

*Roger [initials]*



IEEE

VEHICULAR TECHNOLOGY SOCIETY

NEWSLETTER

Vol. 30, No. 3, August 1983

(ISSN 0161-7887)

Editor: A. Kent Johnson

## Society Presidency Changes Hands





# President's Message

**Sam McConoughey**  
President  
IEEE Vehicular Technology Society

The Board meeting held in Toronto on May 24th preceded the 33rd Annual Conference. Both are reported elsewhere in this issue, but I would like to add that neither the Board or the Conference could succeed without the efforts of many dedicated professionals giving unselfishly of themselves.

I'd also like to call your attention to the "call for papers" for the 34th Annual Conference to be held in Pittsburgh, PA, at the Marriott-Monroeville, May 21-23, 1984. Since tempus does fugit, place it on your calendar now!

Please read the minutes of the Board meeting for details of our Finances, Awards, Future Conferences, Publications, and the Ad Hoc Propagation Committee.

I see no reason why our society should not grow and prosper in the future. We've been through some lean times recently, but the U.S. Automotive industry seems to be making a strong comeback and with even more electronics content in future vehicles. (See the last issue of the Newsletter.) The land mobile industry seer's are predicting \$4 billion cellular mobile radio industry by 1990, to say nothing of the private land mobile market. The outlook for transportation is currently less optimistic - but the new gas tax may help that.

With these prospects in mind, I hope with the assistance of an excellent Board of Directors, to lay plans for our future. More about this later.

I'd like to thank the Board for their unanimous vote of confidence in electing me as their president, Bob Fenton as Vice President and Art Goldsmith as Treasurer. My thanks go also to Sam Leslie for agreeing to continue as Secretary and to Dave Talley agreeing to stay on as Financial Advisor.

We all owe Stu Meyer, now Jr. Past President and Roger Madden, Sr. Past President, a vote of thanks for their past and continued support.

# Newsletter Staff

# Editor's Notes



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Our Annual Conference in Toronto was a huge success and C. Vinodrai and his committee deserve a big vote of thanks from all of us. We appreciate the conference write-up and the conference photos submitted by Vino.

One of the highlights of the conference was the transfer of the Society Presidency from Stuart Meyer to Sam McConoughey. Those of us who have worked closely with Stu appreciate his efforts very much and extend our thanks to him while at the same time we look forward to working with Sam as we know of his dedication to the goals of VTS. Congratulations to both Stu and Sam.

IEEE Vehicular Technology Society Newsletter is published quarterly by the Vehicular Technology Society 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 Society. Printed in U.S.A. Second-class postage paid at New York, NY and at additional mailing offices. Postmaster: Send address changes to IEEE, 445 Hoes Lane, Piscataway, NJ 08854.

Month of Issue	Final Copy to be Rec'd By IEEE Editor*	Target Mailing Date
November	9-13-83	10-20-83
February	12-16-83	1-20-84
May	3-09-84	4-13-84
August	6-09-84	7-13-84

\*Inputs for newsletter staff editors should be received by newsletter editor at least one week before these dates.

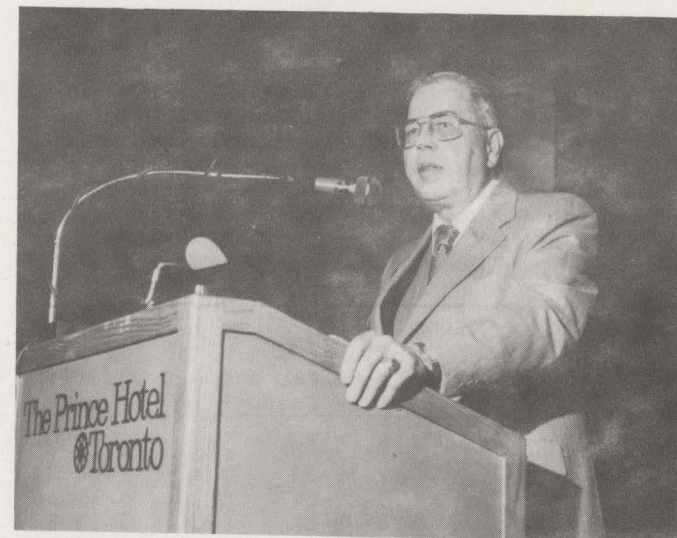
# Society Officers and Board of Directors

## SOCIETY OFFICERS

<b>Society President</b>	<b>Society Vice President</b>	<b>Society Secretary</b>	<b>Society Treasurer</b>
SAM McCONOUGHY Federal Communications Commission 1919 "M" Street, N.W. Washington, D.C. 20554 (202) 634-1854	ROBERT E. FENTON Ohio State University 2015 Neil Avenue Columbus, OH 43210 (614) 422-4310 (614) 457-0479 Home	SAMUEL A. LESLIE U.S. Mobile Radio Dept. General Electric Co. Mountain View Road Lynchburg, VA 24502 (804) 528-7115 (804) 525-7589 Home	ARTHUR GOLDSMITH 4303 Wynnwood Drive Annandale, VA 22003 (703) 941-1323

## BOARD OF DIRECTORS

NAME	RESPONSIBILITY	TERM
Robert E. Fenton	Vice President	Jan83-Dec85
Arthur Goldsmith	Treasurer	Jan82-Dec84
Al Goldstein	Conference Coordinator	Jan82-Dec83
A. Kent Johnson	Newsletter Editor	Jan82-Dec83
Samuel A. Leslie	Society Secretary	Jan82-Dec83
Fred M. Link	Chairman, National Meetings Comm.	Jan82-Dec83
Charles Lynk	Chairman, Paper of Year Comm.	Jan83-Dec85
Roger Madden	Senior Past President	Jan82-Dec84
Robert A. Mazzola	Chairman, Membership Committee	Jan82-Dec84
George F. McClure	Chairman of Publications Comm. and Transactions Editor	Jan83-Dec85
Samuel R. McConoughey	President	Jan82-Dec83
Stuart Meyer	Immediate Past President	Jan83-Dec85
James J. Mikulski	Awards Committee	Jan82-Dec84
Ronald G. Rule	Education Committee	Jan82-Dec84
Eric Schimmel	Chairman, CB Radio Committee	Jan83-Dec85



Incoming Society President Sam McConoughey



1983 VTS Conference Committee

# Board of Directors Report

## Samuel A. Leslie VTS Secretary

### IEEE VTS BOARD OF DIRECTORS MEETING - TORONTO, ONTARIO

The IEEE VTS Board of Directors met on May 24, 1983 at the Prince Hotel in Toronto, Ontario. The meeting was held on the afternoon preceeding the annual IEEE VTS Conference.

The Board meeting was called to order at 2:00 PM.

### ROLL CALL

The following were in attendance:

*Stuart Meyer	President (Immediate Past Pres.)
*Robert Fenton	Treasurer (Vice Pres. elect)
*Jim Mikulski	Awards Committee
*Al Goldstein	National Conference Coordinator
*Fred Link	Chairman, National Site Selection Committee
*Sam McConoughey	Vice President (Pres. elect)
*Roger Madden	Immediate (Senior) Past Pres.
*Art Goldsmith	Member-at-Large (Treas. elect)
*Kent Johnson	Newsletter Editor
*George McClure	Transactions Editor
*Sam Leslie	Secretary
Vino Vinodrai	'83 Conference Chairman
Tom Selis	'84 Conference Chairman
Dave Talley	VTS Financial Advisor

(\* denotes elected Board member)

Eleven of the fourteen present were elected Board members. Thus, a quorum was present for voting on matters before the Board.

