manager, or government representative who is responsible for hardware with MIL-STD-461 imposed. The volume entitled "Simplified Electromagnetic Interference Control Plan for MIL-STD-461, Report 1546, Vol.1" includes detailed information for the draftsman, typist, Q.C. manager, and the project manager. A complete detailed EMI control plan is included. According to Hish Associates, the volume is so complete that an engineer can develop a control plan in 10% of the time required to start from scratch. It contains five sections, 130 pages, example analysis, diagrams, graphs, sources of information, and check lists all intended to save time and money in preparing EMI control plans. The volume is available at \$60.00 per copy.

AD COM RACE ATTRACTS 17

Herb Sachs, Chairman of the G-27 Nominations Committee, announced that there will be a record number of candidates running for positions on the Ad Com this year. According to Sachs, we have 17 candidates instead of the normal 12, with 6 individuals to be elected.

"I am very pleased with the response," says Sachs. "It certainly seems to indicate an increased interest in the operation and activities of our group."

The candidates for Ad Com for the three-year term starting in January 1975 will be: Charles W. Anderson, Willm F. Bakker, Ralph A. Cacase, Robert B. Cowdell, James S. Hill, Carl P. Jespersen, Warren A. Kesselman, James C. Klouda, Herbert K. Mertel, Fred J. Nichols, Carl B. Pearlston, Jr., William J. Prysner, Heinz M. Schlicke, Jacob Scherer, Ralph M. Showers, Robert H. Sugarman, George R. Ufen,

Ballots will be distributed to G-27 members early in August.



What do you know about IEEE?

THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS (AIEE)

Founded May 13, 1884 by Dr. Nathaniel S. Keith
 Location of Organizational Meeting: Room belonging to
 the American Society of Civil Engineers, East 23rd
 Street, New York City
 First President: Norvin Green

THE INSTITUTE OF RADIO ENGINEERS (IRE)

Founded: May 13, 1912 (a merger of the Society of Wire-
 less Telegraph Engineers (SWTE) founded on February
 25, 1907 and The Wireless Institute (TWI) formed on
 January 23, 1909) by Robert H. Marriott, Alfred N.
 Goldsmith and John V.L. Hogan
 Location of Organizational Meeting: Room 304, Fayer-
 weather Hall, Columbia University, New York City
 First President: Robert H. Marriott

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

Founded: January 1, 1963, a merger of AIEE and IRE
 As early as 1922, Dr. Alfred N. Goldsmith (a founder of
 IRE) and Professor A.E. Kennelly (a past President of
 IRE and then current President of AIEE) discussed a
 possible merger between the two organizations, but their
 attempts failed. Subsequently, from time to time,
 thoughts of merger were mentioned but never acted upon
 successfully. Finally, in 1961, the two societies appoin-
 ted members to a quasi-official joint committee to study
 the feasibility of merging the two groups. On September
 13, 1961, the Committee adopted the following recommend-
 ations:

1. That in spite of mechanical problems, the pro-
 fessional advantages outweighed these problems,
 and that the two Institutes should move more
 actively toward merger into a new professional
 society.
2. That the Committee should be voted authority by
 both Boards to draft statutes for a single
 society into which IRE and AIEE could be merged.
 The statutes could then be considered by the two
 Boards and, if satisfactory, referred to the
 membership of the two societies for adoption.

In October 1961, both Boards passed the resolution called
 for by the joint committee. The membership votes on the
 merger were conducted in early 1962. Both organizations
 strongly supported the merger. The vote of the AIEE
 members was 29,464 to 4,383 in favor of the merger; the
 IRE supported the merger plan by a vote of 36,221 to
 5,489. The task of writing a Constitution was given to a
 joint committee made up of seven representatives of each
 society. It took one year and seven formal drafts to
 complete the assignment. The proposed Bylaws were adop-
 ted by both societies in November 1962. All was in
 readiness for the merger to officially take place on
 January 1, 1963.

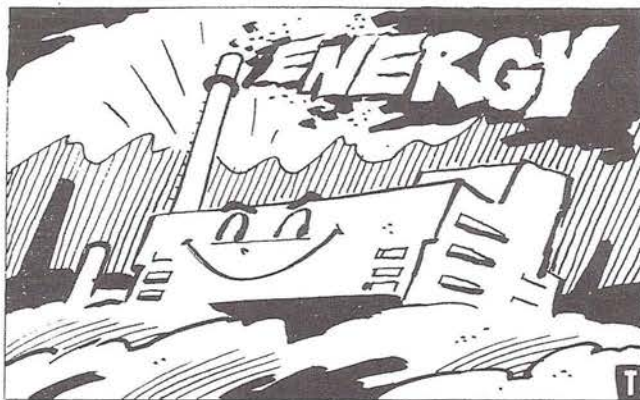
IEEE PRESIDENTS

1963	Ernst Weber	1969	F. Karl Willenbrock
1964	Clarence H. Linder	1970	John V.N. Granger
1965	Bernard M. Oliver	1971	James H. Mulligan, Jr.
1966	William G. Shepherd	1972	R.H. Tanner
1967	Walter K. MacAdam	1973	Harold Chestnut
1968	Seymour W. Herwald		

NEWS of Science

ENGINEERING FOR A BETTER WORLD

NEW ENERGY SOURCE: MUNICIPAL REFUSE



You are sitting at home watching television and your spouse reminds you that it is time to take out the garbage. You grumble about this thankless job once again. However, it might not seem such a bother if you were to realize that this same garbage might help to provide the electricity that would keep your television running.

