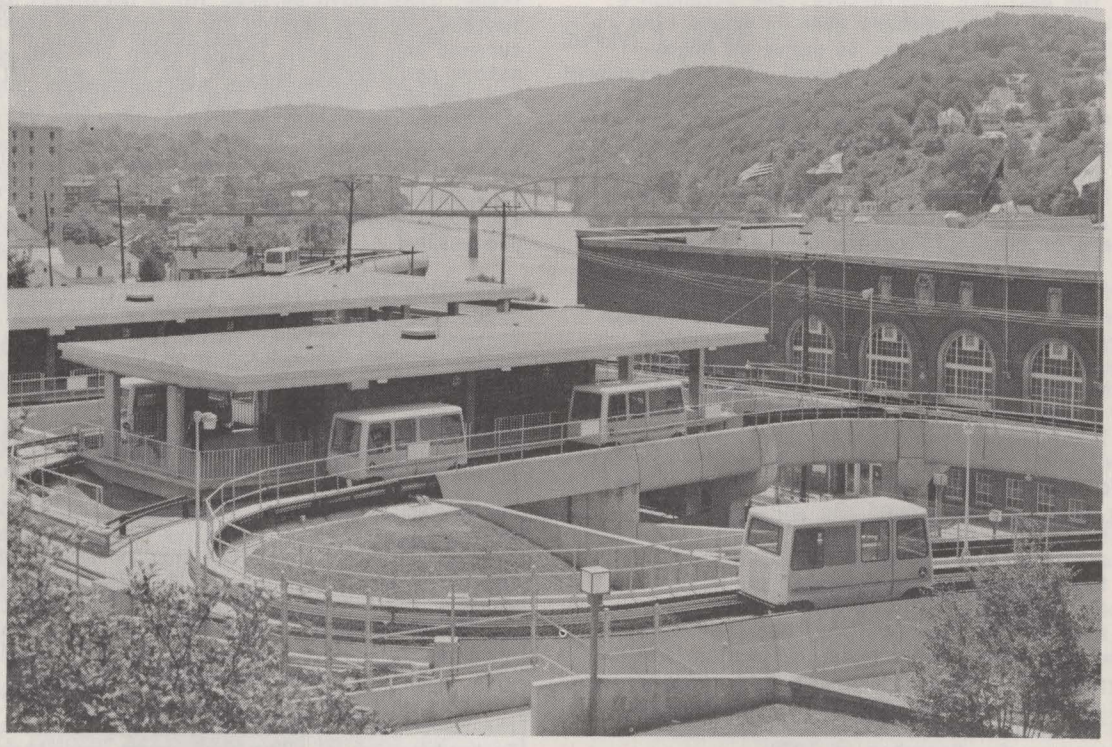
IEEE

NEWSLETTER

VEHICULAR TECHNOLOGY GROUP

AUGUST 1977 EDITOR: OLIN S. GILES

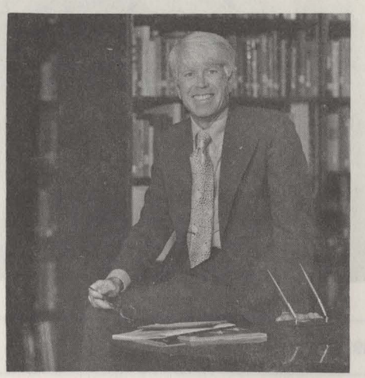
new feature..! TRANSPORTATION SYSTEMS



also... AM STEREO.... MORE ON CB....

Send Form 3579 to IEEE, 345 East 47 Street, New York, NY 10017

THE PRESIDENT'S MESSAGE



Your Administrative Committee (Adcom) had an extremely productive series of meetings during the week of June 13th in Chicago. The full Adcom meets three times a year, normally, and through the years, there has always been an inconsistant attendance for these meetings. The poorly attended meetings were generally meetings not associated with our Annual Conference. I am extremely pleased at the last meeting, which followed our well attended Annual Conference Adcom Meeting in Orlando, we had an attendance of 14 out of the 15 elected Adcom members. To the best of my recollection, I do not think we have ever had an Adcom Meeting with a better percentage ratio during the past ten years. I believe this is indicative of the commitment and dedication of your Adcom members to actively participate in the necessary, and many times unrewarding, chores of administrating the Vehicular Technology's Groups business. I believe we now have a very conscientious group of individuals presently serving on the Adcom. The general membership should review, through the past VTG Newsletters, the attendance of the various Adcom members when it comes time to electing representatives to serve on Adcom in future years.

In addition to just showing up, your Adcom members have, indeed, reported on their busy schedules of activities to improve the organization. One of the key items for our group are our Transactions, and I am sure the general membership is well aware of the improvements that have been made in this area. The May, 1977 issue featured many articles on electric vehicles and automotive electronics. Some of which were obtained through the very successful Convergence '76 Conference. The August issue, which you should be getting about the same time you receive this Newsletter, will be a special issue on Maritime Communications, and will have approximately 120 pages. Coming up in November of this year, we will have the special issue for Mobile Radio Propagation. Some of the leading experts from around the world are contributing to this issue, and also for the convenience of the practicing engineer, we have included the landmark issue originally published by Kenneth Bullington. This will certainly be a key issue of the Transactions that should be used for many years to come by the practicing engineer in Land Mobile Communications. Also, I might mention, that coming up in the future are the special issues planned for Mobile Data Communications for November of 1978.

In addition to the special issues we've mentioned above, we are also concerned with keeping a high level, in terms of quality and quantity of current papers reflecting the advancement in Vehicular Technology area. Elsewhere in this issue, you will see a special request by the Transactions Editor, George McClure, for papers on specific topics. I would urge all of you to consider either participating in authoring a paper for the Transactions, or encouraging someone whom you know, to submit a paper. Often, I find, many prospective authors are somewhat timid about proceeding to produce a paper for the Transactions. We are not asking or looking for a masterpiece issue, that could be used for a Doctorial thesis, instead, we are looking for a forum to exchange current and valuable information, whereby the author can express what he has been working on, and thereby, encourage similar articles or correspondence that will, no doubt, help him in his work. The general membership, of course, benefits by this free exchange of information, and serves as a catalyst for expanding upon the research and applications experience of the people in our profession.

Many other publications exist today in various trade and industry areas, however, the VTG Transactions continues to be the authoritative source for the professional researcher and practitioner in the Vehicular Technology Field. A constant effort and participation by the broad membership will continue this successful and enviable position for our Transactions.

Our Annual Conferences have been a highlight of many of our previous Adcom meetings, however, the last Adcom meeting devoted considerable time to improving and expanding our future conferences. We were all extremely pleased at the results of our recent Orlando Conference, and it now appears that the financial success of this conference will support further activities. The 1978 Conference in Denver appears now to potentially be the best conference to date of the Vehicular Technology Group. The conference committee report was presented by John Tary and reflects an efficient organization which has developed a significant program for the membership. Some interesting aspects to the Denver Conference will be the co-location of our conference with other industry functions. The very successful Mobile/Microwave Symposium, usually held in Boulder, will be co-located in Denver, coincident with our conference. This will provide a basis for many participants to congregate for both conferences. The practicing engineer in the Land Mobile Communications business should find both of these event extremely important to him. In addition, the organizing committee has worked with the National Business Radio Conference organizers, and have reported that they will have their 1978 Conference at the same location as our VTG Conference, just prior to our conference. This will encourage exhibitors to participate in both conferences and many participants of one conference will be interested in attending some portion of the other conference. One of the key movers for bringing about this coordinated effort was Fred Link, and he is working on some additional items to insure a concentrated attendance of all the professionals in Denver, during the week of the VTG Conference.

Our plans for our 1979 Conference ran into some road blocks. The committee tenatively established by the Dallas Chapter for this conference had some dropouts in the key conference management positions previously identified. Some key people were transfered or had different responsibilities which prevented them from serving on the conference committee. The Adcom reviewed the situation in detail, and also by an extended conference call to Dallas, evaluated our options for the 1979 Conference. It was felt that the Dallas-Ft. Worth area would be far better suited in a few years to hold a conference, as they are going to have major industrial expansion in the communications area, and would have a significant increase in active participants in their area. Coincidentally, in 1979 there will be some significant communications developments in the Chicago area that would lend itself to an indepth examination and presentation for the entire VTG membership. With these factors in mind, the Adcom selected Chicago as the site location for the 1979 Conference. Martin Cooper was designated as the conference coordinator, responsible for establishing a conference committee, who will then develop a conference plan and program. A little further down stream, it appears that in 1980, we will be returning to Detroit for the 30th Anniversary Year of the VTG Conference. Detroit was the first conference site in 1950.

During the extensive deliberations by the Adcom regarding future conference sites, it became quite apparent that there is a need for an active base of individuals in a concentrated geographic area, to coordinate and manage a conference. The obvious conclusion is that an active VTG Chapter would be the best source for managing and hosting an Annual Conference. It also appeared apparent that the VTG Chapter organizations are not broad enough, nor active enough to provide a continuing and well diversified series of site selection areas. With this in mind, your Adcom will be spending more time, and more effort, on helping to promote Chapter activities, and working out programs to improve chapter organizations. It is essential that we have strong and active chapters who are capable of hosting our annual conference.

