



# NEWSLETTER

## VEHICULAR TECHNOLOGY GROUP

OCTOBER 1975

### MESSAGE FROM THE PRESIDENT

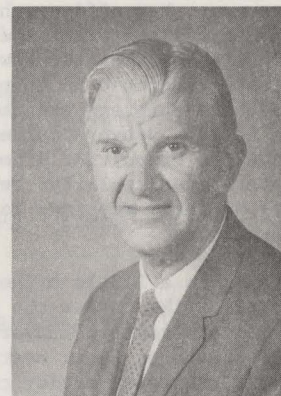
The Administrative Committee, at its last meeting held in San Francisco on June 16, 1975, has acted on a number of proposals and suggestions from its committees and members. I would like to review some of these decisions to give you an idea of how they are intended to improve the usefulness of the services the VTG provides for you. It is interesting to note that in spite of the small number of attendees, much was accomplished. We can thank Secretary Tom McKee for a suggested change in meeting format that resulted in more business being transacted.

One thing I have gleaned while talking to many of you at our Conferences and local chapter meetings is that most of you feel strongly about the value of the Transactions. George McClure, our new Editor, is moving out smartly by soliciting papers for the Transactions from several areas. Currently, George is working on a prospective "Special Issue" in the marine radio area. This has been a rather neglected area recently and deserves attention. George also is continuing to pursue publication of special issues on Propagation and On Emergency Medical Radio Service.

In committee action, we agreed to fund a membership survey. The survey will require your cooperation and the results will, hopefully, provide us with a better understanding of what you really expect from the VTG.

We also agreed to sponsor the Automotive Electronics Committee in their CONVERGENCE '76 endeavor. CONVERGENCE '74 was a huge success and CONVERGENCE '76 should be better, since a symposium was not held in 1975 due to economic conditions in the automotive industry.

The Adcom agreed on several recommendations of the Educational Committee for promoting VTG interest amongst its members. This includes a recognition program for the best student paper, a primer on mobile radio system application for the young engineer, and audio cassettes on subjects of particular interest to VTG members.



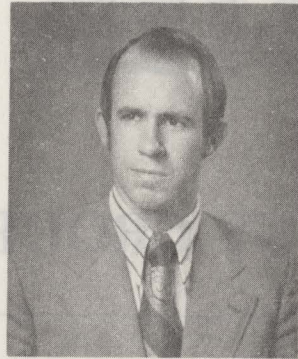
In other committee action, Adcom voted to: (1) continue to support and promote the establishment of an active Transportation Committee; (2) continue our \$500 investment in the IEEE council on Ocean Engineering and support participation in the new council; (3) actively pursue work on Societal status for the VTG; (4) withdraw from activities in Technology and Forecasting; (5) rewrite bylaws to include an amendment permitting Adcom to terminate an elected Adcom member for inactivity, and; (6) selected Orlando, Florida as the meeting place for the 1977 National VTG Conference.

In addition to the above, and with your interests in mind, I have divided the responsibilities for overseeing committee activity amongst the 5 members of the Executive committee. Because of the long interval between our Adcom meetings and the need to establish better communications between us, the result of this division should be improved services to you.

As always, we in Adcom solicit your comments and appreciate the opportunity to help you in any way we are able.

NICK ALIMPICH

## EDITOR'S NOTES



With the ending of summer and the start of a new school year, it's tough to get in the groove again. So many activities are in sync with the school calendar, in addition to this issue of the Newsletter, that I've found this year's transition to be especially difficult. Thanks to the cooperation of all contributors, however, we should go to press with this issue on time.

Chapter activities are getting underway again after the summer recess. New officers have been selected at most locations and plans are being set in motion. John Dettra, our Chapter News Editor, reports an enthusiastic increase in chapter activities. Several inactive chapters are being re-organized, we have added a Denver-Boulder Chapter, and there is interest in organizing a Houston Chapter. Moreover, the chapters are regularly reporting the statistical results on their meetings to John for inclusion in the Newsletter.

Let's set our sights a little higher in this area, however. I would like to see the chapters forward a 50-100 word abstract or summary of the technical papers presented at their meetings. With this information, an interested reader could seek out more information from the speaker via a telephone call or letter. If copies of the paper are available from the speaker, this should be indicated along with the author's address. Most speakers, I believe, would be willing to make such a contribution if asked in advance. Can we try it? If so, forward this information on to John Dettra in time for the various Newsletter deadlines. Also, if you have a Polaroid or B&W photo of the meeting, send it along too.

Sam McConoughey, who is the technical program chairman for the upcoming annual VTG conference in March, has asked that I make an urgent appeal to everyone for more papers. Quality papers are needed in all areas of interest to the VTG membership: mobile and portable communications hardware and systems, automotive electronics, and transportation systems. Maybe you know a colleague who is not a member of VTG but who is a potential author for an interesting technical paper. A reprint of the Call for Papers appears in this Newsletter, so pass your copy on to him.

You will find a number of interesting articles in this issue of the Newsletter. I'll close for now with my comments and let you prowl through it.

OLIN GILES

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### VTG NEWSLETTER DEADLINES

Month of Issue	Final Copy To Be Rec'd. By Editor*	Target Mailing Date
January	12-1-75	12-31-75
April	3-1-76	3-31-76
July	5-31-76	7- 2-76
October	9-7-76	10- 8-76

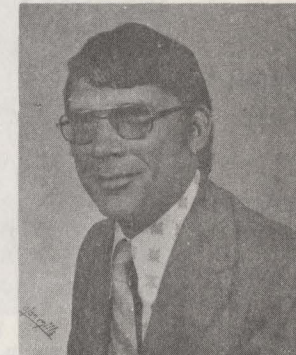
\*Inputs for newsletter staff editors should be received 1-2 weeks before these dates.

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## CHAPTER NEWS

By JOHN DETTRA

### CHAPTER NEWS EDITOR



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- DALLAS: ALAN B. CHAPMAN  
LONE STAR ELECTRONICS CO., DALLAS, TEXAS

## MEETINGS

CHICAGO: POLICE COMMUNICATIONS PLANNING IN THE CHICAGO AREA BY BERNARD EPSTEIN, ILL. INST OF TECHNOLOGY RESEARCH INSTITUTE ON MAY 21, 1975, 15 ATTENDING.

COLUMBUS: TOUR OF COMMUNICATIONS AND COMPUTER CENTER BY MAX HART, COLUMBIA GAS SYSTEM SERVICE CORP. ON AUGUST 13, 1975, 8 ATTENDING.

THE WORLD DIRECT TO YOU (FILM)  
BY BILL CRISS, OHIO BELL TELEPHONE COMPANY  
ON JULY 11, 1975, 14 ATTENDING.

TOUCH TONE APPLICATION AND EQUIPMENT  
BY TED RISTOFF & LARRY QUIGLEY, BRAMCO CONTROLS  
ON JUNE 11, 1975, 25 ATTENDING.

ORLANDO: SATELLITE TERRESTRIAL COMMUNICATIONS  
BY CHARLES F. WHITNEY, GENERAL ELECTRIC CO., EARTH STATIONS DEPT. ON MAY 15, 1975, 58 ATTENDING.

SACRAMENTO: EARL WILSON MCCLELLAN AFB, ENGINEERING LAB  
ON MAY 20, 1975, 20 ATTENDING.

HOUSTON: ORGANIZING-VOLUNTEER-HELP-HOUSTON  
CONTACT: CHARLES M. WHITE, SYSTEMS ENGINEERING  
HOUSTON LIGHTING & POWER CO.  
P.O. BOX 1700, HOUSTON, TX 77001  
713/228-9211x2771

DALLAS: AN EXCELLENT PROGRAM WAS PRESENTED AT THE FINAL VEHICULAR TECHNOLOGY MEETING OF THE YEAR ON MAY 8, 1975, WITH 40 ATTENDING. CHIEF BILL ROBERTS OF THE DALLAS FIRE DEPARTMENT AND CHARLES BOWLES OF THE COMMUNICATION SERVICES DEPARTMENT GAVE A MOST INTERESTING AND INFORMATIVE PRESENTATION OF THE NEW EMERGENCY AMBULANCE SYSTEM SERVING THE CITY OF DALLAS.

DENVER: INTERNATIONAL TELECOMMUNICATIONS IN RELATION TO U.S. INDUSTRY WAS THE TOPIC OF DISCUSSION ON MAY 19, 1975, AT THE U.S. DEPARTMENT OF COMMERCE LABORATORIES.

BOULDER MEMBERS OF THE PANEL INCLUDED JACK HERBSTREIT, FORMER DIRECTOR OF THE INTERNATIONAL RADIO CONSULTATIVE COMMITTEE; GEORGE HAYDON AND ROBERT KIRBY.

ALL THREE WERE FORMERLY SCIENTISTS WITH THE NATIONAL BUREAU OF STANDARDS AND WITH THE OFFICE OF TELECOMMUNICATIONS, INSTITUTE FOR TELECOMMUNICATION SCIENCES IN BOULDER.

DOUGLAS J. G. JOHNSON, VICE PRESIDENT OF MARKETING FOR WESTERN TELECOMMUNICATIONS, INC. IN DENVER, SERVED AS MODERATOR FOR THE PANEL OF INTERNATIONAL COMMUNICATION SPECIALISTS.