### MINUTES OF LAST MEETING

The minutes of the October, 1982 full Board meeting were unanimously approved as published and subsequently corrected by the Executive committee during the November 16, 1982 meeting.

### COMMITTEE REPORTS

#### Financial Report:

Bob Fenton and Dave Talley reported that the outlook for VTS's finances is not quite as bleak as it appeared at the last meeting, due primarily to the return of seed money and small surpluses from the San Diego and Washington conferences, increased dues, and a reduction in spending by the Board. It was noted that the Board will still have to carefully control its budget to prevent further erosion of its assets.

Dave Talley also pointed out a bookkeeping problem with IEEE HQ in the reporting of the \$25K of VTS funds which have been set aside for the Dan Noble award. Stu Meyer assigned Dave the task of checking with HQ to clarify this matter.

#### Awards Committee Report:

Stu Meyer reported that Jack Neubauer is in the process of finalizing the VTS awards program with IEEE Headquarters.

Stu then read a letter from Mr. James B. Owens, IEEE President, with said letter stating that VTS has been allocated eight of the 1,984 Centennial Medals to be awarded next year. Stu indicated that this letter and an attached guideline has been forwarded to Jack Neubauer, the Awards Committee Chairman.

Roger Madden reported that nominations are available for the Sperry Award, which is transportation related. He also reports that there have been no nominees for the IEEE Simon Ramo Award. Roger is to check with Trevor Jones for guidance toward the selection of qualified automotive type nominees.

A potential problem of where the Avant Garde applications are being forwarded was discussed since none were received since the last Board meeting. The application form listed in the VTS newsletter does not specifically say what the mailing address should be; Kent Johnson is to put the correct address on the same page as the form to prevent future confusion on this matter.

Stu Meyer also reported that the Cleveland VTS chapter was the clear leader for the 1982 chapter of the year award, based on meeting attendance. He also pointed out a problem with many of the chapters that do not bother to report their meetings to Gaspar Messina, the Chapter Activities Chairman.

#### Dan Noble Award:

Al Goldstein reported that the second recipient of the Dan Noble Award is Greg E. Chamitoff of California Polytechnic Institute. He further stated that \$5000 has been paid to the first recipient, and that payments to the Mr. Chamitoff will be in two increments, as before. He also indicated that the current interest income from the \$50K fund more than covers the anticipated award amount.

#### Publications Committee Report:

George McClure reported that the Society on Instrumentation and Measurement has invited continued close cooperation with VTS in setting standards for automotive-related instrumentation and measurements.

George further indicated that John Davis, the Editor of the upcoming special COMSOC issue on vehicular communications is highly in favor of making this a joint VTS/COMSOC special issue. The target is for around 35 papers, with publication to be around May or so of next year.

The January issue of the VTS Transactions was reported as being larger than anticipated, but that the overall yearly page budget should be just about on target.

#### 800MHz Propagation Committee, Special Report

Sam McConoughey reported that three meetings of the IEEE VTS propagation committee had been held. This committee is chaired by Neal Shepard, with Floyd Shipley serving as secretary. They have approximately 20 propagation experts from the industry serving on this committee, and their goal is to have a draft of at least a basic document by the end of the year.

Discussion on the scope of the draft ensued, with Jim Mikulski expressing a concern that some members of the committee wanted more out of the document than could be reasonably obtainable. Specifically, some were looking for a system design document specifically geared toward cellular services, without regard for other services or modulation techniques. After discussion of the pros and cons, the Board directed the committee to concentrate first on a universal propagation model which would be suitable for any 800MHz service, and then to later consider service-specific parameters as addendums or appendices to that model as appropriate. Therefore, the first draft due at the end of the year is to consist of a universal 800MHz propagation model.

OLD BUSINESS

Several items of an old business nature were covered at the meeting, as follows:

'84 VTS Conference in Pittsburgh:

Tom Selis reported that the location for the Pittsburgh conference has been selected, and that it is the Marriott/Monroeville. The date of the conference is May 21-23, and the theme will be "THE SECOND CENTURY: The Age of Vehicular Technology".

To support this conference, McClure moved, Fenton seconded that \$1500 seed money be made available to the Pittsburgh conference committee. Vote was unanimous in favor. Tom also reported that the local Pittsburgh IEEE section has also voted \$1500 seed money to support the conference.

'85 VTS Conference Site Selection:

Fred Link reported that Boulder, Colorado was a prime location for the 1985 conference, with many of the IEEE VTS and COMSOC members in the area willing to support the conference. Fred then moved, Art Goldsmith seconded, that Boulder be accepted as the site for the 1985 conference. The vote was unanimous in favor.

'86 VTS Conference Site Discussion:

Fred reported that there were no definite candidates in sight at this time. Following discussion by the Board, three potential areas were identified. They are Chicago, Dallas, and Miami. Al Goldstein is to explore further both Chicago and Dallas as to the feasibility of holding the conference in either one of these cities, while George McClure is to explore the Miami possibility.

Automotive Electronics Associate Editor:

To broaden the scope of the editorship for this domain of vehicular technology, Bob Fenton made a motion that the title "Automotive Electronics Associate Editor" be changed to read "Vehicular Electronics Associate Editor" to allow non-automotive (i.e., off-road vehicles, truck, etc.) electronics to also be included. The motion was seconded by George McClure, and the vote was unanimous in favor.

Transportation Systems Associate Editor:

George McClure reported that, at present, no candidates are identified. Bob Fenton continues as the acting editor.

VTS Support of Land Mobile Expo East Conference:

Stu Meyer reported that this conference is now only looking for individual support in the giving of papers or tutorials, and is not looking for official participation from VTS. Thus, this subject is being dropped from further consideration by the Board.

Manufacturer Exhibits Procedure:

Sam McConoughey reported that his committee has prepared a rough draft on the new procedures for manufacturer exhibits for future VTS conferences. Concern was expressed by some of the Board members on the applicability of the 1/2-hour symposium procedure; otherwise they felt that the rest of the draft was acceptable. Stu Meyer directed the 1984 Pittsburgh conference committee to proceed as they best see fit (within the constraints that no exhibit space be provided), and that the Board would explore the symposium concept further at the next meeting.

NEW BUSINESS

The Board covered the following new business items at this meeting:

Convergence '84 Conference:

Trevor Jones reported via phone that it is VTS's turn to provide seed money support for the Convergence conference. Based on experience from the last VTS-supported conference, Sam McConoughey made a

motion that up to \$10K seed money is to be provided to the Convergence conference committee on an as-needed basis. Roger Madden seconded the motion, and the vote was unanimous in favor.

The Board assigned Al Goldstein and Bob Fenton the task of making sure that the local Detroit VTS Chapter provides adequate support for the conference.

IEEE Society Centennial Planning:

Fred Link has agreed to chair and act as a point of contact between the IEEE Centennial Planning Committee and the VTS Centennial Committee. At present, John McCormick has agreed to serve on the VTS Centennial Committee; other committee members are expected to be obtained from the ranks of the "Avant Garde". Stu Meyer is to canvas the "Avant Garde" award recipients to obtain additional help and/or history information for this committee. To date, nothing new has been received from the IEEE Centennial Committee on what is expected from VTS.

Election of Board Officers for the 1983 Term:

Roger Madden presented a slate with Sam McConoughey for president, Bob Fenton for vice president, and Art Goldsmith for treasurer. No other nominations were received from the floor, after which Fred Link moved, Jim Mikulski seconded, that the nominations be closed. Board vote was unanimous in favor. Roger Madden then moved, Al Goldstein seconded that the slate be accepted. The vote again was unanimous in favor.