Elsewhere in this issue, you will see a report by Sam McConoughey, our chapters Activity Chairman, who will be reporting on activities of all of our chapters, as well as making some significant announcements about our new Speaker of the Year, and other speakers available for individual chapters to utilize. It is through these special programs, and the availability of knowledgeable people in our profession to speak at local chapter activities, that creates the basis for a strong chapter organization. I would urge all of you, who are in areas where you have not had active chapter participation, to contact Sam McConoughey and see if your area can qualify for a special meeting. We will do our very best to publicize this meeting, and encourage all of the people within your area to participate. A chapter doesn't necessarily have to have a meeting every month. Several meetings throughout the year could be extremely beneficial to our members who are not able to travel long distances to attend our National Conferences, but wish to exchange information and be updated on developments in a timely fashion. We are looking forward to a very active chapter program in the forthcoming year, and starting in September, we will be publicizing very heavily, all activities, to encourage a wide participation.

Again, I would like to extend to all of you, an invitation to actively participate in all of our activities. Please send or contact me with any suggestions you may have in improving our organization. We are looking forward to your comments and suggestions.

SAM LANE

Magnasync/Moviola Corporation
5547 Satsuma Avenue
North Hollywood, California 91601
(213) 877-2791

VTG NEWSLETTER DEADLINE

Month of Issue	Final Copy To Be Rec'd. By Editor*	Target Mailing Date
November	10-3-77	11-4-77
February	1-9-78	2-11-78
May	4-3-78	5-5-78
August	6-26-78	8-4-78

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

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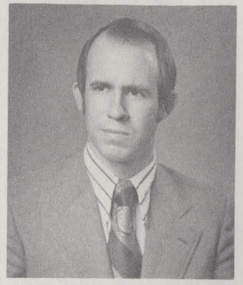
EDITOR'S NOTES



Upon returning from vacation this week, I found myself well behind in my work and, in addition, facing a Newsletter deadline four days away. That's enough to discourage anyone! If I can somehow muster the energy to complete this column, I should be well on the way to meeting the deadline.

The timing for inputs to this issue hit squarely in the middle of the summer vacation period. Because of this, a couple of staff regulars were unable to contribute to this issue. Hope you won't be too disappointed; we'll be back to full strength in the November issue.

With this issue, we inaugurate a new regular column on "Transportation Systems" by Ronald Rule of the Boeing Company. The primary objective of this column is to serve the interests of the transportation systems segment of the VTG membership. Dr. Rule has agreed to cover the newsworthy developments in this rapidly developing field. This addition to the staff rounds out our coverage of the various VTG disciplines; the other two being, as you are aware, automotive electronics and land mobile communications.

You may have noticed that your May issue of this Newsletter was several weeks late. This delay was entirely caused by problems at IEEE Headquarters. I'm told that they had a backlog of overdue inputs from other editors and that we had to fall "in-line", even though our input was right on schedule. Hopefully, the problem has been rectified.

Please note the deadline for the November issue.

OLIN GILES

The IEEE Vehicular Technology Group Newsletter is published quarterly by the Vehicular Technology Group of the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 345 East 47th Street, New York, NY 10017. Sent automatically and without additional cost to each member of the Vehicular Technology Group. Printed in U.S.A. Second-class postage is paid at New York, NY and at additional mailing offices.

ADVERTISING

RATES

VEHICULAR TECHNOLOGY GROUP
NEWSLETTER

(Effective with August 1977 Issue)

Full Page (Approx. 7-1/2" x 10")	$250.00 Per Issue
Horiz.Half Page(Approx.7-1/2" x 5")	150.00 Per Issue
Vert. Half Page(Approx.2-1/2" x 10")	105.00 Per Issue
Quarter Page (Approx. 2-1/2" x 5")	85.00 Per Issue
Sixth Page (Approx. 2-1/2" x 5")	60.00 Per Issue
Twelfth Page (Approx. 2-1/2" x 2-1/2")	37.50 Per Issue

NOTES

1. Above prices are for "Ready for Camera" artwork. A limited amount of composition may be done with prior arrangement.
2. Quoted prices are net with no allowance for agency discounts.
3. Bleed acceptable on full page ads only. No extra charge for full page bleed.

CLOSING DATES ARE AS FOLLOWS:

Month of Issue	Closing Date*
November, 1977	October 3, 1977
February 28, 1978	January 9, 1978
May, 1978	April 3, 1978
August, 1978	June 26, 1978

FREQUENCY DISCOUNT

25% credit allowance for future advertising for four issues during a 12-month period.

10% credit allowance for future advertising for two issues during a 12-month period. (The newsletter is published four(4) times a year -- February -- May -- August -- November).

Frequency discount credit will be determined after the close of your advertising year and applied to the earliest future invoices.

*NOTE: Ready for camera artwork should be forwarded to: Olin S. Giles, Jr., General Electric Company, Mountain View Road, Lynchburg, Virginia 24502 (PHONE: (804) 846-7311, Ext. 2346).

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28th ANNUAL VTG CONFERENCE

DENVER, COLORADO
MARCH 22 THROUGH 24, 1978

CALL FOR PAPERS

THEME: "Technology on the Move"

TOPICS:

Communications
Voice, Data, Control, Compatibility

Propulsion
Control of Combustion Engines
Control of Electrical Motors
Propulsion Advancements
Energy Conversion

Command and Control
Discrete, Micro-Processor, Computer, Systems

Safety and Security
Collision Avoidance and Sensing
Vehicle Sensing/Locating
Anti Skid
Life Support

These are only suggested topics.

DEADLINE: Six copies of a 500-word outline should be submitted by October 15, 1977 to:

JOHN F. SHAFER

U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
325 Broadway
Boulder, Colorado 80302
(303) 499-1000, Ext. 3185
(303) 499-6855 (Home)

Outlines or summaries should be typed single-spaced with a two-inch left margin, in a 4-3/4 inch column with a 1-1/2 inch top and bottom margin. The title, name(s), and affiliations should be included, with complete address and telephone number.

Authors will be notified of acceptance by November 15, 1977. The complete text of accepted papers will be published in the Twenty Eighth IEEE Vehicular Technology Conference Record, which will be distributed at the conference.

DENVER REGENCY
Site of 1978 VTG Annual Conference
March 22-24
DENVER -- GATEWAY TO ADVENTURE

LETTERS

Mr. Thomas A. McKee
General Electric Company
Mountain View Road
Lynchburg, Virginia 24502

Dear Tom:

I read with great interest the results of the 1976 VTG membership survey published in the February 1977 Newsletter. Although I was not among the members surveyed, I agree with many of the "choice comments" you received as responses, especially those related to papers published in the VTG Transactions and Newsletter. Ken Guthrie's tutorial articles are always good and written in a refreshingly candid style. More of these would be very welcome. In the past the VTG Transactions have been skimpy and almost not worth the cost of receiving them. I'm very pleased to see the new approach to the Transactions where specific areas in vehicular technology are covered by Special Issues.

I was amazed that 91% of the VTG membership have never submitted papers for publication, (I'm in this group), but I can come up with a few obvious reasons why there has been such a lack of papers in the past:

1. The majority of the VTG membership is (probably in private industry or government, not academic and there is no real pressure to publish or perish.
2. Because of the nature of the vehicular technology (mobile radio) industry, the engineer's scarce working day hours must be spent in a manner profitable to the employer. Preparing papers for publication comes last in the order of priorities and many employers view papers as only marginally valuable in terms of corporate prestige (notwithstanding the statements in the company Policy Manual). Engineers therefore normally turn to writing papers only as a last resort to occupy their time and work on them only during lulls in the business cycle. The pressure to have a good "charge number" on his time card is very real.
3. The poor quality and volume of the Transactions in the past probably bred apathy in the membership.
4. Good writers are scarce and all of them are probably writing - proposals, bulletins, reports, memos, company brochures, etc. - with no time left over to write papers.

I would like to offer the following suggestion for improving the quantity, quality and orientation of the papers submitted for publication by the VTG: the VTG membership could be asked (through notices or an article in the Transactions and Newsletter) to submit suggested titles of papers they would like to see published. The titles should be augmented with brief descriptions of the matter desired to be covered and its orientation (tutorial, applications-oriented, theoretical, etc.). This information could then be published in the Transactions or Newsletter and members desiring to submit a paper could "bid" for the task of writing it. If more than one bid is received for a specific paper the VTG editorial staff could either select the most qualified writer or get the two or more bidders together to work on a joint paper. To ensure that papers are prepared and submitted within a reasonable length of time the names of the members awarded a paper could be published together with a due date.

I believe that this suggestion for improving our literature would work because it would provide potential authors with a list of desirable subjects to write about. It would also provide a challenge and an incentive. The overall product would be superior because authors would be responding to specific requests for information.

Another incentive to submit papers would be to honor the author(s) of the best paper published each year with a plaque, a profile in the VTG Transactions, and maybe an all expenses paid invitation to the Annual VTG Conference. The membership could be asked to vote for the best paper by means of a tear-off ballot in the Transactions or Newsletter.

To fatten-up the VTG Transactions I would like to suggest reprinting in each issue one or more of the "classical" or "definitive" papers printed in the past in any one of the IEEE publications. Perhaps a Special Issue of Classical Papers would be appropriate.

This letter itself could be reconfigured as an article or paper and I would be very willing to do the necessary research and writing if you think it would be acceptable.