LECTURER-OF-THE-YEAR  
"LIVING WITH LIGHTNING"  
DALLAS OCT. 9

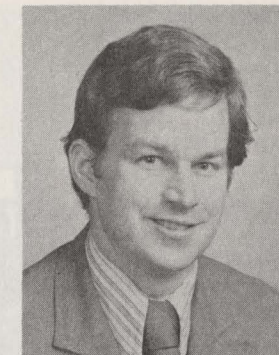
KENNY GUTHRIE  
PITTSBURGH OCT. 15

## AUTOMOTIVE ELECTRONICS

DATELINE: DETROIT

By BILL FLEMING

### AUTOMOTIVE ELECTRONICS EDITOR



#### BEST SPEAKER AWARDS

Last June, the officers of our Southeast Michigan chapter of VTG met to select the chapter Speaker of the Year for 1974. There were seventeen speakers to choose from--the winner and next two runner-ups of this selection were as follows:

##### •Winner, 1974 Speaker of Year:

Don Sarna of the U.S. Army/Automotive Command, "On-Vehicle Diagnostics".

##### •First Runner-Up:

Richard Post of Lawrence Livermore Laboratory for his talk, "Flywheels--Energy Storage for Electric Propulsion."

##### •Second Runner-Up

Alex Dolgosh of Antenna Specialists for his talk, "Solving Communications Antenna Problems Through the Use of Site Geometry."

For the record, results of the 1973 Speaker awards are also listed here. They are as follows:

##### •Winner, 1973 Speaker of Year:

Jack Morgan of Motorola for his talk, "On-Vehicle Electrical Transients."

##### •First Runner-Up:

Jerry Rivard of Bendix for his talk, "Closed-Loop Control of an EFI Engine."

##### •Second Runner-Up:

John McCormick of General Electric for his talk, "Mobile Radio Systems."

The officers of our chapter have resolved to present award plaques to the winning speakers. This selection is to be a regular highlight of our chapter functions.

#### ELECTRONIC INSTRUMENTATION AND CONTROL SYSTEMS IN HIGHWAY SAFETY RESEARCH

The final meeting of the Southeast Michigan chapter of VTG was held May 22, 1975 in Ann Arbor, Michigan at the University of Michigan Highway Safety Research Institute (HSRI). Three staff members of the Institute gave an overview of the work underway at HSRI.

Meeting attendance of 20 persons was disappointingly small, this was attributed to the unusually fine spring weather and longer daylight hours which kept many members home.

The meeting was nonetheless most interesting and I thought it would be worthwhile to highlight the technical proceedings.

For background, one should know that HSRI was created in 1965 with gift funds of over \$10 million from Ford, Fruehauf, General Motors, and the Motor Vehicle Manufacturers Assoc. The Institute now employs a staff of 190 persons engaged in highway safety research on a broad front ranging from the vehicle itself to social, medical, and legal environments.

•Bob Ervin, an Associate Research Scientist at HSRI, described an automatic controller used for testing of vehicle handling characteristics. The objective was to obtain precision measurements of vehicle emergency maneuvering capabilities in order to assist in the writing of Federal standards on handling characteristics

Two systems were built--one system (drone controlled) was radio operated and the other (robot controlled) was programmed to operate in set patterns. In both systems, the vehicle included three servo controllers to operate, respectively, the steering, brake, and accelerator. Vehicle response was measured by conventional accelerometers and force transducers, and output data were recorded on tape (FM analog). Vehicle trajectories were computed by integration of vehicle acceleration signals.

Experiments were carried out on a specially paved airport runway near Texas A&M University. Severe brake/steering command signals were applied to many different domestic and foreign-made vehicles in an assessment of vehicle roll potential. Film clips were shown to demonstrate that certain vehicles were more prone to roll-over than others.

Bob concluded by stressing that the HSRI work, although it is only an *open-loop experiment*, provides one with a level of precision for study of vehicle handling never before achieved. Bob then pointed out that the major void in this work was neglect of driver response to emergency situations. For example, studies have shown that, typically, about 23 of 25 drivers cannot perform emergency maneuvers which are within the capability of the vehicle

being driven. It turns out that the most relevant experiments needed to study driver response to emergency situations are illegal according to the Nuremberg code (which states that experimental subjects must be informed of the full context of any experiment they are to participate in).

Because of the lack of data on driver response, Federal legislation will probably not be written on the basis of the vehicle handling experiments conducted at HSRI. Nevertheless, the work is having much use in engineering studies of parameter sensitivity in design of vehicle handling.

•John Campbell, Senior Research Associate at HSRI, reviewed work on rear lighting studies. This project involves two experiments: first, a scale model simulator, and second, a special research vehicle for highway studies.

The simulator consists of a model car, carrying special rear lighting arrangements, which is driven on a 50-foot long belt of 3 foot width. The model car is run through various maneuvers while displaying different lighting signalling patterns. A test subject is seated in a simulated driver's compartment equipped with brake and accelerator pedals. The object is to measure driver response to the model car during various following and signalling maneuvers. Relative closure velocity, headway distance, and reaction time are measured at a 30 Hz sampling rate, and recorded by a digital computer.

The model car runs free on the belt and is controlled by a servo-positioned magnet located underneath the belt. Variable parameters of the setup include number and location of lights on the model, light intensity, and light flash rate.

The research vehicle, together with a companion following car, are set up for tandem road experiments designed to evaluate effectiveness of rearlighting systems. Data of test subject response to lead car lighting are recorded for computer analysis. Test data were used to develop a computer simulation model to assess performance of various lighting systems.

•Chris Winkler, Senior Research Associate at HSRI, described work on mobile truck tire dynamometers and a truck suspension measurement machine.

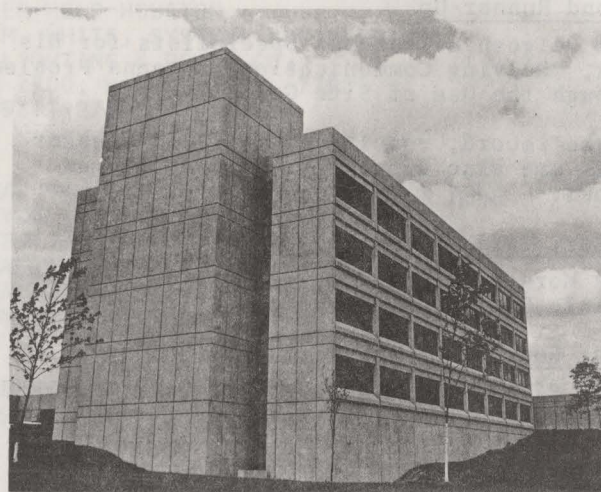
The tire tester consists of a semitrailer towed by an instrumented highway tractor. The test tire is mounted centrally on the trailer and is vertically loaded by an adjustable air-spring to a maximum of 20,000 lbs. A large disc brake provides braking torque to the test wheel in response to servo-commands. Longitudinal and vertical components of tire force are measured by strain gage load cells. An on-board watering system is used for wet surface testing of tires.

The suspension measurement machine basically consists of a pivoted platform on which the truck is placed. This allows pitch plane inertial measurements which determine the truck center of gravity and rocking moment of inertia.

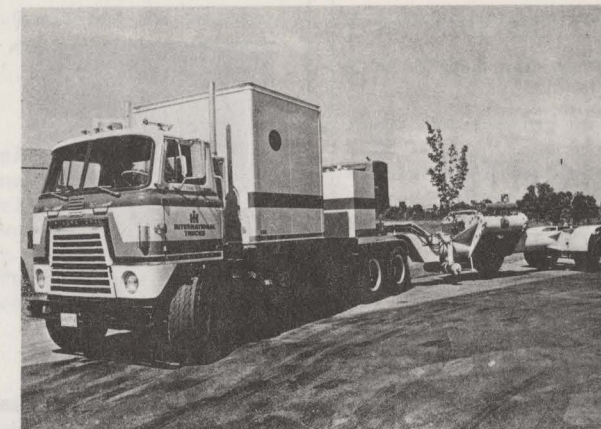
After the talks, the speakers conducted a tour of the HSRI facilities. Other project areas, not described here, which are also under study at HSRI are the following:

- Accident Investigation and Data Analysis
- Occupant Protection and Human Tolerance to Impacts
- Roadway Design and Traffic Engineering
- Driver Improvement and Public Policies

During 1974, the HSRI research expenditures were in excess of \$3 million. Research is conducted by 190 University of Michigan faculty and staff members in the areas of Human Factors, Physical Factors, Biosciences, and Systems. Staff members backgrounds range from zoology, social science, and psychology to mathematics, physics, anatomy, anthropology, and engineering.



HIGHWAY SAFETY RESEARCH INSTITUTE  
(Ann Arbor, Michigan)  
Site of the May 22, 1975 Meeting of Southeast Michigan Chapter of VTG.



MOBILE TRUCK TIRE TESTER  
Used by Highway Safety Research Institute

## BOOK REVIEWS

By CARROLL LINDHOLM

### BOOK REVIEW EDITOR

Your IEEE has been publishing some useful books lately. I will review in capsule form some of the more recent ones. Many more have been recently announced and I will mention them as they become available. The paperback versions are inexpensive and available to IEEE members only. The clothbound equivalents are available through your local bookstore or direct from IEEE. Member discounts are available when books are ordered direct from IEEE.

*Key Papers in the Development of Coding Theory*  
Edited by Elwyn R. Berlekamp. IEEE Press (N.Y.), 1974

If you have followed coding theory over the past 25 years you have probably noticed two trends. The theory has grown increasingly complex and algebraic while the practice has barely made an impact. Only where the information is very costly to obtain has the additional effort been made to incorporate the advantages coding has to offer (e.g., Space Missions). But today LSI digital circuits can implement many of the encoding and detection functions and even simple single-error correction functions are now available.