Sam McConoughey then appointed Sam Leslie to continue as the Society Secretary, and Dave Talley to continue as the Society Financial Advisor.

Election to the Board for the 1984-1986 Term:

Roger Madden reported that the task for obtaining nominations for the upcoming 3-year term falls upon the immediate past president, Stu Meyer. The secretary reported that the board members whose terms are expiring at the end of this year are Fred Link, Sam McConoughey, Al Goldstein, Kent Johnson, and Sam Leslie.

Standards for Mobile Ignition Radiation:

Roger Madden suggested to the Board that this standard be coordinated with SAE J551, and that participation should be via Society members with a vehicular electronics background.

Standards for Transmitter and Receiver Spurious Measurement:

After discussion, the Board decided to set aside these standards for later consideration, pending outcome of the current FCC actions toward deregulation.

IEEE VTS Speaker's Program:

Sam McConoughey reported that not much activity has been occurring with the speaker's program, particularly in light of recent Board efforts to cut back on expenditures. Sam is to update the speaker's list within the next couple of weeks or so.

Student Council Request for Funds:

Roger Madden reported on a request to roll over the \$500 recently distributed to VTS to the IEEE Student Council. Roger then made a motion that the funds received from the Oceanic Engineering Council be made available to the Student Council on a one-time basis. Bob Fenton seconded the motion, and the Board vote was unanimous in favor.

IEEE Reimbursement of Dues:

The Board discussed a letter from IEEE HQ which indicated that IEEE would pay half of the dues fee for a newly subscribed VTS member during 1984 if VTS would pay the other half. The Board through voice discussion decided not to respond to this offer since it appears to offer no concrete evidence that it will provide a permanent increase in VTS membership, and that it may cause some members to drop their current membership so that they can resubscribe "for free" next year. Furthermore, member costs for publications and other services are currently running more than

twice than the current VTS dues, and such a program would serve to further degrade the Society's financial status.

Travel Funds

Roger Madden presented a motion that the VTS president be authorized funds where otherwise not available from other sources for travel expenses to IEEE TAB events and to regularly scheduled VTS meetings, not to exceed \$1000 for any one trip, and not to exceed \$5000 total for the calendar year. Discussion that followed focused on keeping expenses to a minimum, and the fact that the VTS president already has budgeted a fixed amount for travel or other expenses as he sees fit. After the above discussion, the motion died since it was felt that no further action was required.

Board Vacancy:

Stu Meyer reported that George Mitchell had resigned from the Board, due to business commitments. Sam McConoughey then moved, Fred Link seconded that Jim Mikulski be appointed to fill the remainder of Mitchell's term. The Board vote was unanimous in favor.

Next Board Meeting:

The next full Board meeting will be held in the Washington, D.C., area sometime during the first week in December, probably on the 6th or 8th. The secretary will send out a notice several weeks ahead of time with the location, date and times specified so that Board members may make travel plans.

Adjournment

Jim Mikulski moved, Al Goldstein seconded that the meeting be adjourned. Board vote was unanimous in favor, and the meeting was adjourned at 6:23 PM.

Respectfully submitted,

*Samuel A. Leslie*

Samuel A. Leslie  
VTS Secretary



Head table at Awards Luncheon



Sam McConoughey (left) and Roger Madden



Sam McConoughey (left) presenting gift to Mr. & Mrs. Stuart Meyer



Roger Madden (on right) presenting Avant Garde Award to Tom Selis



# Chapter News

**Gaspar Messina**  
Chapter News Editor

Meetings

New Jersey Coast (EMC/VTS)

"Electronic Design Constants and Approaches for Systems Used in Radiation Environments"  
by Dr. George J. Brucker, holder of a PhD degree in Physics from N.Y.U. Dr. Brucker has spent the last 20 years at RCA David Sarnoff Research Center, Princeton, N.J. The talk stressed Gammy ray and EMP hardness for satellite operational systems. Dr. Brucker is a member of the Speakers Directory  
Held on April 26, 1983, with 32 attending including 2 guests.

" Basic All-Weather Open Field EMI Test Site"  
by Mr. Don Heirman, member of the Technical Staff of American Bell Inc., Holmdel, New Jersey. Mr. Heirman is a past chairman of the IEEE EMC Society  
Held on February 15, 1983, with 28 people attending.

Luncheon

New Jersey Coast (EMC/VTS)

A luncheon meeting is planned for 21 June 1983 at Colts Neck Inn to accomplish the election of officers for the 1983-1984 term. The slate will be the incumbent officers who will serve one more year if no nominations are received prior to this meeting  
Presentation topic will be "Mobile Subscriber Equipment".

Awards

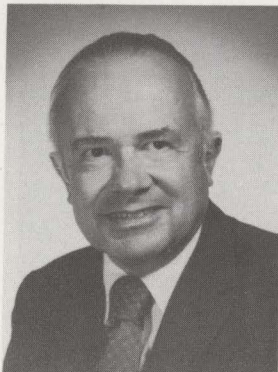
New Jersey Coast (EMC/VTS)

A presentation to Paul Major was made at Fellow Awards Dinner of 11 March 1983 by Chapter Chairman S. Krevsky. Paul was presented with the EMC/VT Chapter Man of the Year Award for unselfish dedicated service to the Chapter.

Gaspar Messina  
Editor and Chapter Activities Chairman  
9800 Marquette Drive  
Bethesda, Maryland 20817

# 1983 IEEE Vehicular Technology Society Directory of Chapters and Chairpersons

BOSTON	Stuart J. Lipoff Arthur D. Little Inc. Cambridge, MA 02140 (617) 864-5770	MONTREAL	None
CANTON	C. T. Unger 3759 Crestwood Drive, NW Canton, OH 44708 (216) 477-5918	NEBRASKA	None
CHICAGO	Phil Petersen Acting Chairman	NEW JERSEY COAST	Seymour Krevsky PRC TRI-TAC PMO 142 State Hwy. 35 Eatontown, N.J. 07724 (201) 544-9223
CINCINNATI-DAYTON	Frederick R. Bay 7378 Commonwealth Drive Cincinnati, OH 45224	NEW YORK CITY	George Graul 250 Ogden Avenue Jersey City, N.J. 07307 (201) 798-4403
CLEVELAND	Mr. Fritz Hemrich City of Euclid 545 East 222nd St. Euclid, OH 44123 (216) 289-2759	ORLANDO	Melvin C. Kelch 3118 Ivel Drive Orlando, FL 32806
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DALLAS	Paul Hartman 820 Thoreau Allen, TX 75002	SACRAMENTO	Alfred E. Jacobus 2804 Chad Court Sacramento, CA 95827 (916) 445-8803
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FLORIDA-West Coast	Acting Chairman William C. Prickett General Telephone Company of Florida 610 Morgan Street Mail Code 66 Tampa, FL 33601 (813) 229-6850 Ext. 2873	SYRACUSE	None
LOS ANGELES	Mr. Gary David Gray Orange County Communications 481 The City Drive South Orange, California 92668 (714) 834-2137	TOKYO, JAPAN	Dr. Marlo Akiyama Kogakuin University 1-24-2 Nishi-Shinjuku Tokyo, 191, Japan
MIAMI	Malcom Gotterer Florida International Univ. Miami, Florida (305) 552-2743	TORONTO	Dale Moreland Canadian General Electric Company Mobile Radio Dept. 100 Wingold Avenue Toronto, Ontario, Canada M6B, 1R2
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## Professional Activities

**Frank E. Lord**  
Professional Activities Editor

### PROFESSIONAL ACTIVITIES

June 6, 1983  
F. E. Lord

#### Election

Our Institute election is at hand. It takes a bit of time to vote intelligently because we often don't know too much about the candidates and issues. The material sent with the ballot does not always seem to provide sufficient information on which to base a decision. Sometimes it is possible to gain additional information from the monthly INSTITUTE or Spectrum.