Hope to meet you in Orlando during the Annual Conference.

Patrick J. Dunne
Computer Sciences Corporation

Mr. S. H. Lane, President VTG
4015 Ramitas Road
Santa Barbara, California 93110

Dear Mr. Lane:

During 1976, Dr. Joseph Biedenbach, EAB Chairperson for Short Course and Home Study programs, added a new dimension to our expanding Continuing Education programs. This new activity takes advantage of the travel assignments that are normally scheduled by your members in industry, government and universities. In this manner we are able to extend low-cost education to our members in our far-away Regions. We urge you to relay this information to your Newsletter Editors so they can alert your membership. Many arrangements have to be made in advance of the travel schedule so we urge you to expedite your return to us.

We will need to know:

1. The members' biography.
2. His/her travel plans for the next 6- to 12-months. Exact dates and length of the stay in the respective countries would be of great help.
3. A brief statement describing the subject in which they feel they are best qualified to teach.

We include an honorarium of $300.00 per teaching day plus the local travel expenses from his location in the foreign country to the course site.

Vincent J. Giardina, Manager -
Continuing Education, IEEE

Editor's Note: If you are interested in participating, please contact Sam Lane, VTG President.

TO: VTG CHAPTERS AND OFFICERS

FROM: Sam McConoughey
Chairman, Chapter Activities Committee

As your new Chairman of Chapter Activities, I've chosen this means of getting acquainted.

First, let me say that I'll do my best to help you in your job as Chapter Officers by offering assistance in obtaining good programs for the coming 77-78 season. Now is the time to begin your planning for activities beginning this fall.

Second, you can help me and the VTG to support your chapter.

* Keep me informed of the names, addresses, and telephone numbers of your officers. Aside from the election of new officers, there are frequent changes when someone moves or resigns. We can't help if we have letters returned as undeliverable or can't locate an officer by telephone.

* Send in your meeting reports promptly. We like to publish them in the Newsletter and they are needed in the selection of the "Chapter of the Year" award. Indicate by an asterisk if you believe you had an exceptionally good speaker other chapters may wish to call upon.

We have a number of chapters we've not heard from in some time. Failure to remain active can result in dissolution of your chapter. At the Chapter Chairman's breakfast in Orlando during the National Conference, seven chapters were represented. During this meeting there were some excellent suggestions made for improving programs. Some of these were:

For Program Speakers

Go after the authors of papers appearing in the Transactions or at the National Conference. I will try to obtain mailing addresses and telephone numbers for you but you should generally be able to track down authors as the biographical sketches usually indicate current affiliations (see "contributors" at the end of each Transaction issue). Also, if you have access to an IEEE Membership Directory, usually home and office addresses are provided.

Try Workshop Seminars

Several chapters reported successful experiences with "how to" courses, day-long field trips or workshop seminars. Typical subjects have been "Instrumentation", "CB Educational Seminar", "Lightning Protection", "How to Obtain Patents". Fees for these day-long sessions have been on the order of $25-50. and included lunch, dinner or transportation. Orange County, California, Boston and Cleveland chapters have held workshops and can give advice. Supplier industries and government agencies will often cooperate in setting up, conducting training seminars, and in furnishing course materials.

Plant Tours

Tours of public safety facilities, manufacturing plants, government laboratories and similar facilities were also reported as producing large attendance. Afternoon, evening and weekend meetings all appeared to be successful.

Meeting Dates and Times

Know your competition was the advice given. Don't pick a meeting time that conflicts with Monday night football on TV, or a location where parking is scarce or expensive. If most of your membership lives in the suburbs an evening meeting downtown may work against you. Some chapters report better success with luncheon meetings than with dinner meetings. It's really up to the chapter officers to use a little care and judgment in picking the time and place to promote good attendance.

Publicity for Meetings

Check your community newspapers, trade publications and you may find those that carry "Meeting Notices". The IEEE "Section News" is also a good place to list meetings, but one of the best reminders is a direct mailing prior to each meeting. Some local radio stations may also mention your meeting as a public service announcement.

One very innovative approach used by the Cleveland Section of IEEE was mentioned. Dial area code (216) WHAT'S UP and you will hear a recorded announcement of all upcoming meetings! If you have trouble dialing "WHAT'S UP", try 942-8787. The cost of a telephone answering device is nominal and you might get the Section to pick up the bill. You may not be able to get the same number as in Cleveland but by working with your telephone company and a little imagination you might come up with another easy to remember slogan.

Work with your Section

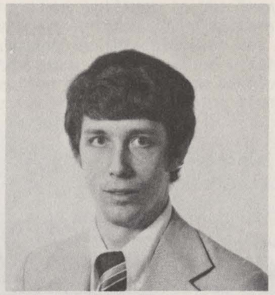
As above, the Cleveland VTG benefits from working with the Section. There are many such examples which benefit the Group and the Section of IEEE. Another example which helps attendance is joint meetings. For example, all Groups in an area could hold meetings from 6-8 p.m. followed by a Section meeting from 8-10 p.m. This permits VTG members to meet with associates of other disciplines, cuts down the travel to separate meetings, and promotes attendance. Plant tours and workshop seminars are often very good occasions to work with your Section.

Sam McConoughey

TRANSPORTATION SYSTEMS

by Ronald Rule

TRANSPORTATION SYSTEMS EDITOR



This new section of the Newsletter will cover the use of electronic technology in the area of ground transportation systems. The scope will include but not be limited to developments in the following areas: traffic control systems, automatic vehicle identification, location, and monitoring systems, automated transport systems, moving walkways, and other people-movers.

DOWNTOWN PEOPLE MOVERS

The Urban Mass Transportation Administration (UMTA) has selected four cities for Downtown People Mover (DPM) demonstration projects. The wide range of climates, population densities, and economic conditions of Houston, Cleveland, Los Angeles, and Saint Paul will provide varied scenarios for assessing the practicality of urban installations of automated transit systems. The DPM program's purpose is to assess the economic benefits that improved transportation services can produce, to determine operating cost economies of an automated transit system, and to find out how well people-mover systems might perform as substitutes for more expensive fixed guideway systems in high density, short-trip situations.

THE MORGANTOWN WEST VIRGINIA
PERSONAL RAPID TRANSIT SYSTEM

The U.S. Department of Transportation's UMTA has awarded a contract to N.D. Lea and Associates, Inc. (a transportation engineering firm) to perform an assessment of the Morgantown Personal Rapid Transit (MPRT) System which is currently the only automated guideway system in an urban area. The MPRT System is composed of 21-passenger fully-automated rubber-tired vehicles operating on a concrete guideway. The system was installed by UMTA as a public demonstration project and it is designed to connect the Morgantown business district with the widely separated campuses of West Virginia University.

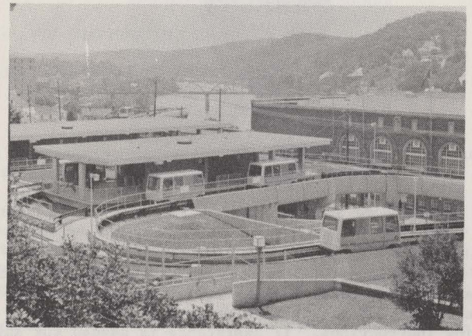
Operation of the MPRT System can be summarized from the passenger's viewpoint. He arrives at the origin station on the concourse level and reads the Platform Assignment Display to determine which platform is servicing his desired destination. He proceeds up the stairs or ramp to the platform level. He inserts a coded card into the Fare Collection/Destination Selection Unit and presses a button selecting his destination. A graphic display illuminates informing him to proceed to the vehicle loading area. A Vehicle Destination Display above the loading gate provides vehicle boarding instructions. If assistance is needed for any reason, he may telephone the central operator. He boards when his vehicle arrives at the loading gate and the door has opened. The door closes and the vehicle automatically proceeds under software control non-stop to his destination. At the destination station the vehicle stops at an unloading gate, the door opens and he leaves the station through the exit gate.

The West Virginia University Board of Regents has a capital grant to extend the MPRT system from the present terminus at Evansdale campus to the Medical Center campus. Associated contractors to the University are F.R. Harris, Inc. who is responsible for physical structures and power distribution and the Boeing Aerospace Company who is responsible for vehicles, power rails, and control/communications systems. The extended or Phase II MPRT system will consist of 5-passenger stations, 2 maintenance areas, and 8.6 miles of single lane guideway.

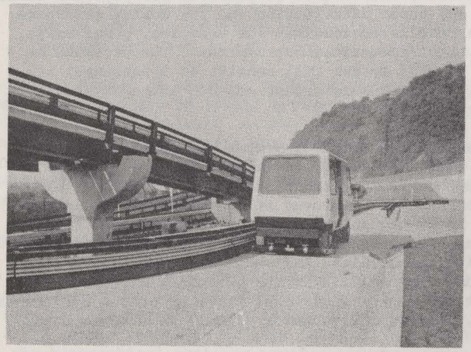
The entire Phase II MPRT system will have both heated power rails and heated on-vehicle power collectors for improved cold weather operation. Subsystem design changes for improved reliability will be incorporated in 28 new and 45 existing vehicles: air conditioning, chassis, propulsion, brakes, steering, hydraulics, pneumatics, and vehicle control and communications. The ability of the vehicle's electronics to detect and report individual fault or status conditions (e.g., loss of a tachometer signal) will be improved.