But coding theory itself is becoming full of dead ends. Proofs of nonexistence, laborious calculations to prove something cannot be done. But on this desert of nonresults are found oases of great beauty. And these are the BCH codes, the convolutional decoding techniques and others.

In your researches in this area, you will have encountered continual references to one or more of the "key papers" gathered here. Of principal value to students and to old guys (like me), this collection chronicles the great moments in a still very active field. Especially valuable are the editor's remarks placing the various papers in perspective. I have spent many happy hours browsing the collection, even though I have copies of most of the papers in various notebooks all over the house.

*Key Papers in the Development of Information Theory*  
Edited by Davis Slepian. IEEE Press (N.Y.), 1974

This volume, in format identical to the "Coding Theory" volume above, is a monument to one man: Claude Shannon. Yet it is not full of accolades for him personally, but a finer tribute yet -- the vast literature his concepts have spawned. You will find the crude beginnings; you will find the erudite present happenings. I found this a more challenging volume as I am not as current with the subject matter and I am not convinced this is the medium to use to become familiar with it, but it provides a fine panorama of the field. Dr. Slepian's introduction is brief and less useful as an introduction, but many of the selected papers have tutorial significance and were enjoyable.

Neither of the above volumes is easy reading nor can I think of any other such collection which is.

*Computer Communications*  
Edited by Paul E. Green, Jr., and Robert W. Lucky  
IEEE Press (N.Y.), 1974

Much more down-to-earth and real-world relevant is this third book. But if you are into interconnected computers, even simple ones, this volume has collected a mass of useful data. From papers on Tariff Rates and Security through Modems, Multiplexers and Concentrators, Media on thru total systems (Computer Networks) this has it all. And it's not dull. But much of it is dated. Get your copy before it is all history! About 90 papers are included to offer something of interest to everyone. This is a useful desk book. It has charts, tables, summaries, even an IBM manual included (on TCAM).

## ADCOM HIGHLIGHTS

### ADCOM NEWS EDITOR

By TOM McKEE

#### June Meeting

The summer meeting of the VTG Adcom was held on June 16, 1975 at the Fairmont Hotel in San Francisco, California.

The following persons were present:

Nick Alimpich	George McClure
Arnold Brenner	Sam McConoughey
Bob Cassis	Tom McKee
Sam Lane	Dave Talley (guest - former member)
Roger Madden	

The following elected Adcom members were unable to attend the meeting.

Carl Brooks	Stu Meyer
John Cassidy	Jack Neubauer
Marty Cooper	Jack Renner
Fred Link	Neal Sheperd
Dick Moore	

\* \* \*

The Treasurer reported that 1974 expenses exceeded income by almost \$9K. VTG's net worth at the end of 1974 was about \$11K. The Treasurer recommended a number of actions to stabilize or improve the group's financial picture.

\* \* \*

Approval was granted for a limited membership survey to help the ADCOM better understand what the members want and expect from membership in the group.

\* \* \*

The ADCOM approved sponsorship of the Convergence '76 automotive electronics conference to be held in the Detroit area in the Fall of 1976.

\* \* \*

Bob Cassis, VTG's representative on the IEEE Oceanographic Coordinating Committee, was present and reported that the committee was being disbanded and a new IEEE Council on Ocean Engineering was being formed. After discussion of the pros and cons of transferring membership from the old committee to the new council, including the possible adverse impact of the council's new



journal on the VTG Transactions paper flow, it was decided that VTG should join the new council. Our representatives on the council will be Bob Cassis and George McClure.

\* \* \*

There was a brief report indicating that planning for the 1976 VTG Annual Conference was going well. The conference will be held in Washington, D.C., March 24-26, 1976.

\* \* \*

After discussion of several possible locations for the 1977 VTG Annual Conference, the ADCOM selected Orlando, Florida as the conference site.

\* \* \*

In recognition of the Institute's reduced support for technological forecasting and assessment activities, the ADCOM voted to discontinue VTG's involvement in this area.

\* \* \*

Arnie Brenner presented some guidelines covering the work of the VTG Educational Committee. The guidelines were developed by Arnie and Dale Grimes of the University of Michigan. During discussion, additional items were suggested by the ADCOM members. The committee was directed to select two or three of the best proposals as the basis for VTG's initial efforts in the educational area. Considering the items proposed, the emphasis of the committee's work will be on educational programs for the VTG membership, but other areas, such as programs for student members, may be included also.

\* \* \*

There was a brief discussion of the need for a procedure which could be used to terminate the Adcom membership of elected Adcom members who cannot or will not work for VTG and who cannot or will not attend the Adcom meetings. The President indicated his intention to request the Constitution and Bylaws Committee to draw up a bylaws revision dealing with this subject. The revision will be considered by the full Adcom at a future meeting.

\* \* \*

VTG publications were the subject of a separate three-hour meeting held just prior to the Adcom meeting. George McClure, the new VTG Transactions Editor, dis-

cussed his plans and programs. Goals for the improvement of VTG's publications were established.

\* \* \*

The President introduced a new plan involving all of VTG officers in closer monitoring of the work of the VTG committees. As indicated below each officer is now responsible for monitoring the work of several committees. This system should result in more time being devoted to the supervision of VTG committee activities. The responsibilities are assigned as follows:

**PRESIDENT:** Planning  
Publications Committee  
Technology and Forecasting  
Technical Activities Board (TAB)  
Constitution and Bylaws

**VICE PRESIDENT:** National Meetings  
Membership  
Chapter Activities  
Education  
Technical Programs  
Intergroup Liaison

**TREASURER:** Automotive Electronics  
Standards  
Transportation  
Environmental Quality

**SECRETARY:** Awards  
Paper of the Year  
Publicity  
Historical

**JR.PAST CHAIRMAN:** Nominations  
Public Safety and Emergency  
Oceanography

## EXPANDED COVERAGE PLANNED BY TRANSACTIONS

Plans are shaping up for expanding the coverage of the IEEE Transactions on Vehicular Technology, including special topic-oriented issues. The Transactions staff-George McClure, Editor; Bob Fenton, Associated Editor for Transportation Systems, Dave Howarth, Associate Editor for Automotive Technology; and Roger Madden Associate Editor for Communications - are assisted by reviewers in the specific technical areas.

Papers are sought and solicited on the theory, design, and applications of electrical and electronics technology to vehicles and vehicular systems. Both tutorial papers and papers describing original work are welcome, as are "how-to" papers dealing with such topics as interference suppression and site management.

Objectives in the five-year plan for the Transactions include expanding publication to 400 pages per year, in four issues, one of which will be devoted to a single topic area as a special issue. For special issues, the invitation and coordination of papers will be done by a Guest Editor who is active in the field being covered.

Plans for special issues are now being formulated and dates have not been set yet, but topics under consideration include radio paging, marine communications, emergency medical services, propagation, automotive electronics, and 900 MHz mobile communications systems. Ideas for other special issues are welcomed by the Editor, in addition to suggestions for candidates to serve as Guest Editor for those special issues.

In order to encourage submission of papers, whether by members of VTG or by others, emphasis is being placed on completing the reviews in a timely manner. Authors will usually be notified of actions taken on their papers within two months, but will always be informed within three months. The cooperation of reviewers is being sought so that we can stay within these time limits.

It is not necessary to have a paper completed in order to have it considered for publication in the Transactions. Submission of an abstract and outline, or summary of the paper, will enable the editors to work with the authors, advising on the shape and content of the final paper.

Submission of papers is encouraged, as it benefits both the author and the VTG membership as a whole. Conference or symposium papers may be published in the Transactions, following the same review process as for contributed and invited papers.

GEORGE McCLURE, EDITOR-VTG TRANSACTIONS

## SAFER STREETS THROUGH IMPROVED COMMUNICATION

By MARSHALL TREADO\*

The policemen of today have benefited greatly from the technology developed for other uses within this country. Nowhere is this more evident than in the field of communications. Law enforcement agencies are now purchasing lightweight radios, mobile digital terminals, automatic vehicle location equipment and miniature transmitters and receivers. They are automatically transmitting and receiving data from computers located at all levels of government, that is local, state and Federal.

This influx of new and highly sophisticated electronics equipment has created a need for equipment performance standards and a means of disseminating technical information to non-technical personnel. This need was noted in 1967 by the President's Commission on Law Enforcement and Administration of Justice, which said, "Standardization of police mobile equipment should contribute substantially to field efficiency." The Commission then went on to recommend that a program of nationwide standardization of police mobile radio equipment be established.

Such a program, the development of standards for law enforcement communications equipment, is presently being pursued by the Law Enforcement Standards Laboratory (LESL) at the National Bureau of Standards. In addition to standards, LESL is developing reports and guidelines to assist the law enforcement community in the selection and procurement of communications equipment.

How are these documents generated? Generally, they are produced only after laboratory and/or field testing of a representative number of items of equipment being offered to police for their use. In some cases, the tests are an update of tried and true methods. In others, new test methods have been developed to keep pace with new and more sophisticated electronics equipment being used by policemen. Within NBS, this testing -- and subsequent generation of communications equipment documents -- is accomplished primarily by the Electromagnetics Division located in Boulder, Colo.

### Standards Needed

As reported in the LEAA Police Equipment Survey of 1972, the three communications items most named as needing standards were mobile radios, portable radios and batteries. Voluntary performance standards are being developed in these areas, as well as for base station equipment, personal transceivers, repeaters, transmitters used in undercover work and mobile digital communications equipment.

Guidelines and reports are being written that cover these areas as well as voice privacy equipment, automatic vehicle location techniques and electronic eavesdropping equipment. These documents should provide the law enforcement community with both the technical and non-technical information to purchase and utilize new and improved communications equipment.