Have you noted that the Board of Directors has again put up two candidates for President-elect and Executive Vice President? This is a new practice of the Board and is probably motivated by a desire to increase participation in the election. Two elections ago, barely enough members voted to make the 20% participation that is required by the By-laws to constitute a valid election. We all know that a one-man election is not too exciting and now the Board seems to be coming to that realization also. To make matters even more interesting this year, there will be a petition candidate on the ballot.

It should be noted that getting on the ballot by petition is not easy, as 1% of the voting members must sign the petition and that amounts to about 1900 members at the present time. If you think that is easy, just consider how you would go about conducting such an effort yourself. Needless to say, if a member is to get on the ballot this way, there are 1900 or more members who think he ought to be there. It only takes about 16 votes for the Board to put a candidate on the ballot. The

required percentage of petition signatures has changed over the years. It went up from 1/3 percent to 2 percent when the Board first felt threatened by a petition candidate and then down to 1% when the members complained about that particular maneuver of the Board.

There may also be an amendment to vote on. If not withdrawn because of prior Board action, this amendment proposes to add more "technical" directors to the Board. This may come as a surprise to most of you who thought that we were all primarily technical people. Apparently, there is some very narrow thinking occurring among Board members and they seem to be taking sides along Divisional (technical) and Regional (geographical) lines. If you want to get an idea of how ridiculous the whole matter is, you might read the column of Jose Cruz on page 4 of the May 1983 issue of the INSTITUTE. Cruz describes IEEE as a matrix organization, which it is, and he completely forgets the third dimension of the matrix, the professional/career factor. It is quite possible that the composition of the Board should change after careful study, but the so-called 'lack of balance' suggested by Cruz may only exist in his narrow view. There seemed to be no concern expressed in his article about strengthening local technical activities through an improved rebate structure or, for that matter, any other specifics. The concern only related to the number of Directors. I was reminded of the remark of former Director Harold Goldberg in a recent article on the composition of the Board, "How many times must we be represented?" The proposed amendment cannot be a proper answer to such a poorly-defined "problem." The way this matter is developing makes one wonder if we voters have been making good choices for Directors.

#### Member Survey

One of the series of periodic surveys conducted by the United States Activities Board (USAB) has been underway recently. It is being conducted on a representative sample basis, so not all of you would have gotten questionnaires. The topics include: Membership Accountability on Issue Positions, Attitudes Toward the American Association of Engineering Societies, Ethnicity, Patents, Engineering Manpower, Political Action Committees and Science & Engineering Policy. There is also a section on the personal characteristics of the respondent, so that answers can be presented along with such parameters as age, degrees, type of employer, salary bracket and participation in societies. There is a section at the end where the respondent may compose additional inputs. Of course, as I have pointed out in the past, your inputs on professional matters are welcome at any time and may be submitted to me or directly to the Vice President for Professional Activities.

The result of surveys which are usually presented in INSTITUTE or Spectrum are also usually available in more comprehensive form in lengthy report, which may be purchased from the Service Center in Piscataway, N.J. Members inputs are important in formulating plans for future action. These inputs are carefully considered by USAB and by other entities in the Institute as well. Unfortunately, there are also some segments of the organization that seem to be ignoring these expressed wishes of the members.

#### Questions for PE Exam

The United States Activities Board is seeking licensed Professional Engineers, electrical and electronics, who may or may not be IEEE members, to develop questions for the electrical engineering portion of the Professional Engineering (PE) examination. Honoraria will be given questions accepted by the National Council of Engineering Examiners, preparers of the PE exam.

Licensed professional electrical and electronics engineers can obtain further information by requesting the "Question Writer's PE Packet" from Joel B. Snyder, PE Co-Task Force Leader, IEEE/USAB Licensure & Registration Task Force, c/o IEEE Washington Office, 1111 - 19th Street, NW, Suite 608, Washington, DC 20036. Or, call the IEEE Washington Office, (202) 785-0017, and request the "PE Packet".



### PUT THE "YOU" IN USAB

USAB's Pension Task Force is looking for a few good men or women—IEEE volunteers with an interest in pensions. Volunteers who serve on this task force will be expected to initiate and complete those tasks which identify and resolve pension problems common to the American members of IEEE.



No salary is offered; only all the overtime an individual could want. Apart from the free coffee generally available at task force meetings, there are no other fringe benefits, let alone a pension! On the plus side, volunteers participating in these activities can help solve a major problem of the profession, and they can reasonably expect to learn a lot about corporate pension plans, especially their own! Contact your USAB recruiter today! Write or phone IEEE Washington office, 1111 Nineteenth St., N.W., Washington, D.C. 20036; (202) 785-0017. Tell'em Dave Lewis sent you!

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## News from Washington



**Eric Schimmel**  
Washington News Editor

### CORDLESS TELEPHONES

Although the new vogue of cordless phones is only remotely related to mobile radio, I have been asked to write a brief review on this very dynamic consumer product. At this writing, cordless phones are entering the market at an annual rate of six-million units, and increasing monthly. That's a lot of two-way radios. It is clearly a product whose time has come. Those of us of mature age know that cordless phones are not new, and can probably recall ads from a decade or more ago which illustrated the occupant of a back yard swimming pool accompanied by a telephone with an antenna on it. The message was clearly directed to the affluent, but today with prices falling below \$100, cordless phones are being purchased and used by the masses.

Now, as you might expect, this more than modicum of success is not without its share of problems, the major of which is an inadequate number of channels. Where have you heard that before? Currently cordless phones have only five frequencies in the 49MHz band, to which manufacturers pair arbitrary frequencies in the 1.6 to 1.8MHz band. Operationally the portable handset transmits on the 49MHz frequencies and the base station xmtr operates in the 1.7MHz area. One unique model developed by the Electra Company, operates full-duplex totally within the 49MHz allocated frequencies, with only 45kHz between the transmit and receive channels.

Cordless phones operate under the provisions of Part 15 of the FCC Rules and Regulations, as Low Power Communications Devices. Section 15.118 sets the minimum technical standards for the 49MHz channels, including an emission limit of 10,000uV/m @3 meters. No specific specifications existed for cordless phone operation in the 1.7MHz region until a temporary waiver provision was adopted last year to formally accommodate these systems until October, 1984. It is expected that by that time the FCC will have responded to industry petitions to provide some alternate spectrum. Use of the 1.7MHz area by cordless phones has never been highly desirable, but it was the only spectrum which allowed unlicensed, continuous carrier, voice modulated systems. Propagation characteristics of this band are not very reciprocal to those at 49 MHz, and to achieve reasonably efficient radiation at these long wavelengths, power line carrier techniques are used. The base transmitter's RF energy is actually loaded into the A-C power line, and sometimes the telephone pair to which the unit is intercon-

nected, or a combination of both serve as the antenna system. Obviously the variables involved in a building's construction will be reflected in a given system's talk-out characteristics, and make them less predictable than the talk-back performance on 49MHz. For example, where building codes permit Romax type wiring, radiation can be expected to be better than where power lines must be in conduit. As a practical matter, however, most cordless phones are operated within 100 feet of the base, and range limitations are rarely a problem.