A collision avoidance system is provided independent of primary software control to assure headway protection for stopped vehicles or merge conflicts. This check in/check out block system is implemented through dual logic paths starting from vehicle detection and ending with vehicle command. The dual logic paths are implemented in station minicomputers and in hardwired electronics. In Phase II MPRT the hardwired electronics will be replaced by a microprocessor subsystem.

Finally, the Phase II MPRT will provide a new coin/magnetic card fare collection system, improved radio encode/decode electronics, and modifications to dynamic displays, central consoles, and computer hardware.



The off-line parallel loading bays at Beechurst Station (Morgantown Personal Rapid Transit)



A MPRT vehicle automatically following along the steering/power-collection rail on an at-grade section of concrete guideway (Above-grade guideway in background)

New Copyright Law Affects IEEE Authors

A new copyright law takes effect in the U.S. next January changing procedures currently in effect under the existing 1909 law. Under the new law, extensive photocopying can no longer be done without the consent of the copyright owner. Copyright ownership of a paper rests with the author (or his institution) unless he transfers ownership to the publisher in writing.

Single photocopies may be made for personal use or for research by individuals or libraries under the new law, continuing the "fair use" doctrine, without the owner's consent but "concerted" or "systematic" reproduction without payment of royalties to the copyright owners is prohibited. A Copy Payments Center is planned to administer the collection of royalties for excess copying, on a non-profit basis.

To function under the new law, and to be able to grant permission for reprinting as in the past, the IEEE has proposed to its Board of Directors that authors of papers to be published by IEEE journals (except newsletters) shall transfer to the IEEE in writing any copyright they hold for their individual papers. Such transfer shall be a necessary requirement for publication, except for material in the public domain (e.g., papers by government employees) or which is reprinted from a copyrighted publication. The IEEE will copyright the complete publication. In return for the transfer of author rights, the IEEE shall grant the author and his employer blanket permission to make copies and otherwise reuse the material for internal purposes, and to republish with appropriate credit to the IEEE source.

Obtaining the written transfer of author rights shall be the responsibility of the journal editor or conference publication committee chairman. The wording to be used on the form for effecting the interchange of rights with the author will be supplied by the IEEE Publications Board if this procedure is approved by the Board of Directors at its July meeting.

Authors of papers submitted for the Transactions or the annual conference should expect to receive a certificate for the transfer of rights with respect to copyright to the IEEE, to be executed and signed before a paper is accepted for publication. In the case of the VT Transactions, agreement to the transfer may be executed on a contingent basis before the paper enters the review cycle. If the paper is not accepted, the agreement would be returned to the author.

MOBILE RADIO PROPAGATION TO BE FEATURED IN NOVEMBER

In November, the IEEE Transactions on Vehicular Technology will publish a special issue on Mobile Radio Propagation, with Neal Shepherd and John McCormick serving as Guest Editors. The contents of that issue are shown below.

TABLE OF CONTENTS

EVER WANTED TO BE AN AUTHOR?

LIKE TO SEE PAPERS ON A CERTAIN SUBJECT?

VEHICULAR TECHNOLOGY TRANSACTIONS NEEDS YOUR HELP!

Increasing the number of papers published is a real service VTG can perform for its members. More pages mean more coverage is possible in all three of our interest areas -- automotive technology, mobile communications, and transportation systems. This year the Transactions will approach 400 pages. To sustain this level of publication and foster further growth we need a continuing input of quality papers reporting work being done in college, government, and industry research laboratories, in systems planning, and in applications affecting vehicular technology.

Papers sought include those describing design, development, and applications, theory and analysis, plus tutorial or survey papers dealing with topics of interest to the VTG. Authors of Transactions papers gain the recognition of their colleagues, the satisfaction of acquainting a larger audience with their work, and consideration for the Paper-of-the-Year award.

Prospective authors may suggest ideas for papers, submitting summaries or outlines to the Transactions before the papers are written. The editors and reviewers may suggest changes at this stage to the approach or emphasis of the paper, making it of wider interest or focusing attention on specific new developments of interest to our readers, thus avoiding time spent in later extensive revisions.

Some topics for which papers are especially sought now include:

- Data Communications in a Mobile Environment
- Emerging 900 MHz Technologies
- Automation in Land Mobile Radio Services
- Loran-C Developments and Applications
- Strategies and Designs for Urban Mass Transit
- Electric Vehicle Control Systems and Power Sources
- Electronic Applications to Vehicle Pollution Control
- Electronics for Vehicle Safety, Braking, and Collision Avoidance
- Automatic Test Systems for Vehicle Monitoring and Diagnostics
- System Design and Control for Light Rail Transit
- Tactical Vehicle Electronic Design for Military Applications
- Vehicular Traffic Control Systems
- Electronic Control of Engine Combustion for Fuel Economy
- System Innovations in Land Mobile Radio Communications (e.g., channel sharing through time division multiplexing or spread spectrum techniques)
- Uses of Communications Satellites for Mobile Communications and Position Locating

As a reader, you might suggest other subjects to be added to this list, so you could find papers dealing with them in the VT Transactions, drop a note to the editor. If you can suggest an author for such a paper, he will be contacted.

Ideas for papers may be discussed with the Transactions staff by phone or letter. Full addresses are inside the cover of each Transactions. Information for Authors appears on the back cover of each issue of the Transactions.

Copies of the Author's Check List for the preparation of papers are available on request from:

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Martin Marietta Aerospace
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Orlando, Florida 32805

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Bill Chriss, Assoc. Editor, Communications

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Dr. Jim Bender, Assoc. Editor, Transportation Systems

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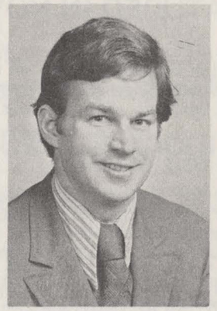
AUTOMOTIVE ELECTRONICS

DATELINE: DETROIT
By BILL FLEMING

AUTOMOTIVE ELECTRONICS EDITOR



WHAT'S OF INTEREST?

Having just received a reminder letter on the approaching deadline for Newsletter submission, I asked myself what's happening now in automotive electronics which would be of interest to VTG readers. A casual survey of two colleagues convinced me that the hot subject continues to be: "CB radio and related in-car entertainment systems."

As I've done before (see the August 1976 issue of the VTG Newsletter), let me give you a summary of what can be learned by doing some homework on this subject. All the following information is taken from recently published articles and appropriate references are cited.

THE 1.5 BILLION DOLLAR AUTOMOTIVE RADIO BUSINESS

Automotive Industries trade journal predicts that sales of new car sound equipment, consisting of AM-FM radios, tape players, CB radios, etc., will probably exceed $1.5 billion this year.[1] Factors contributing to this growth are:

- Recently demonstrated tendencies for new car buyers to upgrade their sound systems.
- Availability of more expensive systems in more car models.
- Expected allure of improved radios in the future, especially in youth-oriented vans and light trucks.

Here are some facts of interest: (1) last year 55% of all GM radios sold provided AM-FM reception, and (2) prices of add-on CB mobile units have fallen to unprecedented low levels. For example, one could purchase a 23-channel, Johnson Messenger 123A, CB radio which originally sold for $159.99 for a mere $38.88 on closeout sale.[2] (This radio is 100% solid state, has electronic speech compression, automatic noise limiting, and an acoustically isolated speaker).

In recent years there has been a growing habit of buyers to order new cars without radios. The dealers then install aftermarket sound systems, which generally are lower-priced Japanese-made units.[1] American car companies are responding to this challenge.

General Motors Radio Developments. The product bombshell in this business was dropped last fall when GM's car divisions announced two new radio systems:[1]

- An in-dash AM-FM-CB stereo radio with two-way CB controls.
- A new stereo radio which digitally displays either the time, date, elapsed trip time, or station frequency.

Both radios, shown in adjacent photos, are manufactured by Delco Electronics Division of General Motors. Delco Electronics has responsibility for design, development, and manufacturing of GM radios. For the 1977 model year, GM has dropped the 23-channel, hang-on CB radios and shifted to 40-channel in-dash CB radios.[1]

Ford Motor Radio Developments. Ford Motor Company currently offers a 40-channel hang-on CB radio, plus three other models of hang-on units. These units are made by Kraco, Motorola, and Johnson.[1]

Last year, Ford Motor came out with their first line of CB radios, marketed by their Parts and Services Division. Sales of $0.5 million were predicted, but Ford actually sold about $1 million worth, mostly of the Johnson CB radios.[1] Ford Aeronutronics and Communications Corporation (formerly Philco Corp.) in Blue Bell, PA develops Ford-manufactured radios. In addition, Ford's Entertainment Systems Engineering Department in Dearborn, Michigan, has release authority for radios made by suppliers.[1]

Chrysler Radio Developments. Last year Chrysler introduced a 17-channel Kraco hang-on CB radio that was marketed through its MOPAR Division. Chrysler has not yet introduced a 40-channel model, suggesting that they will "tread water" until a 40-channel built-in CB unit can be offered possibly next fall.[1] Chrysler's electronics operation in Huntsville, AL is concerned with advanced radio product development.