Use of this better equipment ought to mean more reliable communications with a subsequent improvement in emergency help. It should provide an increased number of transmissions, improved communications security, better response times and improved safety for both the police officer and the general public.

\*Mr. Treado is Manager of the Communication Systems Program within NBS' Law Enforcement Standards Laboratory. This article was originally published in the U.S. Department of Commerce's Dimension periodical. Mr. Treado has agreed to write a follow-up article on this subject for a future issue of the VTG Newsletter. The available Standards and Reports are listed below.

## PRODUCTS OF THE LAW ENFORCEMENT STANDARDS LABORATORY NATIONAL BUREAU OF STANDARDS FOR COMMUNICATIONS EQUIPMENT

### Standards

NILECJ-STD-0201.00, September 1974. Fixed and Base Station FM Transmitters (Stock No. 2700-00283; Price 65 cents)

NILECJ-STD-0202.00, October 1974. Mobile FM Transmitters (Stock No. 2700-00287; Price 70 cents)

NILECJ-STD-0203.00, October 1974. Personal/Portable FM Transmitters (Stock No. 027-000-00293; Price 70 cents)

NILECJ-STD-0205.00, May 1974. Mobile Antennas (Stock No. 2700-00250; Price 55 cents)

NILECJ-STD-0207.00, June 1975. Mobile FM Receivers (in press)

NILECJ-STD-0211.00, March 1975. Batteries for Personal/Portable Transceivers (in press)

### Reports

LESP-RPT-0002.00, May 1974. LEAA Police Equipment Survey of 1972, Volume II: Communications Equipment and Supplies (in press)

LESP-RPT-0201.00, May 1972. Batteries Used with Law Enforcement Communications Equipment: Comparison and Performance Characteristics (Stock No. 2700-0156; Price 50 cents)

LESP-RPT-0202.00, June 1973. Batteries Used with Law Enforcement Communications Equipment: Chargers and Charging Techniques (Stock No. 2700-00216; Price 80 cents)

LESP-RPT-0203.00, June 1973. Technical Terms and Definitions Used with Law Enforcement Communications Equipment (Radio Antennas, Transmitters, and Receivers) (Stock No. 2700-00214; Price \$1.55)

LESP-RPT-0204.00, May 1974. Voice Privacy Equipment for Law Enforcement Communication Systems (Stock No. 2700-00260; Price 65 cents)

LESP-RPT-0205.00, September 1974. Automatic Vehicle Location Techniques for Law Enforcement Use (Stock No. 2700-00282; Price 75 cents)

LESP-RPT-0206.00, October 1974. Repeaters for Law Enforcement Communication Systems (Stock No. 027-000-00288-9; Price 65 cents)

Please order publications for which a price is indicated by title and stock number, and enclose remittance payable to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

Single copies may be obtained from the National Criminal Justice Reference Service, Law Enforcement Assistance Administration, U.S. Department of Justice, Washington, D.C. 20531.

## URGENT CALL FOR PAPERS

HELP! HELP! HELP! Technical papers are needed now for the upcoming 26th Annual Vehicular Technology Conference in Washington, D.C. March 24-26, 1976. The deadline for the submission of an 800-1000 word outline is approaching and many more papers are needed to assure a successful conference. Won't you please help?

Papers are sought devoted to the following areas:

- \* Satellites to Extend Mobile Coverage to Aeronautical, Maritime and Land Mobile Units.
- \* Microwave Mobile Communications Systems.
- \* Air-Ground Public Radiotelephone Systems.
- \* Digital versus Analog Techniques in the Mobile Service.
- \* Automatic Transmitter Identification.
- \* Automatic Vehicle Location, Monitoring, and Identification of Mobile Units.
- \* Methods for Achieving Improved Spectrum Utilization in Mobile Services, including Trunking and Multiple Access.
- \* Spectrum Requirements for the Mobile Services.
- \* Public Safety and Emergency Medical Systems.
- \* Industrial and Transportation Uses of Mobile Communications.
- \* Propagation at 900 MHz and above in Mobile Service.
- \* Systems and Equipment Operating in the 900 MHz Bands.
- \* Role of Regulation and International Treaty Matters.

- \* New Hardware and System Developments.
- \* International Developments in the Mobile Services.
- \* Motorist's Aid Systems.
- \* The Amateur and Citizen's Use of Land Mobile.
- \* EMC and RFI in the Vehicular Environment.
- \* Marine VHF Systems.
- \* Electronic Control Systems for the Engine.
- \* Fuel Injection Systems.
- \* Outboard Microprocessors.
- \* Automobile Electrical Components and Systems.
- \* Sensors and Actuators for Onboard Use.
- \* Automated Highways.
- \* Crash Avoidance Systems.

If you have an idea for a technical paper, submit six (6) copies of an 800-1000 word outline by November 1, 1975 to the Technical Program Chairman:

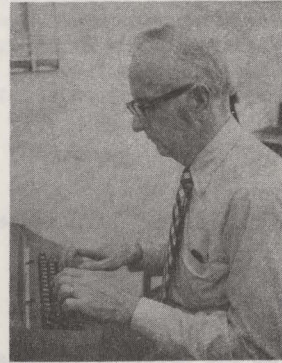
Mr. Sam McConoughey  
C/O Federal Communications Commission  
1919 M Street, N.W., Room 8308  
Washington, D.C. 20554

Selection of papers and notification to the authors will be completed by December 10, 1975. Outlines or summaries should be submitted single spaced with a two-inch left-hand margin, typed in a 4-3/4 inch wide column and with a 1-1/2 inch top and bottom margin. The title and name(s) of author(s) and affiliations should be included, with complete address and telephone number.

Copies of the summaries of selected papers will be published in the Conference Technical Digest which will be distributed at the conference. Selected papers will be considered for publication in the IEEE Transactions. Thus, all authors should submit a complete paper at the time of the conference.

# AVAILABILITY CUSSED & DISCUSSED

By A. K. "Kenny" GUTHRIE  
COMMUNICATIONS EDITOR



How many spare mobile or personal radios should one have for a radio system? The answer is in the graph. If 95 percent of the units are "available" (for use), then 5 percent are spare units, whether intended or not. The user will be better pleased if the allocation is intended and planned for!

While MTBF, MTTR and the other military-style indicators do have a place, they seldom fit directly into management of the typical public safety or industrial radio system. The effect of the factors used to calculate these numbers is often "washed out" by administrative and other elements of the real-life situation.

In the military-type environment, it takes paragraphs or even pages to define "failure" so that failure rate can be calculated. Being practical about it, a radio has failed when it will no longer do its job and goes to the shop.

"Time to repair" also gets into innumerable complexities. But, being practical about it again, the significant matter is "downtime per failure." How much time elapses from all causes between the time the radio becomes "non-available" due to failure and the time it becomes available again?

Most people give major consideration to failure rate--how often the unit fails. This is a major factor, but it isn't the only one. The "downtime per failure" is usually influential, and may actually control availability. After all, one can achieve 100 percent availability with either zero failures or zero downtime!

Downtime per failure usually focuses upon the competence and efficiency of the shop. This is only part of the story. In assessing availability, one should adopt the point of view of the end user and consider all of the elements which render the radio non-available, including:

- Get radio to the place of repair
- Get through the shop backlog
- Troubleshoot
- Procure parts
- Repair and test
- Get radio back to the end user

Availability is one of those things which does not become an issue until you don't have enough of it! It does become an issue when there are insufficient "available" radios to meet the needs of the user. Too often, this sudden realization triggers jumping to one of two conclusions: (1) the failure rate is too high, or (2) the people in the shop can't fix radios. While either of the assumptions may prove to be true, in whole or in part, you'll never know until you have actually determined the failure rate and isolated the factors which total up to downtime per failure.

Once the facts are known, one can determine both the best and quickest ways to bring availability to an acceptable level.

You can seldom do anything constructive about failure rate in the short term. The rate merely reflects the consequences of what has already happened. For short-term improvement, zero-in on "downtime per failure." If it is found reasonable, the answer is: Add Units. Get a pot big enough to support the operation. Perhaps you find fat in the downtime. Get it out. If the problem is administrative delay in the using organization--streamline the procedures. If the problem is shop backlog, do something to increase capacity to get and stay current. This may call for more people; it may indicate a need for better test equipment or training. If the problem is parts availability, increase the parts inventory. As usual, defining the problem is the first step toward solving it!

The graph is plotted from this relationship:

$$A = \frac{365 - Fd}{365}, \text{ where:}$$

A = Availability (1.00 = 100 percent)  
F = Failure rate (per unit per year)  
d = Mean Downtime per Failure (days).

Failure Rate can be approximated, thus:

$$F = \frac{12 f}{nt} \text{ (approximately), where:}$$

F = Failure Rate (per unit per year)  
f = the total number of failures recorded for n units in t months

The approximation is most accurate when d, mean downtime per failure, is small. The more accurate approach which excludes "non-available days" from the calculation is:

$$F = \frac{12 f}{nt \left(1 - \frac{12 fd}{365 nt}\right)}, \text{ which reduces to:}$$

$$F = \frac{12 f}{nt - 0.0329 fd}$$

One can best determine Mean Downtime per Failure with a sample of actual experience. Count the number of days lost from each of a number of failures, sum them, and divide by the number of failures. Go through the exercise! Actual numbers are invariably larger than estimates because estimators tend to leave out some of the factors.