Installation parameters will become less of a factor during the coming year as the next generation of equipment comes to market. This will occur as a result of anticipated action by the FCC in Docket 83-325, in which it proposed to allow cordless telephones to use five additional 49MHz frequencies and ten frequencies in the 46MHz range. The later will replace the 1.6-1.8MHz band and will provide for full duplex operation on VHF channels. It is expected that the FCC will take this action sometime this summer. If you are wondering how the FCC came up with 15 scarce VHF frequencies, the answer is that they had some help from the IRAC. These are actually federal government frequencies which are being shared with industry for an interim period of at least six years while a permanent allocation is worked out by the FCC. Unfortunately, it is anticipated that at the current rate of growth these channels will also become heavily loaded long before relief from a permanent allocation becomes available. It will probably be necessary, therefore, for the cordless phone industry to pursue additional interim allocations.

The main focus for a permanent allocation is on the 900MHz band. The FCC addressed this as a possibility as early as 1979 when it issued a Notice of Inquiry (Docket 79-140) regarding the establishment of a new personal communications service in that band. Since then, partially in response to a petition from General Electric Company which proposes the specifics of such a service, the FCC has issued a Notice of Proposed Rulemaking (Docket 83-26) in which it again requests comments with regard to potential cordless phone operation in the 900MHz region. While the cordless telephone industry is in dire need of additional spectrum, it has some reservations about the 900MHz region. For one there is the question of whether 900MHz technology will support the design and manufacture of products which would have to be price competitive with current products. A

specific state-of-the-art technical problem would involve an economical means to maintain frequency stability in the battery operated portable. Another major concern is with the timing of making such an allocation available. It is not unreasonable to assume that it might take the FCC up to five years to complete such a rulemaking, and it might take that long to solve the techno-economic problems. In any case the cordless industry must have some additional spectrum long before that, and will immediately begin to search for other solutions to both its near and long term needs.

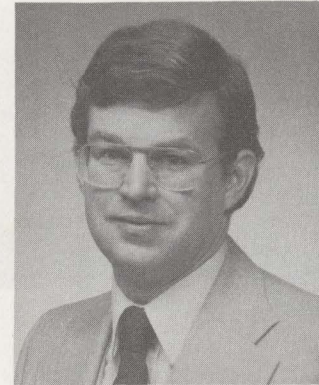
A final point of interest is the perspective of cordless telephones as they are viewed in the context of other interconnected radio services, all of which are competing for spectrum, especially the remaining unused segments in the 800 and 900MHz bands. On the one hand we have conventional mobile radio and mobile telephone systems which provide service to both the private and public sectors of the market. These will soon be joined and perhaps to some extent replaced, by the new sophisticated high capacity cellular systems. Some observers feel that cellular portables will even replace subscriber's needs for conventional wired phones in their homes and offices. As such they would become cordless telephones. The viability of this is of course cost dependent. Somewhere in between, is the GE proposal for an interconnected personal communications service which would allow the public to make phone calls through their home base station over a range of about five miles. This range would be extended to about 15 miles if repeaters were permitted as also proposed by GE. Here again, portables would be cordless telephones, but whether they would replace cordless phones as we know them today would be dependent on the public's perception of how much range they really needed and at what cost. My personal opinion is that all of these systems offer a different service and have a unique value. Obviously the present dynamic growth of cordless phones cannot go on for ever, but contrary to some expectations that it is approaching a CB type bust, I think market saturation is a long way off if adequate spectrum can be found. Unlike CB, which depended to a large extent on the personality of the marketplace, cordless phones can reasonably be expected to find acceptance in a majority of homes, several times the market penetration that CB enjoyed. One thing I am sure of is that it is going to be an interesting and exciting next couple of years for any of us who are involved in any of the above.



Incoming President Sam McConoughey (left) and Outgoing President Stuart Meyer



Incoming President Sam McConoughey (left) and Outgoing President Stuart Meyer



# Automotive Electronics

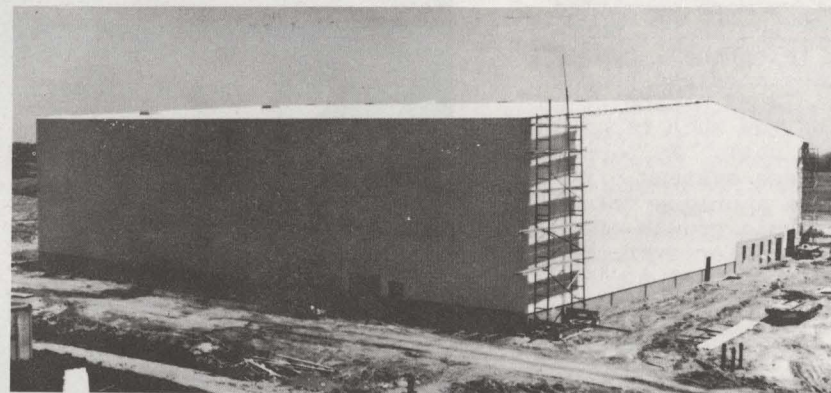
Dateline: Detroit

**Bill Fleming**  
Automotive Electronics Editor

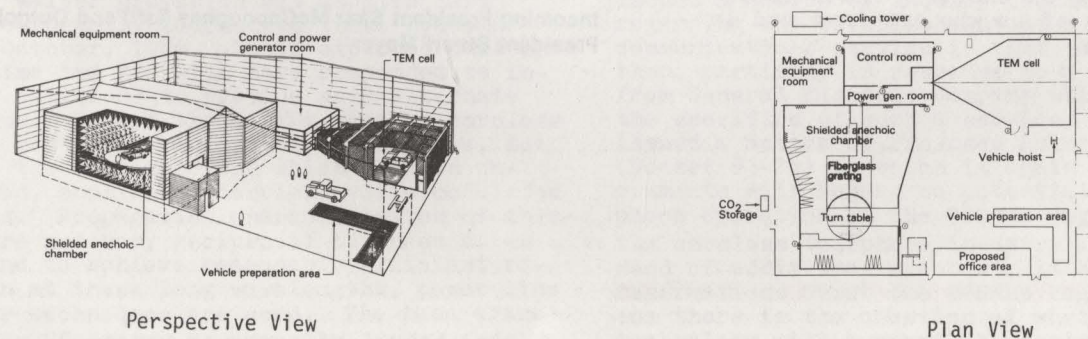
## STATE OF THE ART ELECTROMAGNETIC COMPATIBILITY TEST FACILITY BUILT BY FORD MOTOR

Ford Motor Company has just completed (May, 1983) construction of a state of the art indoor electromagnetic compatibility (EMC) test facility for total measurement of radiated susceptibility and radiated emissions of operating motor vehicles.<sup>1,2</sup> This facility was designed and constructed jointly by Ford, Boeing Aircraft, and BE & C Engineers, Inc., using a new integrated concept viewpoint -- a dedicated building solely serving EMC test functions. The facility, shown below, includes a transverse electromagnetic wave cell for 60Hz-to-100MHz EMC testing of operating vehicles (up to vans, operated on a 100 hp absorbing dynamometer) at field strengths up to 5000 V/m. It also includes an anechoic chamber for 20 MHz-to-40 GHz EMC testing of operating vehicles (up to heavy diesel truck tractors, operated on a 250 hp absorbing dynamometer, incorporated into a 360-degree rotateable turntable) at field strengths up to 200 V/m. Various modes of EMC test signals -- such as CW (swept), AM, FM, and Pulse (lightning simulation) -- are included.

This is the most advanced EMC test facility available anywhere in the world (outside of military EMC pulse test facilities located in Albuquerque, NM and Huntsville, AL). Ford Motor spokesman report that plans are underway to make their facility, located in Romeo, MI, available to outside users on an hourly rental basis, starting sometime in early 1984.