FORECAST FOR AUTOMOTIVE RADIO DEVELOPMENTS

AM Stereo. An important new opportunity for auto-entertainment manufacturers is the arrival of AM stereo. High-fidelity stereo music can be broadcast for hundreds of miles by AM stations, contrasted to the 20 to 30 mile ranges to which FM stations are limited.[1,3] The full impact of AM stereo won't be known until public response is determined. But it could usher in a new type of radio that could be the dominant radio in future cars.

Four different AM stereo broadcast systems are under study by the FCC and it is hoped that a ruling on which system will prevail will be made by early 1978. Automakers, which are expected to generate 80% of the AM stereo market, would then be able to get the new radios into dashboards of 1979 models.[3] Receiver makers like GM Delco Electronics, Magnavox, Motorola, and Sansui have projected an annual wholesale market of $250 million. A schematic diagram of one proposed system of AM stereo broadcast and reception is shown adjacent to this article.

On-Car Information. An on-car entertainment microprocessor is not too far in the future. It would provide drivers with a wide range of additional information such as:[1]

- Digital time
- Date
- Elapsed time
- Inside and outside temperatures
- Time to arrival on trips
- Fuel mileage
- Distance to the next gas station
- Business and personal appointment schedules

On-board cassette tape recorders are also likely to appear. They would typically be useful to a student, doctor, or salesman who wants to record either an interview or keep a daily activity log.[1]

Another possibility is extension of the radio reception capability to pick up TV audio. Indeed, many GM car radios already can pick up sound from the TV Channel 6 on the low end of the FM dial.[1] If this function gains public acceptance, a TV-audio reception band might be added to the automobile radio.

One more feature which might be added to car radios is weather frequency-band reception. This could be part of a national-alerting system for disasters. Once the government gets all its weather transmitters installed, it's possible that the weather band reception could be mandated into all car radios in the distant future.[1] In fact, however, Cadillac this year discontinued its weather band radio for a year or so due to poor demand which was attributed to a lack of operating all-weather transmitting stations.[1]

Low-Noise CB Microphone. Normally, CB radios are used in high-ambient noise locactions. A small microphone, initially developed for use in a high-altitude pressurized Navy helmet, can clear up voice transmission. It picks up the wearer's voice through his or her cheek, thereby bypassing ambient noise. The microphone was developed by JMR Systems, Salem, NH.[4]

Although the wearer's voice suffers distortion while passing through his cheek, the mike is designed to acoustically compensate for this effect. Audio is detected by the microphone and amplified by a built-in FET circuit. Microphone system cost is approximately $70.

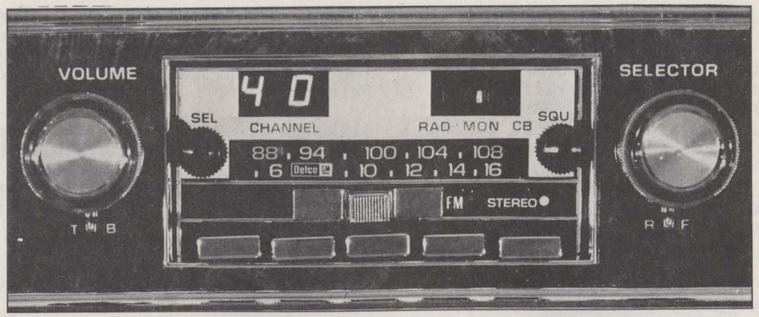
Signal-Booster Antenna. An active signal-booster antenna, called a "solar hot rod," uses solar energy to power itself and to provide an additional 20 dB gain for the CB receiver.[4] Eight solar cells, housed in a plastic case, produce about 20 mW of dc power, which is more than 60 times the level required to run the booster. Excess power is stored in a NiCd battery which alone can run the unit for six weeks. The active antenna costs approximately $50.

CB Frequency Synthesizer IC Chips. Six semiconductor suppliers are now making frequency synthesizers for 40-band CB radios. Three of the suppliers--Signetics, National Semiconductor, and Fairchild Semiconductors--are using bipolar technology which operates directly at the CB frequencies of about 27 MHz. Three other suppliers--RCA, Hughes, and Motorola--are using C-MOS technology which requires much less power drain. The chips generally operate by phase-locked-loop principles--a representative chip is shown in an adjacent photo.

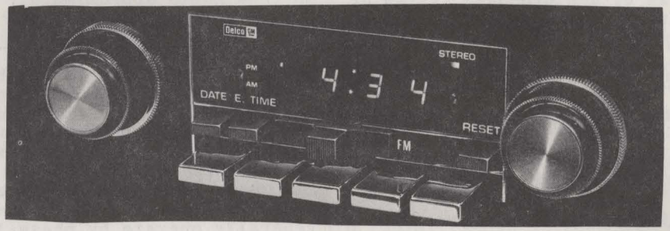
In quantity, these chips will sell for $2 to $5 each. Many of the chips have designed-in capacity for future CB frequency synthesis of up to 100 or more channels.[5] This level of effort in development of specialized large-scale integrated circuits for frequency synthesis is indicative of the confidence the semiconductor industry has in the market potential of CB radio.

References

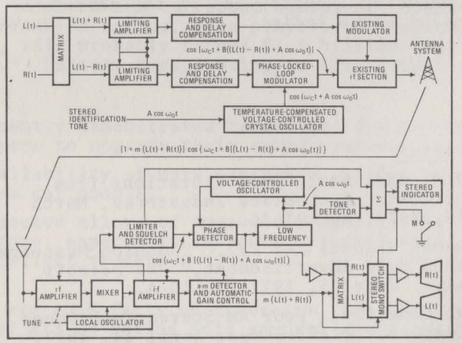
1. J.M. Callahan, "Good Vibrations from Detroit," *Automotive Industries*, March 15, 1977, pp. 31-35.
2. *Sears, Roebuck and Co.*, "Johnson Messenger 123A Sale Advertisement," *The Detroit News*, June 15, 1977, p. 10-A.
3. R. Connolly, "Four AM Stereo Techniques Compete," *Electronics*, April 14, 1977, pp. 82-84.
4. D. Hackmeister, "Roots of Improving CBs Can be Traced to Varied Technologies," *Electronic Design*, April 12, 1977, pp. 32-33.
5. B. Cole, "CB Chip Market is Technology Battlefield," *Electronics*, April 28, 1977, pp. 77-78.



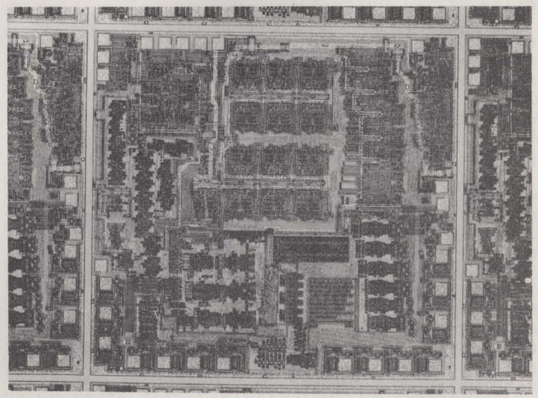
GM Delco Electronics AM-FM Stereo, 40-Channel CB Radio In-Dash Combination, as Installed in a 1977 Oldsmobile (Ref. 1).



GM Delco Electronics Digital Clock Radio. It Displays Time, Date, Station Frequency, and Elapsed Trip Time in Bright Yellow Digital Lights.



One Possible AM Stereo Broadcast and Reception Technique. The Sum of Left-Plus-Right Stereo Channel Information, L(t)+R(t), is Amplitude Modulated; while the Difference of Left-Minus-Right Stereo Channel Information is Phase Modulated (Magnavox System--Ref. 3).



Typical Complexity of Phase-Locked-Loop Frequency Synthesizer Chip for 40-Channel CB Radio Use. (This circuit is made by National Semiconductor and contains the equivalent of 500 to 1000 devices--Ref. 5.)

Editor's Note

We are fortunate in this issue to have received a guest article submitted by Mr. Clark Quinn, a pioneer worker in the field of vehicular communications. Clark retired from General Motors Research Laboratories in 1972, but continues to keep abreast of developments in highway communications. While travelling in Europe this year, Clark observed an operating driver communication system much like the systems he had done research on during the years 1955 to 1970. On his own, he volunteered to write up the following story on the present-day European system of highway communication.

We are pleased to print his article, as it was received from Clark, without editing. You'll agree he writes a pretty good article, but that's what 70 years of age can do for you if you keep on going and follow Clark's example of hard work and zest for life.

DRIVER INFORMATION BY FM RADIO IN WEST GERMANY AND AUSTRIA

by

Clark E. Quinn
General Motors Research Laboratories
Senior Research Engineer, Retired

We have just left the Frankfurt airport and are proceeding south to Mannheim, our destination in West Germany and "home" for the next ten days.

Suddenly the FM radio emits a three-tone chime and then several announcements in German (which I do not understand) and then silence. Our driver does not speak English so there I am in the dark. This radio sequence occurred several times during the trip. Could this be audio signing such as DAIR (Driver Aid, Information, and Routing) or HYCOM (Highway Communications) that we demonstrated at General Motors Research Laboratories **over fifteen years ago?** It was! It works! And has been in operation in West Germany for over two years and in Austria for a year.