Availability can be determined by entering the graph with the approximated failure rate, or by calculating from the computed failure rate, thus:

$$A = 1 - \frac{12fd}{365 nt}$$

For a sample study, we assume values which might be typical for a personal radio system with fairly tough use: 135 total failures (f), in 45 units (n), over 12 months (t). Mean

downtime per failure (d) is 14 days. Using both the approximate and more accurate formulae we have:

$$F = \frac{12 f}{nt} = \frac{12 \times 135}{45 \times 12} = 3.0 \text{ (approximately).}$$

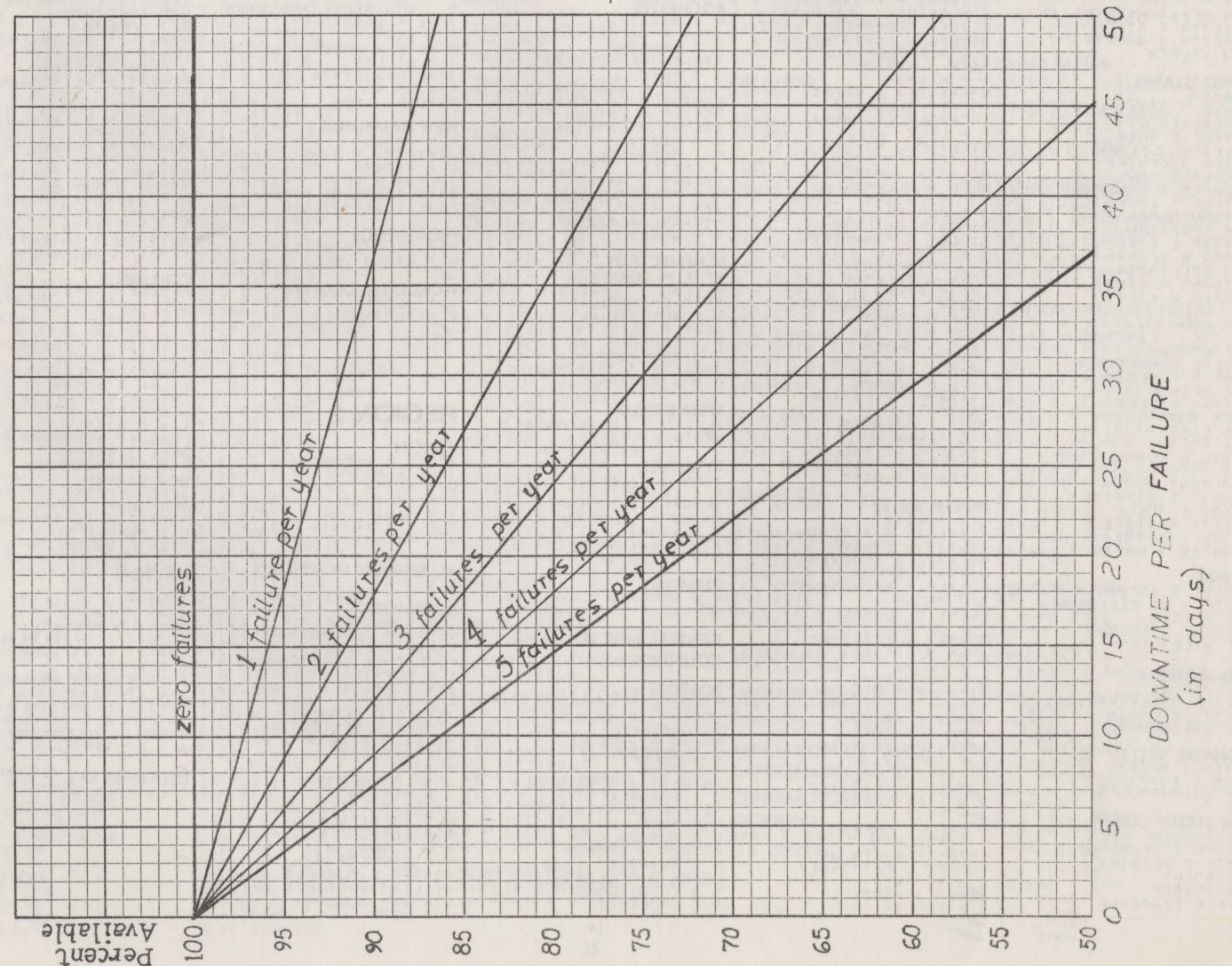
Entering the graph with this value, indicated availability is about .885. This says that 11.5 percent of the 45 radios, or 5 of them, are serving as spares. If the user needs only 40 radios at a time, all is well. Otherwise, availability must be improved. If downtime per failure can be squeezed down to 7 days, availability improves to 94 percent, and the user has use of two more of his radios. The value of two radios will pay for carrying additional parts inventory!

We get to the same availability with the more accurate approach:

$$F = \frac{12 f}{nt - 0.0329 fd} = 3.39, \text{ and}$$

$$A = 1 - \frac{12 fd}{365 nt} = .885$$

However one goes about it, the important thing is: do go about it! When the total number of radios times availability yields enough units to do the job, you have a good system.







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P VACCA
NORTH ITALY
ALESSANDRO Q ALBERIGI
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S R TONICLO
GUIDO P VULPETTI
C ZANELLI

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GABRIEL J GIRCLT
MANUEL GOMEZ
GUILLERMO R ZCUIERDO
E S JIMENEZ-ASENJO
E CLAPPEZ DE TAMAYO
DIEGO G MARTINEZ
JOSE MLMBRU
KALEVI E OTTINEN
B SANZ
RICARDO VALLF-SANCHEZ

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JAUT REFLANDER
PER BENGTSSON
O RILLSTRAN
SVEN CHRISTENSSON
R C GAMSTORP
S G GERZELL
C E GRANQVIST
GUNNAR GUSTAFSSON
LENNART GUSTAFSSON
G JANCKE
ROLF A JCHANNESSON
L KARLSTEDT
MAGNUS KOCH
BENGT L LENNARTSSON
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NILS WARTENSSON
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S SJOGREN
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DAVID A COMES
BULENT M ENER
MOHAMED JAMIL
NABIL A KARBANI
J L KOENREICH
R F LEWIS
KEPEDE MENGESHA
D F MORLEY
L SZANTO
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CENTRAL AMERICA
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MEXICO
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GERMAN FERRER ARREALA
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JAIIME A GARCIA CADTANCO
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NOE GUZMAN-SACHEZ
HUGO H LEZAMA
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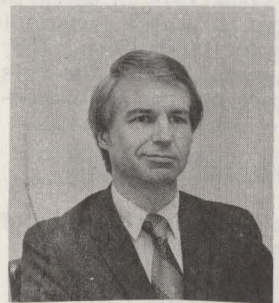
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THE WASHINGTON SCENE
By ERIC SCHIMMEL
WASHINGTON NEWS EDITOR



Legislative Activity

Telecommunications is notoriously non-legislative, in that the FCC can perform most of its regulation by the authority given to it in the Communications Act of 1934. As such, Telecommunications suffers from relatively low visibility in contrast to other national issues which get kicked around on Capitol Hill. Recently, however, two bills have been introduced in the House, proposing significant changes in the structure and operations of the federal communications bureaucracy. Space does not permit their total reproduction here, but we are reprinting significant paragraphs which will give you the gist of most of the proposed changes. There is no way to predict at this point in time if these bills will even get out of committee, but we will continue to watch their progress and keep you advised.

H. R. 8014

IN THE HOUSE OF REPRESENTATIVES

June 18, 1975

Mr. MacDonald of Massachusetts introduced the following bill; which was referred to the Committee on Interstate and Foreign Commerce.

A BILL

To amend the Communications Act of 1934 in order to reorganize the Federal Communications Commission and revise its procedures so as to permit the Commission to more effectively perform its duties.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

REPORTS ON CERTAIN MEETINGS AND COMMUNICATIONS

SEC. 4 Section 4(j) of the Communications Act of 1934 is amended by adding at the end thereof the following:

"(2) The Commission shall adopt rules requiring each Commissioner and each employee of the Commission who is engaged in any significant policymaking decision, as determined by rules of the Commission, to disclose in public reports to be filed in timely fashion with the Secretary of the Commission information concerning meetings or communications with persons outside of the Commission concerning any pending Commission proceeding on any policy matter. To the extent practicable each such report shall set forth (A) the date, time, and place where such meeting or communication occurred, (B) the name of each person participating in such meeting or communication, and (C) a summary of the subject matter covered in such meeting or communication. The

Section 1. This Act may be cited as the "Federal Communications Commission Reorganization and Reform Act".

COMPOSITION OF THE COMMISSION

Sec. 2. (a) (1) Subsection (a) of section 4 of the Communications Act of 1934 (47 U.S.C. 154 (a) is amended to read as follows:

"(a) The Federal Communications Commission (hereafter in this Act referred to as the 'Commission') shall be composed of five Commissioners appointed by the President, by and with the advice and consent of the Senate. One Commissioner shall be appointed Chairman by the President, by and with the advice and consent of the Senate.

Commission may by rule except from the requirements of this paragraph reports in those situations in which the filing of such reports would serve no useful purpose in promoting openness in Commission decisionmaking. The Commission shall include in its annual report the rules adopted to implement this paragraph and any rules making exceptions thereto."

#### PUBLICATION OF CERTAIN COMMISSION DECISIONS

SEC. 5. Section 4(j) of the Communications Act of 1934 is further amended by adding at the end thereof the following new paragraph:

"(3) Whenever the Commission waives a rule or departs from any of its established policies, including any internal processing standard, it shall issue a written decision giving a concise statement of the factual background and the policy basis for such waiver or departure."