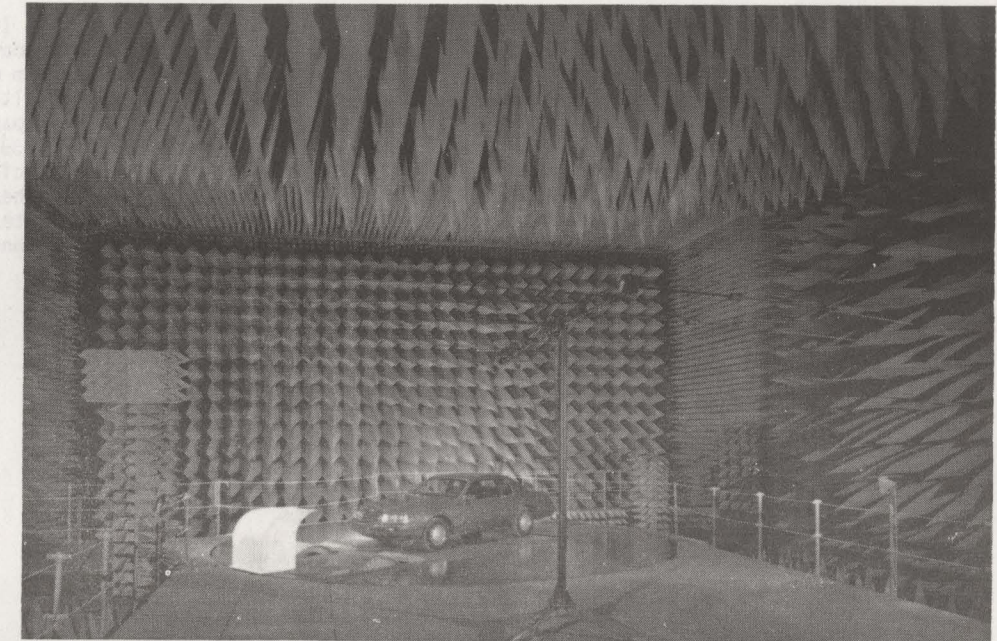
EMC Dedicated Test Facility Building (202 feet x 162 feet x 50 feet)



Perspective View

Plan View

EMC/RFI Test Building Layout



Test Vehicle on Turntable Dynamometer in Anechoic Chamber

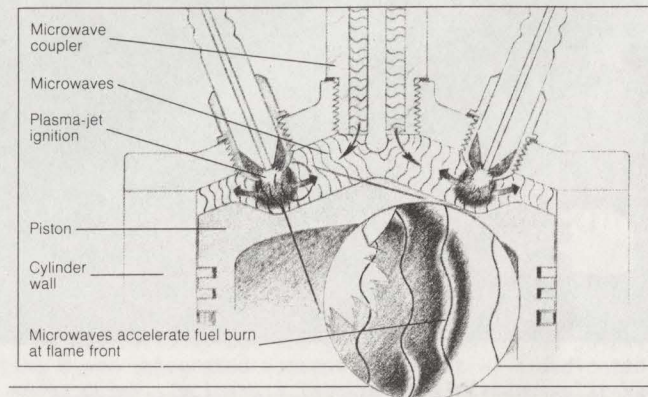


Test Vehicle at Entrance to TEM Cell

## MICROWAVE STIMULATED COMBUSTION OF LEAN AIR-FUEL MIXTURES

Michael Ward of Combustion Electromagnetics, in Arlington, MA is building a microwave-enhanced combustion (MEC) engine.<sup>3</sup> The MEC engine runs at air-fuel ratios as lean as 33-to-1 (in laboratory combustion "bomb" tests)<sup>4</sup> -- this is five ratios leaner than what Ward says is the 28-to-1 ratio commonly thought to be the upper limit of self-sustaining gasoline-air flame ignition. The MEC engine's consequent low-temperature burn, due to lean A/F operation, will allow the engine to run adiabatically (without cooling -- i.e., no circulating air or water). The engine will run sufficiently cool that ceramic parts will not be required. Metal engine parts will be used except for the piston heads which will be made of aluminum instead of steel.

A \$15 magnetron will supply microwave excitation, via coaxial cables, to the engine cylinders.<sup>3</sup> In his 1980 publication,<sup>4</sup> Ward used a commercially available 150-Watt magnetron, operated at 2.4 GHz, which coupled 100 Watts of power into a combustion "bomb" via a 50-ohm probe. Moreover, a standard ignition system was replaced by a plasma jet ignition system with a 4 microfarad storage capacitance and 800 volt charging voltage (1.3 Joule stored energy discharge). Using a combination MEC/plasma-jet-ignition system, Fig. 8 of Ward's paper<sup>4</sup> shows that he obtained a partial burn limit of 0.47 equivalence ratio (or an air-fuel ratio of nearly 33-to-1 for the propane fuel used in these tests). Ward suggests the use of a \$16, 2.4-kW, 72-percent efficient magnetron, plus a recently developed 18-mm triaxial plasma jet/spark plug/microwave coupling probe for further study on a multi-cylinder, 11:1 compression ratio engine operated at a nominal A/F of 25:1. Ward believes that: "this in principle could increase engine efficiency by 20% to 30% and satisfy existing emissions regulations." Ward's work in Ref. 4 was supported by the U.S. Department of Energy.