The Federal Government of West Germany has over 3500 miles of autobahns (freeways) and some 20,000 miles of interstate routes. About 400 out of every 1000 persons owns a car.

Twelve radio stations transmit on 34 different frequencies. They are financed by set owner fees, advertising and subsidies. Under such government control, there is very close co-operation with the police, road and helicopter patrol, and the radio stations.

Figure 1 shows a map of West Germany divided into six regions, labelled A thru F. Note also that in each region there are a number of FM stations in the 88-108 MHz frequency band providing a nation-wide network of emergency information stations. These stations in addition to their regular programs, encode an inaudible signal for identification and tones for turning on and off the speaker in the receivers.

When emergency information is received at the stations, the program is immediately interrupted by a chime and the information transmitted.

To keep drivers informed of the region and station frequency, there are road signs at frequent intervals such as seen in Figure 2. A region card is also carried in the car for reference.

Any FM car or home radio can tune in to these information stations. However, to make it more convenient and acceptable for the driver, he can take advantage of the encoding system by obtaining an adapter for his FM radio (Figure 3) or can purchase a complete unit with the decoder built in as in Figure 4. The advantages of having the decoder are as follows:

1. When an information station is tuned in, the identification signal is decoded, lighting a light on the panel or on the adapter region selector knob.
2. After the station is tuned in, a touch of a button silences the speaker.
3. The speaker is silent until the station sends the unmuting signal, a chime and the announcement is made and the speaker silenced again.
4. Some receivers have a buzzer to warn when you are out of range of the station. You then tune until the light comes on again, referring to your region card or the posted signs.
5. Some sets have a tuning scanner which stops on the identification signal.

Now you may ask, "What is different than traffic announcements in the U.S.A. sent on some AM and FM stations?" There are three important differences:

1. The program is interrupted to make the emergency announcement as soon as it is received at the station. Waiting for a program or musical number to end can lead you into a traffic jam.
2. You do not have to listen to the regular program to get the emergency reports. The speaker is silent until the reports are sent.

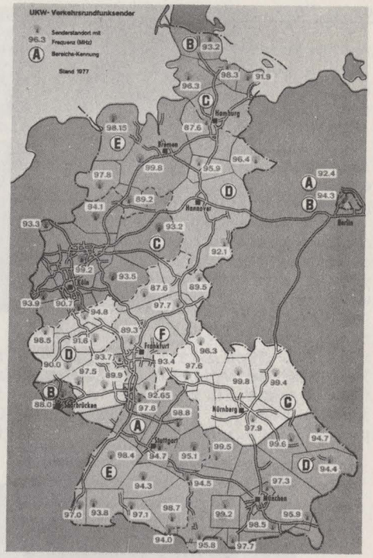


FIGURE 1

Map of Regions and Frequencies of Encoded Information Stations

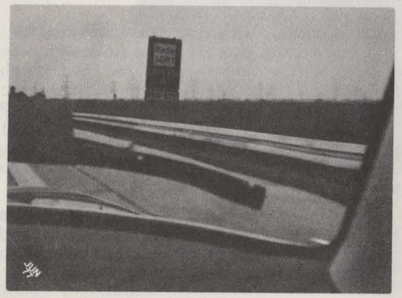


FIGURE 2

Region and Station Frequency Road Sign

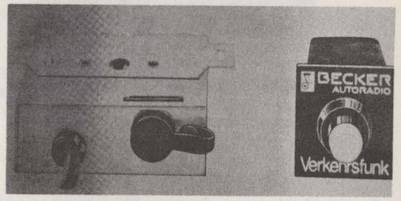


FIGURE 3

FM Receiver Decoder Adapter

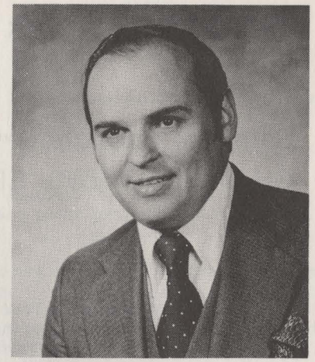
FIGURE 4

FM Car Radio with Built-In Station Decoder

ADCOM HIGHLIGHTS

GEORGE J. MITCHELL

ADCOM NEWS EDITOR



JUNE MEETING

The June meeting of the VTG Adcom was held on June 14, 1977 at the Ramada-O'Hare Inn, Des Plaines, Illinois.

* * *

The following persons were present:

Nick Alimpich
Gaston A. Arredondo
James G. Bender
Arnold Brenner
Carl N. Brooks
John F. Cassidy
William H. Chriss
Martin Cooper
Ken Cunningham
David S. Howarth
Sam Lane
Fred M. Link
Roger Madden
George F. McClure
Sam McConoughey
Tom McKee
Stuart Meyer
James Milculski
R.L. Neal
Neal Shepherd
John Tary

* * *

The following persons were unable to attend the meeting:

CDR. Robert H. Cassis, Jr.
Olin S. Giles
T.O. Jones
George J. Mitchell
J.R. Neubauer
David Talley

* * *

During the President's report, Sam Lane again requested action plans from all Adcom members. He also announced that the Montreal chapter has been dissolved due to inactivity for the last three years. In addition, in response to a request from Mr. Bargellini that Adcom select people to review VTG transactions, the following names were submitted: Messrs. Alimpich, Brenner, Shepherd, Cassidy and Neubauer.

* * *

Unfortunately, the current Treasurer's report was not available due to Roger Madden's recent move to Washington. However, it was reported that we are approximately $15K over budget at the present time. It was also reported that approximately $150 remains to be distributed to close out the Washington Conference. Total income to VTG is $1,150 net.

* * *

Questions posed by T. Jones regarding Convergence '77 finances have been answered directly and a revised distribution plan is to be published in the Newsletter.

* * *

The Finance Committee has prepared the 1978 budget without a VTG input. This budget was based on previous years' performance.

* * *

During Fred Link's conference portion of the meeting, extensive discussion ensued concerning the problems being encountered by the people organizing the 1977 Dallas Conference. Following a telephone conversation between the Adcom members and the Dallas organizers, it was unanimously decided to cancel plans for the 1979 conference in Dallas, and proceed instead with plans for the 1979 conference in Chicago with Martin Cooper appointed as coordinator.

* * *

The possibility of Radio Dealers holding their annual symposium at the same location as the VTG conference was discussed. Gaston Arredondo also discussed the possibilities of holding the Mobile Microwave Symposium at the same location as the VTG conference. It was decided to invite the Mobile Microwave Symposium organizers to join the VTG conference in Denver in 1978. However, three conditions must be met for this to take place: 1) Microwave Symposium be held on a day preceding or following the VTG conference; 2) Microwave Symposium must coordinate with the VTG conference to make arrangements convenient for conference attendees; 3) Microwave Symposium organizers encourage people who want to publish to fit into the formal part of the VTG. Gaston Arredondo is to work out the details and coordinate with Fred Link.

* * *

The next Adcom meeting will be held Tuesday, December 6, 1977 at the Marriott in Los Angeles. It will coincide with NTC.

CHAPTER NEWS

Sam McConoughey
CHAPTER NEWS EDITOR

CHICAGO

"Voice Scramblers for Mobile Radio Systems"
by Tony Hennen, Engineering Manager of Motorola Inc.
Held at Maitre D' Restraunt, Elk Grove Village on June 8, 27 attending.
Mr. Hennen gave a technical discussion, illustrated with slides of digital voice scramblers, including a demonstration of Motorola's MX3000 hand-held portables employing digital voice scramblers.

"911-The Emergency Telephone Number"
by Jeff Rogerson of Illinois Bell Telephone
Held at the Hungry Lion Restraunt, Oakbrook on May 11, 8 attending
Mr. Rogerson discussed the history of 911 including the legal aspects and some of the systems configurations.

"The Job of the F. C. C. Field Operations Bureau
by Bill Meintel of the Federal Communications Commission
Held at the Maitre D' Restraunt in Elk Grove Village on April 20, 18 attending.
Mr. Meintel discussed the role of the Chicago Field Office in the enforcement of the F.C.C. Rules and Regulations.

CLEVELAND

"Introduction to V-TAC"
by Bill Skiles of RCA's Land Mobile Division
Held at the Cleveland Engineering and Science Center on May 17, 23 attending.
Mr. Skiles discussed the engineering features of RCS's latest land mobile product line called "V-TAC"
Election of officers was held at this meeting, the results of which are listed below:

"Peak Load Shaving with Computerized Radio Control"
by Karl Beckman of Motorola
Held at the Cleveland E & S Center on April 11 with 11 attending.
Mr. Beckman described a system employing computer load management techniques in conjunction with radio-controlled switches. The system he described is presently employed by the Buckeye Rural Electric Cooperative and provides significant energy and cost savings for its thousands of consumer/owners.

"The Bell Boy @ System in Northeast Ohio"
by W. C. Brinkerhuff, Project Engineer with Ohio Bell Telephone Co. and Don Russell of Motorola
Held at Ohio Bell's Conference Room on March 8 with attendance limited to 52 because of space limitations, 20 persons were left on the waiting list unable to attend this dinner meeting sponsored by Bell.
The speakers provided small group discussions of the equipment and operating characteristics and a complete tour of Bell's paging facilities. Paging receivers, programming equipment and transmitters were available for a hands-on display adding greatly to the speaker's presentations.