#### LEGISLATIVE RECOMMENDATIONS

SEC. 6. (a) Section 4 of the Communications Act of 1934 is amended by adding at the end thereof the following new subsection:

"(p) If the Commission determines at any time that additional legislation is necessary or desirable, it shall submit the proposed legislation together with appropriate background information thereon to the Congress. No such proposed legislation shall be subject to review or approval by any department or agency of the executive branch of the Federal Government."

#### CERTAIN EXPENSES OF RULEMAKING PARTICIPATION

SEC. 8. Section 4 of the Communications Act of 1934 is further amended by adding after subsection (q), as added by section 7 of this Act, the following new subsection:

"(r) The Commission may pursuant to rules prescribed by it provide compensation for reasonable fees and other reasonable expenses of participating in any rulemaking proceeding of the Commission or in any proceeding before a joint board of a Federal-State Joint Board referred to in section 410 of this Act. Such compensation may only be provided to a person (1) who has or represents an interest (A) which would not but for such compensation be represented in such proceeding and (B) representation of which is necessary for a fair determination of such proceeding taken as a whole, and (2) who is unable to effectively participate in such proceeding because of inability to pay the fees and other expenses for which compensation is provided by the Commission under this subsection."

#### OPEN MEETINGS

SEC. 9. Subsection (e) of section 5 of the Communications Act of 1934 is amended by inserting "(1)" immediately after "(e)" and adding at the end thereof the following new paragraph:

"(2) Each meeting of the Commission shall be open to the public unless (A) closed pursuant to a rule of the Commission, or (B) the Commission determines by a recorded vote, taken in public, to close the remainder or any part of the remainder of such meeting. The Commission may not close any portion of any meeting which is devoted to the consideration or adoption of any rule unless it makes a determination that the closing of such meeting is required by considerations of national defense or foreign policy. If any meeting of the Commission or a part of any such meeting which is devoted to the consideration or adoption of a rule is

closed to the public, the Commission shall publish in the Federal Register the date and time of such meeting, the vote by which such meeting was closed, and a brief statement of the reason or reasons for closing such meeting."

#### REPORT ON ACTIVITIES

SEC. 10. (a) Section 5 of the Communications Act of 1934 is further amended by adding at the end thereof the following new subsection:

"(f) By the tenth day of January, April, July, and October of each year the Commission shall submit to the Interstate and Foreign Commerce Committee of the House of Representatives and the Commerce Commission as to significant rulemaking proceedings, insofar as it has been determined, and (2) for the preceding three calendar months (A) the number of persons employed by the Commission and by each of its bureaus, offices, or other subdivisions listed according to grade of the General Schedule, (B) a brief description of each study or investigation being conducted by the Commission, and of any study or investigation completed during such three calendar months with a brief statement of the results thereof, (C) a list of all petitions for rulemaking pending before the Commission for one year or more with a projected date for action thereon, and (D) a list of all rulemaking proceedings being conducted by the Commission, and all such proceedings terminated during such three calendar months with a brief statement of the Commission action with respect thereto."

#### REPRESENTATION

SEC. 13. (a) Title IV of the Communications Act of 1934 is amended by inserting immediately after the heading thereof the following new section:

#### REPRESENTATION

"SEC. 400. The Commission shall have exclusive authority to commence or defend and supervise the litigation of any civil action to which it is a party and any appeal of such action in its own name by any of its attorneys designated by it for such purpose unless the Commission authorizes the Attorney General to do so. The Commission shall inform the Attorney General of the exercise of such authority but such exercise shall not preclude the Attorney General from intervening on behalf of the United States in any such action and any appeal of any such as may otherwise be provided by law."

H. R. 9289

#### IN THE HOUSE OF REPRESENTATIVES

August 1, 1975

Mr. Staggers introduced the following bill; which was referred to the Committee on Interstate and Foreign Commerce.

#### A BILL

To amend the Communications Act of 1934 to facilitate the effective utilization of telecommunications technology, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. This Act may be cited as the "Telecommunications Technology Act of 1975".

SEC. 2. (a) The heading of title I of the Communications Act of 1934, as amended, is hereby amended to read as follows:

#### "TITLE I-GENERAL PROVISIONS

"PART I-PURPOSES, SCOPE, DEFINITIONS: FEDERAL COMMUNICATIONS COMMISSION".

(b) Such title I is further amended at the end thereof a new part as follows:

"PART II-TELECOMMUNICATIONS TECHNOLOGY AND COMMERCE; SECRETARY OF COMMERCE

#### "CONGRESSIONAL FINDINGS

"SEC. 171. The Congress hereby finds that-

"(a) While telecommunications technology, from telephone to modern data communication systems and international communications satellites, has contributed significantly to improving the quality of life in the United States and throughout the rest of the world, it still has the potential to bring about additional significant improvement.

"(b) In particular, telecommunications technology has the as yet unrealized potential to-

"(1) increase the availability of information, diverse cultural amenities and Federal, State, and local governmental services to our Nation's urban, suburban, and rural citizens;

"(2) improve the relationship among nations by facilitating commerce and exchange of information;

"(3) enhance productivity in all sectors of our economy;

"(4) facilitate the exchange of information and views among our citizens, and improve their ability to participate in their Government at the Federal, State, and local levels;

"(5) contribute to the conduct of domestic and international commerce and trade, improve our domestic posture and balance of trade in telecommunications goods and services, and provide new jobs and economic opportunities for our citizens;

"(6) facilitate conservation of energy;

"(7) contribute to the improvement and preservation of the environment;

"(8) improve our national defense and security;

"(9) help prevent wrongful violation of the right of privacy;

"(10) improve the quality and increase the variety of available health services and care; and

"(11) increase the quality of life for all our citizens.

"(c) Much of the technology which is needed to realize the potential of telecommunications to benefit people throughout the world is now available or could be developed readily. Furthermore, increased domestic and international commerce in telecommunications technology would disperse its benefits more effectively, and strengthen our Nation's economy. However, a variety of impediments stand in the way, including:

"(1) lack of adequate information about or understanding of telecommunications technology among a significant number of those in a position to hasten, deter, or regulate its progress;

"(2) lack of sufficiently detailed social, economic, and technical information to enable sound selection from among the many choices and options offered by telecommunications technology;

"(3) lack of national goals, priorities, policies, and plans specific to telecommunications;

"(4) lack of sufficient engineering and commercial standardization for telecommunications;

"(5) lack of sufficient capital to finance production of telecommunications technology products and services which have not yet been demonstrated to be marketable; and

"(6) nontariff barriers to United States international commerce in telecommunications technology products and services.

"(d) Present Federal activities in support of telecommunications technology, and utilization, have been fragmentary and inefficient, thus preventing telecommunications from making its rightful contribution to our Nation's economy and well-being.

"(e) It is necessary and appropriate to establish an entity within the Federal Government to centralize and coordinate efforts to advance the utilization of telecommunications technology for the benefit of all our citizens.

"(f) The Secretary of Commerce possess much of the authority necessary to formulation and performance of a program to realize the potentials and reduce the impediments identified in subsections (b) and (d); therefore, the entity referred to in subsection (e) should be located in the Department of Commerce, and the Secretary should be granted the additional authority necessary to such program formulation and performance. The Secretary must necessarily formulate and perform such a program in appropriate cooperation with other interested Federal agencies, State and local officials and units of government, representatives of foreign governments and international agencies, and private institutions.

#### "BUREAU OF TELECOMMUNICATIONS

"SEC. 174. (a) There is hereby established in the Department of Commerce an agency which shall be known as the Bureau of Telecommunications.

"INFORMATION GATHERING; INQUIRIES; INVESTIGATIONS

"SEC. 175. (a) The Secretary is authorized to request any Federal department or agency to supply such statistics, data, program reports, views, or other information or materials as he deems necessary to carry out the purposes of this part, and each such department or agency is authorized to cooperate with the Secretary and, to the extent permitted by law, furnish such information or materials to the Secretary.

"DEMONSTRATIONS

"SEC. 176. The Secretary is authorized to conduct, support, or participate with other Federal departments or agencies as appropriate in the conduct or support of, projects demonstrating the feasibility and utility of new telecommunications technology, or new uses of telecommunications technology, in accomplishing one or more of the purposes of this part.

"TRAINING AND TECHNICAL ASSISTANCE

"SEC. 177. The Secretary shall-

"(a) provide technical assistance to State and local governments to facilitate their more effective and economical utilization of telecommunications technology products and services, as their needs dictate.

"(b) through conferences, seminars, and other appropriate and effective methods-train, educate, and foster interchange of information to and between officials and employees of State and local government, nonprofit organizations, educational institutions, and business organizations.

"COMPREHENSIVE PROGRAM; ANNUAL REPORT

"SEC. 178. (a) The Secretary shall use the authorities granted by this part and other of his authorities in telecommunications research, engineering, analysis, technical services, standards making, economic research and analysis, and promotion of commerce to plan, develop, and perform a comprehensive and integrated program, appropriately coordinated with other interested departments and agencies, to carry out the purposes of this part.

"TELECOMMUNICATIONS TECHNOLOGY ADVISORY COUNCIL

"SEC. 179. (a) The Secretary shall establish a Telecommunications Technology Advisory Council to advise him, the Director, and other appropriate officers of the Department or other interested departments and agencies on the planning, development, and performance of the comprehensive program authorized and directed by section 178 (a). The Secretary shall appoint twelve persons to staggered three-year terms. The persons selected for appointment should be broadly representative of developers, producers, State regulators, and State, local, and nongovernmental users of telecommunications technology products and services.