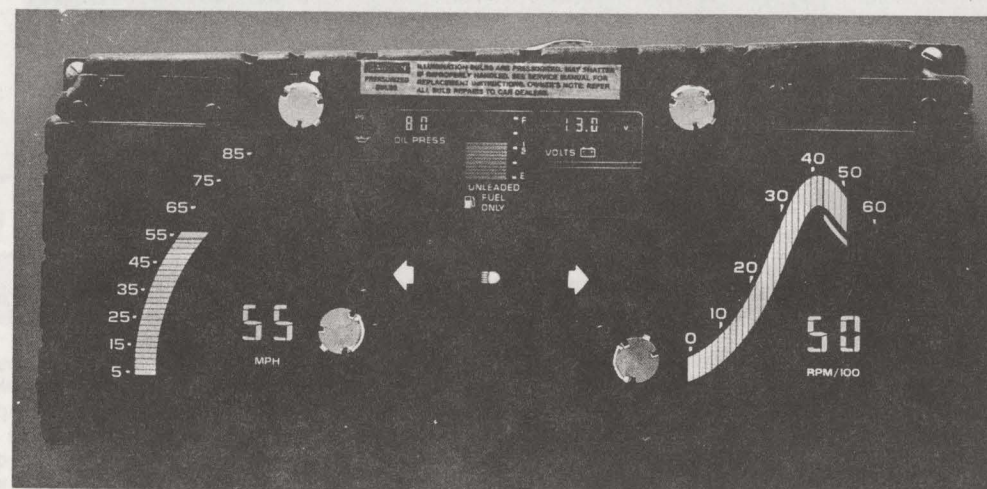


Schematic Diagram of Microwave-Enhanced/Plasma-Jet-Ignition Combustion Processes

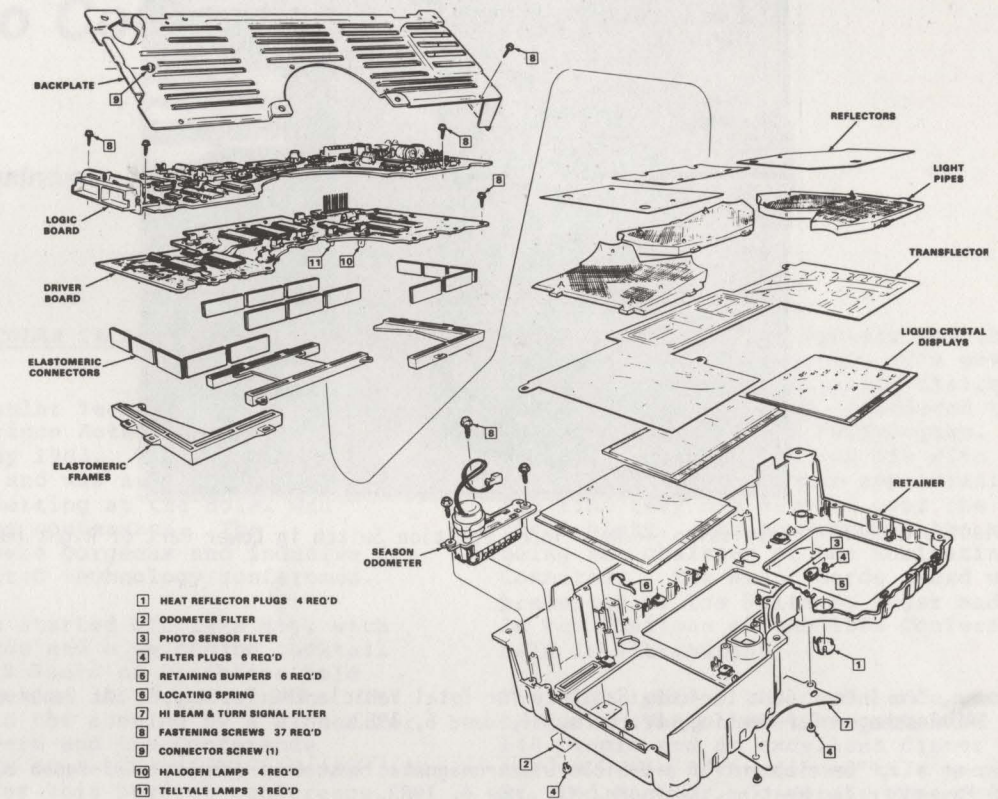
AC SPARK PLUG DEVELOPS MICROPROCESSOR-CONTROLLED INSTRUMENT CLUSTER FOR THE 1984 CORVETTE

Joint development of a microprocessor-controlled liquid crystal display (LCD) instrument cluster for the 1984 Corvette was announced by AC Spark Plug, GM Design Staff, and Chevrolet.<sup>5,6</sup> They decided upon LCD technology because "it offered a better chance of achieving multicolor, large area, sunlight-visible, easy-to-style speedometer and tachometer displays." A Driver Information System -- displaying fuel level, oil pressure, oil temperature, coolant temperature, battery voltage, instantaneous or average fuel economy, range or trip mileage -- is available where all displays are selectable in either English or metric units.

The analog speed display consists of a 41-segment yellow bar graph, the analog tachometer display (shaped to match the engine torque curve) consists of a 31-segment bar graph which changes color from green to yellow to red as engine speed increases, and the analog fuel display consists of a 17-segment green bar graph. Each analog display is accompanied by large-size yellow LCD digital display of the respective readouts. The microprocessor also gives alarm indications for low fuel and out-of-normal range values of monitored engine parameters. The LCD display cells are negative image, transmissive, twisted nematic units with active areas which change from dark to clear, like a shutter, when electrically energized. High intensity backlighting is provided by wedge-shaped-endface clear acrylic light pipes illuminated by four 3.8-candlepower halogen lamps developed especially for this display by General Electric.<sup>5,6</sup> A 6801 dedicated-purpose microprocessor monitors display select switches, processes inputs from vehicle sensors (senders), calculates display parameter values, and transmits data to display drivers. The mechanical total mileage odometer is electrically driven by a miniature stepper motor, and high beam and turn signal indicators are illuminated by incandescent lamps.



Microprocessor-Controlled Instrument Cluster



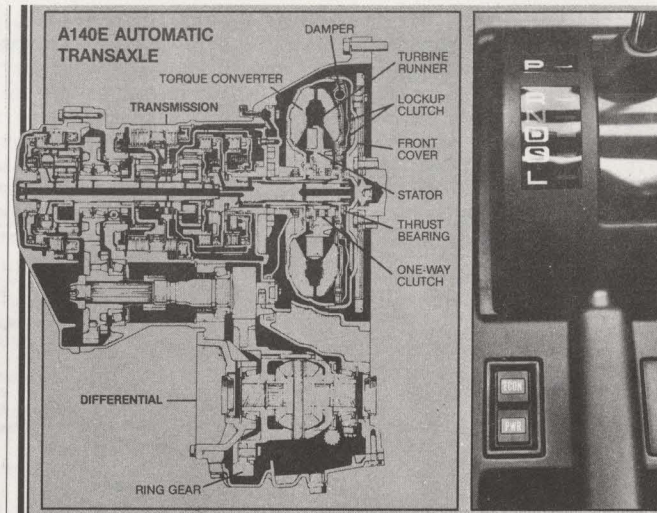
Exploded View of Instrument Cluster Assembly

AMERICAN MOTORS CYLINDER-BY-CYLINDER SPARK TIMING CONTROL

American Motors has announced a unique sequential spark-compensation electronic control system for its 2.5-liter 4-cylinder engine, the standard powerplant for its new downsized 4-wheel-drive Jeep sport wagons, Cherokee and Wagoneer.<sup>7</sup> The microprocessor-controlled system individually adjusts spark compensation of each cylinder based on the feedback signal of an engine knock sensor. Instead of measuring knock once on average for all four cylinders, knock is discretely measured each time a cylinder fires. The system then determines which cylinder is knocking and spark timing for the offending cylinder (or cylinders) is separately retarded.

TOYOTA SELECTABLE SHIFT PATTERN TRANSMISSION CONTROL

Car manufacturers all over the world are gradually changing their transmissions from hydraulic to electronic control. Most domestic manufacturers have used microprocessors to handle torque-converter lockup for several years, and Renault Alliance went a step further by adding upshift and downshift control to its computer. Toyota has recently fielded the most advanced electronically transmission to date in its Cressida, Supra, and Camry vehicles. This is a four-speed automatic transmission, with lockup torque converter. The driver can select, via a three-position switch, any of three different shift patterns (economy, normal, and power). In normal position, the microcomputer chooses its own compromise of comfort, fuel economy, and acceleration performance. If power mode is selected, upshifts occur at roughly 15 percent higher rpm. Normal and economy mode shift patterns are identical, but the torque converter lockup point is substantially lowered when economy mode is selected.<sup>8</sup>



Toyota Selectable Shift Transmission -- Note Three Position Switch in Lower Part of Right Hand Photo Inset

## REFERENCES

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2. D. Weber et al., "Development of a Vehicle Electromagnetic Test Environment," SAE Paper 831015, Presented at the SAE Passenger Car Meeting, Dearborn, MI, June 6, 1983.
3. H. Brody, "Will Microwave Be the Next Trick to Boost Engine Efficiency?" *High Technology*, April, 1983, pp. 85-86.
4. M. Ward, "Microwave Stimulated Combustion," *Journal of Microwave Power*, Vol. 15, No.3, 1980, pp. 193-202.
5. "Microprocessor Controls LCD Instrument Cluster," *Automotive Engineering*, June 1983, pp. 37-41 and journal cover page.
6. G. Walkush et al., "An LCD Instrument Panel for an Automotive Application," SAE Paper 830041, Presented at the International Meeting, Detroit MI, February 28, 1983.
7. "Spark Control Is Sequenced on New AMC 2.5L 4-Cyl.," *Ward's Engine Update*, April 1, 1983, pp. 1 and 7.
8. D. Sherman, "Technical Highlights," *Car and Driver*, May, 1983, p. 124.