Several situations are currently coming to the surface. First, Americans are using more and more electricity. Secondly, fossil fuels such as oil, coal, and gas are becoming scarce. As a result of these two factors, engineers are working to find new sources of energy. At the same time, municipalities are finding it increasingly more difficult to find new places to dispose of the refuse they collect on a daily basis without causing environmental problems. To draw together all of these problems to the common good, perhaps we could somehow use the refuse to produce energy. Is this idea the dream of a science fiction writer? No! In fact, such operations have existed in Europe for over twenty years. Recently there have been several efforts to adopt this principle in the United States.

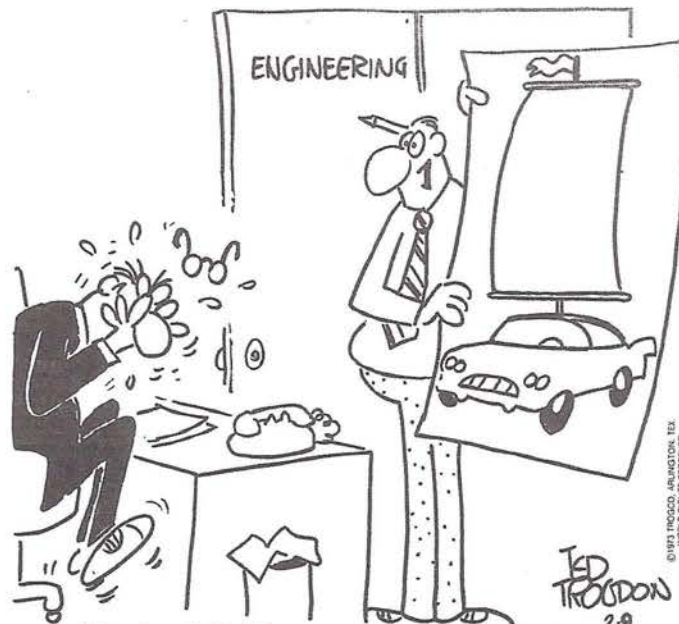
The process is simple. Refuse is burned to produce steam. This steam can then turn generators that will manufacture electricity. The refuse is burned at very high temperatures so there is no odor and an air cleaning system prevents any significant smoke pollution. Glass and metal can be removed for recycling. After burning, sterile ash is left that can make a high-grade road material. Besides producing a

useful product, energy, this use of refuse removes the need for unsightly dumps that sometimes pollute our water supply.

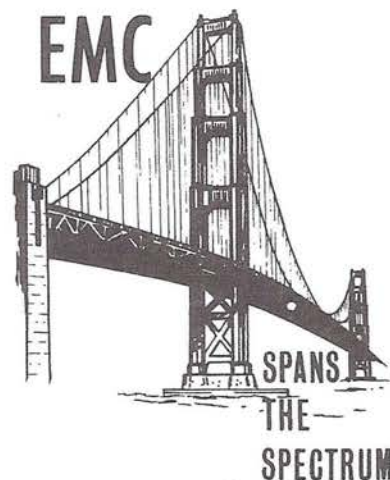
There are several different methods of burning the collected refuse. One plant, currently under construction near Boston, burns refuse without the need of additional fuels. Another method, already being used in St. Louis, uses a mixture of refuse and coal in its burners.

Estimates of effectiveness vary. One expert has claimed that up to 20% of New York City's electricity needs could be met by using this process with the amount of refuse collected daily by the metropolis. Even the lowest figures indicate that if all the refuse collected in the U.S. were used in producing energy, 290 million barrels of oil could be saved yearly. This equals about 2/3 of our former direct imports from Arab countries.

The need to become self-sufficient in energy production is becoming readily apparent. This will require large scale increases in research and development in order to find new and better sources of energy as well as marked increases in recycling of our present precious resources. The concept of burning refuse is just one of many possible alternatives. The Institute of Electrical and Electronics Engineers and six other engineering societies have urged the passage of legislation to create a federal Energy Research and Development Administration. Their statement noted that "governmental attention must be devoted to areas of research and development which have heretofore been ignored."



1974 IEEE INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY



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