ADCOM ELECTION

On December 31, 1975, the three-year term of the following members of the Administration Committee (ADCOM) will expire:

- Nick Alimpich
Marty Cooper
Rodger Madden
Dick Moore
Jack Renner

During the month of October, each member of the VTG will receive a ballot to vote for 5 out of 11 nominees for the term of 1976-78 in ADCOM. Each of the 11 nominees has offered to serve on the ADCOM and each is well qualified to represent the interest of all of the members of VTG. Each member should study the resume of each of the 11 nominees and vote for the five nominees he thinks will best serve, not only his interest, but the interest of our portion of the Engineering profession. All of our members owe a vote of thanks to each of these 11 nominees for their work in our group and profession.

The five members elected will serve with the following 10 members to make up the 15-member ADCOM for the year 1976.

- A. Brenner - Motorola
J. Cassidy - General Motors
S. Meyer - RCA
J. Neubauer - Urban Sciences
N. Shepherd - General Electric
C. Brooks - Consultant
S. Lane - County of Los Angeles
F. Link - Consultant
S. McConoughey - FCC
T. McKee - General Electric

Bob Bloor
Nominating Committee

ADCOM NOMINEES
VOTE FOR FIVE

NICHOLAS ALIMPICH (M'57 - SM '63)

PRESENT EMPLOYER: Michigan Bell Telephone Company
Detroit, Michigan

IEEE HISTORY

- 1974-1975 President - VT-6 AdCom
1972-1973 Vice President - VT-6 AdCom
1970-1971 Treasurer - VT-6 AdCom
1968-1969 Secretary - VT-6 AdCom
1972 Chairman - Southeastern Section IEEE
1970-1971 Vice Chairman - Southeastern Section IEEE
1969 Secretary - Southeastern Section IEEE
1966-1967 Chairman - Southeastern Michigan VT-6

PROFESSIONAL BACKGROUND

Project Engineer - Michigan Bell Telephone Company
Radio; Transmission

OTHER PROFESSIONAL SOCIETIES

Radio Club of America - Fellow
Electromagnetic Compatibility Group IEEE
Communications Society IEEE

EDUCATION

- 1957-1958 University of Detroit
1954-1955 Wayne State University
1944-1946 University of Michigan

Mr. Alimpich, a native of Michigan is married and has three grown children. He has been active in radio since receiving his Amateur Call W8PYW in 1936. During World War II, he spent four years in Navy Communication and Radar.

\* \* \*

MARTIN COOPER (S'49 - A'51 - M'56 - SM'74)

PRESENT EMPLOYER: Motorola, Inc.
1301 East Algonquin Road
Schaumburg, Illinois 60172

IEEE HISTORY

Presently a member of Administrative Committee and Executive Committee of the Professional Group on Vehicular Communications. Past Chairman and Treasurer of VT-6. Past Chairman and Secretary-Treasurer of the Chicago Chapter of VT-6.

PROFESSIONAL BACKGROUND

Vice President and Director of Systems Operations for Motorola's Communications Division. Mr. Cooper has been involved in land mobile communications for over 20 years and has participated in every aspect of the industry including development of Components Equipment Systems' and in regulatory issues affecting the industry. He was instrumental in creating a new high performance quartz crystal and oscillator manufacturing technology, and was a key figure in development of the Bell System "Improved Mobile Telephone System", introduced a number of innovations in mobile and portable two-way radio technology, and was heavily involved in the regulatory issues of Docket 18261 and 18262 for the Federal Communications Commission.

OTHER PROFESSIONAL SOCIETIES

A member of the Policy Board Communications Society of the IEEE. A member of various E.I.A. committees.

EDUCATION

B.S. and M.S. in Electrical Engineering from the Illinois Institute of Technology in 1950 and 1956 respectively.

\* \* \*

JOHN E. DETTRA, JR. (S'55 - A'57 - M'61)

PRESENT EMPLOYER: Dettra Communications, Inc.
2029 K Street, N.W.
Washington, D.C. 20006

IEEE HISTORY

- 1973-Present Chairman, Chapter Activities, VT-6
1974-Present Chapter Editor for VT-6 Newsletter
1970 - Vice Chairman, 21st Annual Conference, VT-6
1969 - Chairman, Washington Chapter, VT-6
1968 - Vice Chairman, Washington Chapter, VT-6
1967 - Secretary, Washington Chapter, VT-6

PROFESSIONAL BACKGROUND

Dettra Communications, Inc., President
Steel, Andrus & Adair, Consulting Engineers
George P. Adair Engineering Company
WB4NBF, First Class Radiotelephone Permit

OTHER PROFESSIONAL SOCIETIES

Association of Federal Communications Consulting Engineers
NARS, NABER, ICET, ARRL

EDUCATION

1968 B.S.E.T., Capitol Institute of Technology  
 1956 A.A.S., Capitor Radio Engineering Institute  
 Maticulated: USDA Graduate School, Chicago Tech.  
 College & University of Virginia.

Since 1956, he has been engaged in many phases of consulting radio engineering work in the broadcast, mobile, marine, MDS, and paging fields. His practice includes the preparation of applications, feasibility, channel allocation, and interference studies, and has given expert radio engineering testimony before the FCC and many state public utility commissions.

\* \* \*

WILLIAM E. ELDER (M'60)

PRESENT EMPLOYER: American Trucking Associations, Inc.  
 Washington, D.C.

IEEE HISTORY

1975 Chairman - Environmental Committee,  
 Member - Constitution and Bylaw Committees  
 1973-1974 Treasurer - VT-6 AdCom  
 1971-1972 Secretary - VT-6 AdCom  
 1970 Chairman, Washington Chapter VT-6  
 1969 Vice Chairman, Washington Chapter VT-6  
 1968 Secretary, Washington Chapter VT-6  
 1960 Member, IEEE/VT-6

PROFESSIONAL BACKGROUND

1957-1974 Chief of Telecommunications Section, ATA  
 1948-1957 Radio Field Engineer - Capital Airlines

OTHER PROFESSIONAL SOCIETIES

Treasurer - Land Mobile Communication  
 Council  
 Advisory Committee to FCC  
 National Industry Advisory Committee FCC  
 Radio Club of America

EDUCATION

1946-1948 Ohio State University

Born in Hamilton, Ohio - Married with one son - Radio amateur since 1939, now W4POQ - First Class Radio Telephone License since 1948 - Served on FCC Land Mobile Advisory Committee - Treasurer Land Mobile Communications Council - Past Chairman, Operational Fixed Microwave Council.

\* \* \*

OLIN S. GILES, JR. (S'62 - M'63)

PRESENT EMPLOYER: General Electric Company  
 Mobile Radio Products Department  
 Lynchburg, Virginia 24502

IEEE HISTORY

1974-Present Editor - VT-6 Newsletter and appointed member of VTG ADCOM  
 1974 Organized and served as the VT-6 Session Chairman at the 1974 International Conference on Communications  
 1969 & 1974 Author of two papers for the VT-6 Transactions:  
 (1) "Multiple Frequency Reception with a Priority Channel", 1969; (2) "Single Conversion Receiver Design and the Impact of Monolithic Technology", 1974.  
 1962 Member IEEE  
 1960 Student Member of IEEE

PROFESSIONAL BACKGROUND

1975-Present Manager, Mobile and Station Engineering, General Electric Company  
 1971-1975 Manager, RF Design Engineering, General Electric Company  
 1966-1971 Technical Leader - Receiver Projects, General Electric Company  
 1962-1966 Engineer, General Electric Company

OTHER PROFESSIONAL SOCIETIESEDUCATION

1968 M.S. - Physics, Lynchburg College  
 1963 Advanced Engineering A-Course, General Electric Company  
 1962 B.S.E.E., North Carolina State University, Member of ETA KAPPA NU

Also, completed various company-sponsored technical and management courses.

Mr. Giles has been active in communications work since 1962. Recently he was named to the position of Manager-Mobile and Station Engineering where he is responsible for managing all of the work associated with the design and development of GE's mobile and station product lines. Mr. Giles is currently serving as the Editor of the IEEE VT-6 NEWSLETTER, and he has been responsible for broadening the scope and coverage of the Newsletter. He holds two U.S. Patents. Age: 35. Married; two children.

\* \* \*

DALE M. GRIMES (M'58 - SM'66)

PRESENT EMPLOYER: The University of Michigan  
 Ann Arbor, Michigan

IEEE HISTORY

1974 Session Chairman, Automotive Electronics, Detroit SAE  
 1974 Session Vice Chairman, Auto Radar Meeting, Detroit SAE  
 1973 Session Co-Chairman, Automotive Electronics, NEC  
 1973 Organizer, four sessions on Computers and the Automobile, Nat'l Computer Conference, New York  
 1959 Chairman, Conference on Magnetism and Magnetic Materials, Detroit

PROFESSIONAL BACKGROUND

1961-1975 Prof. of Electrical Engineering - University of Michigan, Director of Vehicular Electronics Laboratory  
 1960-1963 Chief Scientist, Conduction Corporation  
 1956-1961 Asst. and Assoc. Prof., Dir. Electromagnetic Lab., University of Michigan  
 Consultant to National Bureau of Standards, G.M., ERIM, NCR, Dow Chemical.

OTHER PROFESSIONAL SOCIETIES

AAAS, Int'l. Solar Energy Society, APS,  
 Int'l. Electrotechnical Commission (51),  
 Eta Kappa Nu, Pi Mu Epsilon, Sigma Xi

EDUCATION

1956 PH.D. (EE) University of Michigan  
 1961 M.S. (Phys.) Iowa State University  
 1960 B.S. (Phys.) Iowa State University

Dr. Grimes' interest covers the application of electromagnetics and solid state electronics to today's problems. He has published about 25 technical papers and two books. He is married and has two children.