## Toronto Conference Report

C. Vinodrai  
Conference Chairman

### 33RD VEHICULAR TECHNOLOGY CONFERENCE

The 33rd Vehicular Technology Conference was held at The Prince Hotel, Toronto from 25th - 27th May 1983. The conference was a great success and was attended by about 250 people. The setting at the hotel was perfect for the conference. The surroundings were gorgeous and conducive for this high powered technology conference.

The conference started off 24th May, with the registration and a welcoming cocktail party. The VTS Board of Directors held their Board meeting in the afternoon. It was followed in the evening by a dinner for the Board members and the Conference Committee. The dinner was well attended and set the tone for this perfect conference.

The conference was officially opened by Stu Meyer during the coffee break on the 25th May morning. The Conference Chairman in his comments dwelled upon the theme of the conference "Creative Resources Management: New Directions in Vehicular Technology". He also stated that the Toronto Chapter was pleased to host the conference in the World Communication Year.

The kickoff luncheon was addressed by Mr. Renfrew Morrison, Vice-President Research and Development, Urban Transportation Development Corporation. His speech urged the audience to pay special attention to mass transit. He stated that a system approach was necessary solve the transit problems. He asked the audience to recognize the importance of urban public transportation to energy conservation, the quality of life in urban areas, and the very significant industrial potential of the urban transportation sector.

There were thirty one exhibitors at the conference. A great interest was shown for the 800 MHz Cellular Radio Equipment. Both

Motorola and Novatel had working models of their system. The exhibit area was very representative of the various papers that were presented at the conference. The Ontario Government had displays demonstrating their video conferencing facilities. The Urban Transportation Development Corporation in cooperation with their consortium had set up a display showing the rapid transit system.

On Wednesday evening, the Canadian Radio Relay League had a talk on Packet Radios. This meeting was well attended.

The highlight of the Society was the Awards luncheon held on Thursday. Stu gave his final speech as the outgoing chairman of the Board of Directors and introduced the incoming chairman Sam McConoughey. The Society presented Stu and his wife with a small gift to show their appreciation for the time they had devoted over the years to the Society. Stu now assumes the role of being the chairman of the Nominating Committee. The Avant Garde award was presented to Tom Selis by Roger Madden. Tom is the Chairman of the 1984 Conference to be held in Pittsburgh.

The highlight of the Conference was the banquet. The banquet was attended by over 140 people and an excellent dinner was served. The after dinner talk was given by Dr. Ted Pashler, Corporate Vice-President of Canadian General Electric, Responsible for Technology. He is an electronics engineer and had worked for many years at General Electric's Corporate Research and Development Center in Schenectady, New York. The subject of his talk was "High Technology, Myths and Realities." The audience were entertained to a wonderful talk and left them a lot of food for thought. He dwelt upon the problems of employment in this fast changing technological world. He also enlightened the audience with the problems of keeping up-to-date with these rapid changes in technology.

The conference ended on Friday. Most of the people who attended the conference felt that it was well organized and were encouraged to attend the conference next year in Pittsburgh.

CV/kb/6/Temp 1

See Conference pictures throughout the Newsletter.



THE INSTITUTE OF  
ELECTRICAL AND  
ELECTRONICS  
ENGINEERS, INC.

34th VEHICULAR TECHNOLOGY CONFERENCE  
Pittsburgh, Pennsylvania 21/23 May 84

## *An Invitation to Authors*

PITTSBURGH MARRIOTT HOTEL/MONROEVILLE, PENNSYLVANIA  
21-23 MAY 1984

Our 1984 **THEME** is:  
"THE SECOND CENTURY: The Age of  
Vehicular Technology"

**AUTHORS** are invited to submit 500 word  
abstracts by September 1, 1983 to:

John Oblak  
Technical Program Coordinator  
TACTEC Systems, Inc.  
Meadowlands, PA 15347  
Tel: (412) 228-6410

**SUBJECTS** are detailed overleaf

Since our emphasis in 1984 is on "... (the dawning of) The Age ..." papers that explain the new technologies and their applications will be especially welcome.

**MOBILE COMMUNICATIONS** ... including  
trunked and cellular systems; single  
sideband; mobile satellite; packet radio;  
spread spectrum, spectrum management.

**TRANSPORTATION** ... Downtown People  
Movers; Automatic Vehicle Monitoring;  
automated vehicles; Computer Aided  
Dispatch; rapid transit control technology;  
economics of transportation.

**AUTOMOTIVE ELECTRONICS** ... engine and  
vehicle control systems; collision avoidance  
and safety systems; new directions  
in instrumentation; electromagnetic compatibility.

**HIGHWAY ELECTRONICS** ... traffic monitoring  
and control; automatic highways; traffic  
surveillance systems; driver information  
systems.



IEEE

34th VEHICULAR TECHNOLOGY CONFERENCE  
Pittsburgh, Pennsylvania May 21-23 1984

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- Ray Bodnar, Chrm. - Pgh. Ch. VTS  
Mid-Continent Tele. Serv. Corp.

Dear VTS Member:

The 1984 IEEE Conference on Vehicular Technology will be held on May 21-23, 1984 in Pittsburgh, Pennsylvania. The theme of our conference is "The Second Century: The Age of Vehicular Technology."

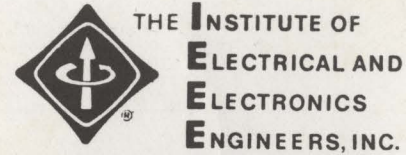
1984 marks the 100th anniversary of the IEEE. The Vehicular Technology Society will kick-off the second century with a highly informative and interesting conference. We need your continued support. It is through your voluntary efforts that past conferences have been very successful. Enclosed is a copy of the Invitation to Authors, with further details.

We are also extending an invitation to you, your family and colleagues to attend the 34th Vehicular Technology Conference in Pittsburgh.

Thank you in advance for your support.

Sincerely,

*John Oblak*  
JOHN OBLAK  
Technical Program Coordinator  
TACTEC Systems, Inc.  
Meadowlands, PA 15347



VEHICULAR TECHNOLOGY SOCIETY

RECOMMENDATION FOR VEHICULAR TECHNOLOGY SOCIETY AWARD

(See Awards Summary)

- FIELD:  Automotive Electronics  
 Mobile Communications  
 Transportation

1. NOMINEE:

Name: \_\_\_\_\_ Tel. No. \_\_\_\_\_  
 Address: \_\_\_\_\_ Bus. \_\_\_\_\_  
 City, State, ZIP: \_\_\_\_\_ Home. \_\_\_\_\_

2. AWARD:

- Gold  Silver  Bronze  Outstanding Service to VTS by Member  
 Outstanding Service by Non-Member to VTS objectives  
 Special Achievement in Advancing VTS Technology  
 Certificate of Appreciation  Avant Garde  Honorary Life Member  
 Other \_\_\_\_\_

3. NOMINATOR:

Name: \_\_\_\_\_ Tel.No. \_\_\_\_\_  
 Address: \_\_\_\_\_ Bus. \_\_\_\_\_  
 City, State, ZIP: \_\_\_\_\_ Home. \_\_\_\_\_  
 Signature and date: \_\_\_\_\_

4. JUSTIFICATION FOR AWARD:

5. ACTION BY VTS AWARDS COMMITTEE:

Approved  YES  NO  RETURNED FOR ADDITIONAL JUSTIFICATION

By: \_\_\_\_\_ Chairman Awards Committee Date \_\_\_\_\_

Mail form to Chairman, IEEE VTS Awards and Recognition Committee



Pittsburgh, Pennsylvania

May 21 1984

*[Faint handwritten signature]*

1588466 SM 06N \*\*\*  
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