"Santa's Amateur Radio Shopping Bag"
by Dennis Had of Dentron, Inc.
Held December 14, 1976 with 16 attending.

COLUMBUS

"Automated Automobiles"
by Bob Mayhan of Ohio State University
Held June 8, with 8 attending.

"Radio Communications Inside Structures"
by Norm Fowlkes of Columbia Gas System Service Corp.
Held May 11, with 14 attending

Business Meeting held April 13 with 11 attending.

"The Hewlett - Packard Test Van"
by Rick Byrne of Hewlett - Packard
Held March 9 with 9 attending.

LOS ANGELES

"Automatic Vehicle Location (AVL)"
by George Gruver and Otto Reichardt of Hoffman Information Identification, Incorporated.
Held on April 12 with 30 attending.
The speakers discussed the following AVL systems:

Huntington Beach Police Department
L.E.A.A. Cargo theft prevention project in Los Angeles
U.M.T.A. field tests in Philadelphia and upcoming pilot project in Los Angeles.

"Tour of Caltrans Freeway Operations Center"
by Messr. W. Minter and F. Murphy of the California Department of Transportation
Held on June 14 at the Center with 28 attending.
The speakers provided a tour and presentation on the application of electronics to traffic control and monitoring and how a portion of the Los Angeles freeway system is electronically monitored via a computer controlled lighted display map and CRT Screens.

In addition to the program elections were held and signatures gathered on a petition to formally reinstate the Chapter. See below for election results:

NOTE TO CHAPTER SECRETARIES Send your "Meeting Reports" to your new Chapter News Editor, Sam McConoughey c/o Federal Communications Commission, Room 8308 1919 M St. N. W. Washington, D. C. 20554. Tel. No. (202) 632-6400. Also report promptly the result of your Chapter elections.

ELECTION RESULTS

Cleveland Chapter

Chairman
Karl Beckman
278 Baker St.
Berea, OH 44017
(216) 234-4839

Motorola C & E
12955 Snow Rd.
Parma, OH 44130
(216) 267-2210

Asst. Chairman
Carl Brooks
Antenna Specialists
12435 Euclid Ave.
Cleveland, OH 44106
(216) 791-7878

Secretary
William Skiles
25151 Brookpark Rd.
No. Olmstead, OH 44070
(216) 777-9189

RCA-Land Mobile Division
3570 Warrensville Ctr. Rd.
Shaker Heights, OH 44122
(216) 283-1792

Los Angeles Chapter

Chairman
Tom Rubenstein
2333 Utah Ave.
El Segundo, CA 90245
(213) 644-1101

Speakers Bureau

Following is a list of speakers who have indicated their willingness to speak at chapter activities. Contact speakers directly regarding arrangements. Only the "Speaker of the Year" obtains a budget for travel expenses from the VTG. Local expenses for the "Speaker of the Year" are normally provided by the local chapter, and Section, and student activity if a joint meeting. Arrangements for other speakers listed is by individual arrangements with that speaker.

Speaker of the Year July 1977 - June 78

Mr. Fred M. Link Life-Fellow
Robin Hill
Pittstown, N. J. 08867
(201) 735-8310

"The History and Growth of Two-way Radio from 1927 to Now."

An outstanding speaker, a pioneer in the development of FM two-way mobile radio, and a colorful personality. Mr. Link is an ideal speaker to boost membership, inspire young students, bring out the stay-at-homes with his first hand stories about the great personalities and the technical triumphs and tribulations of our rapidly growing vehicular technology. His illustrated talk is one that you will want to be sure to hold jointly with your Section and Student Activity and its not so technical that a general audience wouldn't enjoy and benefit from.

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Other Speakers

Mr. Martin Cooper, Vice President
Motorola, Inc. 1301 E. Algonquin Rd.
Schaumberg, Illinois 60172
(312) 576-5375

"The Future of Land-Mobile Radio and High Capacity Cellular Mobile Telephone Systems"

"Marty" Cooper's enthusiam about the future of mobile radio is infectuous. He's a great speaker and while Fred Link would be a tough act for anyone to follow, Marty's sequel to Fred would be "You ain't Seen nothin' yet!" Marty's involvement with private and public mobile telephone systems makes him extremely well equipped to tell your audiences of the future systems now under development.

oooooooooooooooooo

Mr. Neal Pike
Federal Communications Commission
S&SRS Bureau I&PS Rules, Division
Room 5120 1919 M St. N. W.
Washington, D. C. 20554
(202) 632-6497

"The Spectrum and Land Mobile Innovation."

Want to know more about how the FCC manages its land mobile Public Safety, Industrial and Land Transportation Spectrum? Or how new rules are developed, or the impact of the World Administrative Radio Conference in Geneva in 1979, or do you have specific regulatory questions? Then Neal Pike is the speaker for your meeting. Neal is a highly competent speaker and can tailor his talk to specific areas of interest to your audience.

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Other Suggested Candidate Speakers:

Mr. B. Ebstein
Sachs/Freeman Associates
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"The Planning of Public Safety Telecommunications Systems"

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"The Roles of Government in Mobile Communications"

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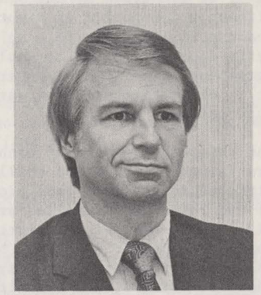
THE WASHINGTON SCENE

By ERIC SCHIMMEL
WASHINGTON NEWS EDITOR



In deference to the automotive electronics contingent of the VTG, I think it is time to devote some space in this column to automotive related interests. Coincidently, the FCC has recently acted upon two proceedings which will affect the design of AM broadcast radios. One of these, Docket 20509, has established a new class of station to transmit 'Traveler's Information' to motorists. The appendix of this Report and Order is reproduced below. The other rulemaking proceeding is a Notice of Inquiry in the matter of establishing an AM stereo broadcasting system, Docket 21313. Due to space limitations, only selected paragraphs are being included in this column. Complete texts of these, and previously referenced Dockets, are available to interested readers from the FCC or its duplicating contractor. I would be happy to assist anyone having difficulty in communicating with the Communications Commission in making such requests for additional information.

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Amendment of Parts 2 and 89 of the Rules to provide for the use of frequencies 530, 1606, and 1612 kHz by stations in the Local Government Radio Services for the transmission of certain kinds of information to the traveling public.) Docket No. 20509

Amendment of parts 2 and 73 of the Rules to provide for Use of Frequencies 530, 1606, 1612 kHz by Community Access Non-Commercial Stations for Locally Produced Public Affairs, Musical, Dramatic and Cultural Programming.

REPORT AND ORDER

Appendix C

Parts 2 and 89 of Chapter I of Title 47 of the Code of Federal Regulations are amended as follows:

A. Part 2 is amended as follows:

(1) In Section 2.1, a definition is added in alphabetical sequence to read as follows:

* * * * * * * * *

Travelers Information Station A base station in the Local Government Radio Service used to transmit non-commercial voice information pertaining to traffic and road conditions, traffic hazard and travelers advisories, directions, availability of lodging, rest stops and service stations, and descriptions of local points of interest.

(2) In Section 2.106, the Table of Frequency Allocations is amended in columns 7 through 11 for the bands 510-535 kHz and 1605-1715 kHz; footnote US14 is amended and a new footnote US221 is added, as follows:

Band (kHz)	Service	Class of Station	Frequency (kHz)	Nature OF SERVICE of Station
7	8	9	10	11
*	*	*	*	*
510-535 (US14) (US221)	***	***	530	Traveler's Information
*	*	*	*	*
1605-1715 (US97) (US221)	***	***	1610	Traveler's Information
*	*	*	*	*

US14 The frequency band 510-535 kHz is not available to non-Government stations except that the frequency 512 kHz is available for use by non-Government ship telegraph stations as a working frequency, and except as provided by Footnote US221. When 500 kHz is being used for distress purposes, ship and coast stations may use 512 kHz for calling.

* * *

(iii) A Travelers Information Station authorization may be suspended, modified, or withdrawn by the Commission without prior notice of right to hearing if necessary to resolve interference conflicts, to implement agreements with foreign governments, or in other circumstances warranting such action.

(iv) The transmitting site of each Travelers Information Station shall be restricted to the immediate vicinity of the following specified areas: air, train, and bus transportation terminals, public parks and historical sites, interstate highway interchanges, bridges, and tunnels.

(v) A Travelers Information Station shall normally be authorized to use a single transmitter. However, a system of stations, with each station in the system employing a separate transmitter, may be authorized for a specified area provided sufficient need is demonstrated by the applicant.

(2) Travelers Information Stations shall transmit only non-commercial voice information pertaining to traffic and road conditions, traffic hazard and travel advisories, directions, availability of lodging, rest stops and service stations, and descriptions of local points of interest. It is not permissible to identify the commercial name of any business establishment whose service may be available within or outside the coverage area of a Travelers Information Station. However, to facilitate announcements concerning departures/arrivals and parking areas at air, train, and bus terminals, the trade name identification of carriers is permitted.