\* \* \*

CARL A. KOLENDA (S'65 - M'73)

PRESENT EMPLOYER: Michigan Consolidated Gas Company  
 Detroit, Michigan

IEEE HISTORY

1972-1975 Program Chairman - S.E. Michigan VT-6  
 1964-1974 Member

PROFESSIONAL BACKGROUND

1973-1975 Manager, Communications Design, M.C.G. Co.  
 1972-1973 Staff Engineer, M.C.G. Co.  
 1968-1972 Communications System Analyst, M.C.G. Co.  
 1964-1968 Communications Engineering Technician

OTHER PROFESSIONAL SOCIETIES

Engineering Society of Detroit  
 Petroleum Industry Electrical Association  
 IEEE Computer Society

EDUCATION

1972 Bachelors Degree in Electrical Engineering, Detroit Institute of Technology  
 1973 Graduate work, Wayne State University

Mr. Kolenda has been engaged in planning, designing, and specifying utility company microwave and mobile radio systems in various capacities during the past 10 years. Mr. Kolenda holds a 1st Class Radiotelephone Operators License and is an active amateur radio experimenter with an advanced class license call WB8BTY.

ROGER MADDEN (M'65)

PRESENT EMPLOYER: Federal Communications Commission  
 1550 Northwest Highway, Room 411  
 Park Ridge, Illinois 60068

IEEE HISTORY

Associate Editor - Communications of "Transactions on Vehicular Technology" and member of AdCom since 1972. Active in Chicago VT-6 Chapter. Originally, joined VT-6 in 1962. Formerly a member-at-large of Central Illinois Section of IEEE.

PROFESSIONAL BACKGROUND

Acting Regional Manager, FCC, Chicago Regional Office. Formerly Chief, Engineering Branch; Chief, Liaison Section; and Chief, Spectrum Utilization Section of same office. Previously employed in Engineering positions at Magnavox, Urbana, Illinois; General Electric, Bloomington, Illinois; and Motorola, Chicago, Illinois.

EDUCATION

1963 B.E.E., University of Louisville, Kentucky.

\* \* \*

GEORGE F. MCCLURE (M'57 - SM'74)

PRESENT EMPLOYER: Martin Marietta Aerospace  
 Sand Lake Road, MP-437  
 Orlando, Florida 32805

IEEE HISTORY

1975 Editor, IEEE Transactions on Vehicular Technology; Named Engineer of Year by Orlando Chapters, VT-6 and Communications Society  
 1975 Organizer and Chairman, ICC-75 Session, Paging and Reporting Systems  
 1974 Organizer and First Chairman, Orlando Chapter, VT-6  
 1973-1974 Chairman, Orlando Chapter, Communications Society

PROFESSIONAL BACKGROUND

Senior Group Engineer; Section Head-Communications Systems Design  
 1964-1973 Staff Engineer, Systems Design, Mobile Communications Systems  
 1961-1964 Engineer, Systems Design, Communications and Display Systems  
 1957-1959 Instructor, Dept. of Elec. Engrg., U.S. Naval Academy  
 1955-1957 Communications Officer, USNR, Amphibious Communications

OTHER PROFESSIONAL SOCIETIES

Audio Engineering Society  
Chairman, New Technology Seminar, "Expanded Services and Opportunities in Mobile Communications", National Electronics Conference, 1974

EDUCATION

- 1961 Master of Science in Engineering, Univ. of Florida
- 1954 Bachelor of Electrical Engineering, Univ. of Florida
- 1952 Assoc. Arts, Jacksonville Junior College (Florida)

George McClure is engaged in the design of computer controlled radio communications systems, including mobile telephone, dispatch, and emergency medical systems. He directs design work for both commercial and military applications, authored FCC filings, published papers on vehicular and amphibious communications, and organized technical sessions at national and international conferences.

\* \* \*

A. M. MISSEDA (S'60 - M'60)

PRESENT EMPLOYER: RCA  
Meadow Lands, Pennsylvania 15347

IEEE HISTORY

- 1972-Present Program Chairman Pittsburgh Chapter VT-6/CS
- 1972-1975 VT-6 AdCom, Membership Chairman
- 1969-1972 VT-6 AdCom, Chapter Activities Chairman
- 1967-1969 Chairman, Pittsburgh Chapter VT-6/CS
- 1960 Member IEEE

PROFESSIONAL BACKGROUND

- 1964-Present RCA Mobile Communications Systems
- 1975 Manager, Portable Products
- 1974 Program Manager - TACTEC
- 1973 Manager - Advanced Development
- 1972 Leader - Advanced Development
- 1968 Senior Member of Tech. Staff - Base Sta. Syst. Grp.
- 1964 Member of Tech. Staff - Receiver Design Group
- 1962-1964 Design Engineer - Mine Safety Appliances Co.
- 1960-1962 Research Engineer - U.S. Sig. Corps Research Labs.

EDUCATION

- 1960 B.S.E.E., University of Pittsburgh
- 1966 M.S.E.E., University of Pittsburgh

Mr. Missenda is 39 years old, married and the father of three children. He has been active in EIA and/or FCC Committees on Land Mobile Channel Splitting at 450 MHz, Land Mobile/TV Sharing and 900 MHz Technical Standards. He has held a First Class Radiotelephone License since 1955. He was a member of the team which received the

1975 David Sarnoff Award for Outstanding Technical Achievement. This award is RCA's highest technical honor.

\* \* \*  
CHARLES M. WHITE (M'70)

PRESENT EMPLOYER : Houston Lighting & Power Company  
P.O. Box 1700 - Engineering Dept.  
Houston, Texas 77001

IEEE HISTORY

Member of IEEE and VT-6  
Chaired a session at 1972 VT-6 meeting in Dallas on "Vehicular Electronics and Communications".  
Presented paper to Dallas Chapter VT-6 1975  
Organizing a VT-6 Chapter Houston, Texas

PROFESSIONAL BACKGROUND

Supervisor - Communications, Houston Lighting and Power Company  
Dist. Sales Mgr. - General Electric Company Mobile Radio Dept. Midland, Texas and Albuquerque, N. M.  
Product Planning and System Design Engineering, General Electric Company, Lynchburg, Virginia  
Communications Engineer, General Electric Company, San Antonio, Texas  
Asst. Supt. Communications, City of Fort Worth, Texas

OTHER PROFESSIONAL SOCIETIES

Utilities Telecommunications Council  
Power and Telephone Communications Association of Texas

EDUCATION

B.A. - Texas Christian University,  
Fort Worth, Texas

Supervises communication engineering for HL&P's Mobile Radio, Microwave and Telephone Systems. Chairman of UTC's Frequency Coordinating Section and is Past Chairman of UTC's Texas-Louisiana Region. Elected Chairman of Task Force 3 of the FCC's Land Mobile Service Working Group (World Radio Advisory Council-1979). Married, two children, active in church, school, and little league affairs.

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**CONFERENCES**



IEEE INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY

El Tropicano Motor Hotel  
San Antonio, Texas  
October 7-9, 1975

- Power
- Telephone
- Microwave
- Satellite
- Vehicular
- Mass Transit
- Aerospace
- Biomedical
- Radio and T.V.
- Computer
- Environmental
- Law Enforcement
- Analysis and Modeling
- Measurement Techniques
- Spectrum Management
- EMC Management
- EMP
- TEMPEST
- Lightning and Statics
- Grounding and Bonding
- Shielding
- Hazards and Pollution
- Circuits and Systems
- Standards

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NATIONAL TELECOMMUNICATIONS CONFERENCE

Fairmont Hotel  
New Orleans, Louisiana  
December 1-3, 1975

- Social Implications of Technology
- Radio Communication
- Communication Electronics
- Technology Forecasting and Assessment
- Communication Theory
- Wire Communication
- Data Communication
- Communication Switching
- Space Communication
- Satellite Systems
- Environmental Monitoring
- Regulatory Aspects of Telecommunications

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1975 IEEE INTERNATIONAL ELECTRON DEVICES MEETING

Hilton Hotel  
Washington, D.C.  
December 1-3, 1975

- Device Technology
- Integrated Electronics
- Solid State Devices
- Image Transducers and Optoelectronics
- Electron Tubes

\* \* \*

CHICAGO FALL CONFERENCE ON CONSUMER ELECTRONICS

O'Hare Inn  
Rosemont, Illinois  
December 8-9, 1975

\* \* \*

MODULATOR SYMPOSIUM

Statler Hilton Hotel  
New York, New York  
February 4-5, 1976

- Phased Array Radar
- Gaseous Discharge Devices
- Vacuum Tubes
- Solid State Devices
- Modulator Techniques
- Transmitter Reliability

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INTERNATIONAL SOLID STATE CIRCUITS CONFERENCE

Marriott Hotel  
Philadelphia, Pa.  
February 18-20, 1976

- Integrated Electronics
- Circuit Techniques, New Devices
- Optoelectronics
- Microwave Electronics
- Microprocessors and Memories
- Health, Medical, Environmental Electronics

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VEHICULAR TECHNOLOGY CONFERENCE

Statler Hilton Hotel  
Washington, D.C.  
March 24-26, 1976

- Mobile Communications Systems, Hardware, and Technology
- Automotive Electronics
- Transportation Systems

\* \* \*

CONFERENCE

TWENTY SIXTH VEHICULAR TECHNOLOGY CONFERENCE

MARCH 24, 25 & 26, 1976

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Jack Renner c/o Advanced Technology  
2425 Wilson Blvd., Arlington, VA 22201  
Phone (703) 525-2664

We are interested in exhibiting at the Twenty Sixth IEEE Vehicular Technology Conference in Washington, DC. Please send us full details.

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