(3) Each application for a station or system shall be accompanied by:

(i) A statement certifying that the transmitting site of the Travelers Information Station will be located at least 15.0 km, (9.3 miles) measured orthogonally, outside the measured 0.5 mV/meter daytime contour of any AM broadcast station operating on a first adjacent channel (540 kHz or 1600 kHz). If the measured contour is not available, then the calculated 0.5 mV/m field strength contour shall be acceptable. These contours are available for inspection at the concerned AM broadcast station and FCC offices in Washington, D.C.

(ii) The applicant is advised that cross-modulation and intermodulation interference effects may result from the operation of a Travelers Information Station in the vicinity of an AM broadcast station on the second or third adjacent frequency. Accordingly, the applicant shall certify that he has considered these possible interference effects and, to the best of his knowledge, does not foresee harmful interference occurring to broadcast stations operating on 550 kHz, 560 kHz, 1580 kHz, or 1590 kHz. The Commission reserves the right to reconsider the status of any Travelers Information Station if such interference effects are caused to broadcast stations.

(v) Separation requirements.

(a) For co-channel stations operating under different licensees, the following minimum separation distances shall apply:

(1) 0.50 km (0.31 miles) for the case when both stations are using cable antennas.

(2) 7.50 km (4.66 miles) for the case when one station is using a conventional antenna and the other is using a cable antenna.

(3) 15.0 km (9.3 miles) for the case when both stations are using conventional antennas.

(b) For a system of co-channel transmitters operating under a single authorization utilizing either cable or conventional antennas, or both, no minimum separation dis- is required.

(c) An applicant desiring to locate a station that does not comply with the separation requirements of this section shall coordinate with the affected station.

(5) Each application for a station or system of stations for a specified area shall be accompanied by a supplementary statement showing compliance with the technical standards contained in this section and additionally:

(i) A map showing the geographical location of each transmitter site and an estimate of the signal strength at the contour of the desired coverage area. For a cable system, the contour to be shown is the estimated field strength at 60 meters (197 feet) from any point on the cable. For a conventional radiating antenna, the estimated field strength contour at 1.5 km (0.93 mile) shall be shown. A contour map comprised of actual on-the-air measurements shall be submitted to the Commission within 60 days after station authorization or completion of station construction, whichever occurs latter. A sufficient number of points shall be chosen at the specified distances (extrapolated measurements are acceptable) to adequately show compliance with the field strength limits.

(ii) For each transmitter site, the transmitter's output power, the type of antenna utilized, its length (for a cable system), its height above ground, distance from transmitter to the antenna, and the elevation above sea level at the transmitting site.

(7) In Section 89.124, subparagraph (k) is amended as follows:

§89.124 Single sideband radiotelephone technical specifications.

* * *

(k) Except for Travelers Information Stations in the Local Government Radio Service, A3J emission for radiotelephone is mandatory in all new radio-telephone systems operating on frequencies below 25 MHz on or after September 8, 1972 and in all other non-exempted systems 5 years after that date.

(8) In Section 89.255, a new subparagraph (d) is added to read as follows:

§89.255 Points of communication.

* * *

(d) Travelers Information Stations are authorized to transmit certain information (see Section 89.102(c) (2) of this Part) to members of the traveling public.

* * * * * *

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
AM Stereophonic Broadcasting.) Docket No. 21313
)
)

NOTICE OF INQUIRY

Adopted: June 22, 1977; Released: July 6, 1977

INTRODUCTION

The Commission has before it two petitions requesting the institution of rulemaking proceedings looking toward the adoption of rules for the transmission of stereophonic programming by AM broadcast stations. One petition was filed by Kahn Communications, Inc. (hereafter identified as Kahn), a New York corporation engaged in research and manufacturing of electronic communications, telephone, and broadcasting equipment, that has developed and tested a system for transmitting binaural stereophonic signals for the AM broadcast service. The second petitioner is the Association for AM Stereo, Inc. (identified as AAMSI), a non-profit corporation of 26 licensees of broadcast stations and one equipment manufacturer, founded for the purpose of encouraging the adoption of standards for stereophonic transmission by AM stations. The National AM Stereophonic Radio Committee ("NAMSRC") filed comments requesting that no action be taken on the Kahn petition, to which Kahn filed a reply.

DESCRIPTION OF PENDING PETITIONS

Kahn states that the technology for compatible stereophonic transmissions by AM broadcast stations has been fully developed and tested over the past 16-year period, and that permitting use of this technology would allow radio listeners to enjoy stereophonic reception with little or no additional investment in receiving equipment. Kahn claims that his system for AM stereophonic transmissions is completely compatible with existing station transmitting equipment and with monophonic receivers, causes no additional interference to other stations, will provide stereo reception using two conventional receivers, and could provide high quality stereo with receivers designed for AM stereo reception.

AAMSI states that "AM stereo is an idea whose time has come" and requests that the Commission take a posture of leadership and active measures to promote the adoption of AM stereo standards. AAMSI acknowledges the development of at least two systems for AM stereophonic transmissions without endorsing a specific technology, but does state that AM stations are now at a competitive disadvantage as compared with the FM service that transmits stereo. The Association also believes that the public interest would be served by AM stereo even though recognizing such service may not have the full fidelity of FM.

The National AM Stereophonic Radio Committee (NAMSRC), an organization sponsored by the Institute of Electrical and Electronics Engineers, the Electronics Industries Association, the National Association of Broadcasters and the National Radio Broadcasters Association, has opposed Kahn's request for a rulemaking proceeding. NAMSRC states that it is in the process of planning and conducting a series of extensive tests on several systems, which have been submitted to it, for transmitting stereophonic signals by AM broadcast stations, and that the results of such tests will provide valuable information concerning the establishment of standards for an effective AM stereophonic broadcast service. NAMSRC believes that it would be premature to proceed with rulemaking based on the limited information available on the petitioner's AM stereophonic broadcast system. Kahn responded to the NAMSRC's objections by stating that extensive field tests of effective AM stereo have been accomplished, that it is the Commission's obligation in the public interest to expeditiously proceed to make this already developed technology available to radio listeners, and that the Commission should neither recognize, nor depend on the work of, committees such as NAMSRC which may not be truly representative in its rulemaking process. Kahn contends that such committees eliminate the rights of small petitioners, who, for various reasons, cannot or believe they should not participate in them. Such committees, Kahn argues, result in unnecessary delays in implementing proven technology.

THE INQUIRY

Kahn suggests several requirements for a compatible AM stereophonic broadcast service:

(a) No increase in adjacent or co-channel interference.

(b) No loss of AM monophonic coverage; i.e., full modulation capability.

(c) No increase in distortion when received by conventional monophonic receivers.

(d) Compatibility with conventional AM broadcast transmitters.

(e) Capable of good quality stereo reception in the home and in the car. (Up to 30 dB of stereo separation.)

(f) Allows stereo reception without the purchase of special receivers.

Others may believe different requirements should be considered or that some requirements should be given greater relative importance.

The Commission believes that there are basic public interest issues that it must consider prior to proceeding with rulemaking to establish technical standards for an AM stereophonic radio broadcast service. Among the Commission's concerns are the following:

(a) The actual interest and need on the part of the public for an AM stereophonic broadcast service.

(b) The extent the broadcasting industry and the manufacturers of home and automobile receivers are interested in meeting the public's interest in AM stereophonic radio.

(c) The impact an AM stereophonic service would have on the continuing development of FM broadcasting.

(d) The cost impact on broadcasters for installation of equipment and stereophonic programming and on the public for receiving equipment.

(e) The compatibility of AM stereophonic transmissions with all existing international radio regulations, terms of the North American Radio Broadcast Agreement (NARBA) and any other international agreements to which the United States is a party.

(f) The extent to which the Commission should regulate stereophonic broadcast system performance from studio through radiated signal to insure that the public is provided with a quality program service.

(g) The possibility of a "standard" response characteristic for AM stereo receivers to avoid the present problem in AM broadcasting where the stations use special processing of their audio signals to overcome limitations in many receivers.

We believe that the public, broadcasters and manufacturers of both broadcasting and receiving equipment should now have the opportunity to comment on the recommendations by Kahn, to respond to our questions, and to submit any additional information they believe should be considered in this proceeding.

Federal Communications Commission

MEETINGS

WESTERN ELECTRONICS SHOW (WESCON)
Civic Auditorium
San Francisco, California

September 20-23, 1977

* * *

OCEANS '77
Bonaventure Hotel
Los Angeles, California

October 17-19, 1977

* * *

INTERNATIONAL ELECTRON DEVICES MEETING
Hilton
Washington, D.C.

December 5-7, 1977

* * *

NATIONAL TELECOMMUNICATIONS CONFERENCE
Marriott Hotel
Los Angeles, California

December 5-7, 1977

ADCOM NOMINEES

The VTG Administrative Committee has approved the following slate of nominees as candidates for the 1978 through 1980 ADCOM:

Gaston Arredondo	Bell Telephone Laboratories
Carl Brooks	Antenna Specialists
Dennis Bodson	Office of Technology & Standards
John Dettra	Dettra Communications
Trevor Jones	General Motors Corporation
Sam Lane	Magnasync-Moviola
Fred Link	Consultant
Sam McConoughey	Federal Communications Commission
George Mitchell	RCA
Jack Neubauer	Urban Sciences

The nominee names and resumes' will appear on the VTG ballot in late August or early September. The five elected candidates will take office on January 1, 1978.

Nick Alimpich
Chairman, VTG Nominations Committee