Dallas—Site of 1986 Annual VTS Conference

Be there May 20-22!
President’s Message

By now, I hope you have completed your plans to attend our 36th Annual Conference, VTC ’86 in Dallas. If you haven’t, you should especially note that VTC ’86 is highlighted in this Newsletter with a copy of the technical program included. Examine the latter and note that our Dallas Conference Committee has compiled an excellent technical program with sessions in areas of high current interest and some outstanding panel discussions. Hopefully, this will convince you to join us for an exciting technical event and an opportunity to enjoy Texas hospitality.

Elsewhere in this Newsletter, you will find an open letter from Sam McConoughey, our Immediate Past President, in which he stresses the need to nominate good candidates for our Board of Directors. Please read his letter and, if you know someone you believe to be qualified, send his name to Sam.

I would also like to enlist your aid for our awards program. We need you to nominate your colleagues for recognitions such as IEEE Fellow, IEEE Field Awards, or for our VTS awards. In particular, our Avante Garde award is intended to recognize those members who played a pioneering role in the development of VTS--don’t you know one or more individuals who are deserving of such recognition? If so, please contact our Awards Chairman, Stu Meyer.

Those and other matters will be considered at our next Board of Directors’ meeting which will be held in Dallas the day before VTC ’86. Since the entire Board will be present both then and during the Conference, this is a good opportunity for you to discuss matters of concern with Board Members and suggest issues that should be considered.

Hope to see you in Dallas!

Respectfully submitted,

Robert F. Fenton

President
IEEE Vehicular Technology Society

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Editor's Notes

A. Kent Johnson
Newsletter Editor

This edition of the newsletter features the upcoming Annual VTS Conference to be held May 20-22 in Dallas, Texas. Elsewhere in the newsletter you will find a complete listing of the papers to be presented at the conference and as you will see, the committee has arranged for an outstanding technical program. We hope you will all be able to make it to Dallas and we look forward to seeing you there.

Special mention should also be made of the results of the recent election for members of the board of directors. These results are mentioned in the report of the recent board meeting and include the election of the following to 3 year terms ending December 1988:

Robert E. Fenton
Charles N. Lynd, Jr.
George F. McClure
Stuart F. Meyer
Eric J. Schimmel

We extend congratulations to these individuals and thank them for past work in behalf of the society.

I would like to call your attention to one other item found elsewhere in this newsletter. Society Vice President Roger Madden has been working with a committee on the revision of the constitution of the IEEE Vehicular Technology Society and a copy of the revised constitution is printed here for your consideration. This document was approved by the Board of Directors at the March 15, 1986 meeting. Please take advantage of this opportunity to study the new constitution.

<table>
<thead>
<tr>
<th>Month of Issue</th>
<th>Final Copy to be Rec'd by VTS Editor</th>
<th>Target Mailing Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>August</td>
<td>6-9-86</td>
<td>7-13-86</td>
</tr>
<tr>
<td>November</td>
<td>10-13-86</td>
<td>10-15-86</td>
</tr>
<tr>
<td>February</td>
<td>12-30-86</td>
<td>1-27-87</td>
</tr>
<tr>
<td>May</td>
<td>3-10-87</td>
<td>4-14-87</td>
</tr>
</tbody>
</table>
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Al Goldstein (86)
A. Kent Johnson (86)
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Fred M. Link (86)
Charles Lynck (85)
Roger Maddox (85)
Robert A. Matzola (87)
George F. McClure (88)
Samuel R. McConnell (86)
Stuart Meyer (86)
Fred M. Link (86)
Eric Schimmel (86)

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Chairman of Publications Comm.
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National Coordinator
National Coordinator

Chairman, Personal Radio Comm.

Board of Directors Report

Samuel A. Leslie

IEEE Vehicular Technology Society Newsletter May 1986

IEEE Vehicular Technology Society Newsletter

TAB REPORT

Robert Madden attended the last TAB meeting and reported that the cost of the production of the Transactions will be going up, due to a recent increase in the cost of paper and postage. The new costs will be added to the subscriptions next year.

He also reported on a discussion regarding mutual interests between ComSOC and VTS in the mobile communications arena. ComSOC had recently published a magazine issue devoted primarily to Cellular Communications, and has recently issued a call for papers for portable and mobile communications. ComSOC has expressed interest in maintaining VTS as an information source, and VTS has expressed interest in maintaining ComSOC as an information source. A joint venture has been suggested, with the MSS and VTS publications maintaining their own editorial format while allowing the other to maintain the format that suits the interests of their main audience. This will be reported to the TAB at their next meeting.

Also, Misquiss moved, Misses seconded that the TAB President take the issue of the TAB to the VTS Board of Directors for the consideration of the TAB. The TAB Board of Directors has agreed to consider this issue, and will be reporting to the TAB at their next meeting.

On another issue, Robert Madden moved, Stuart Meyer seconded that the TAB support the NISE student program with a fee of $15. Vote was unanimous in favor.

TREASURER'S REPORT

Art Goldsmith reported that TAB had finished its reviews on all but two of the TAB journal publications, and that he was forwarding these to the TAB Board of Directors for final approval.

McConoughy moved, Kent Johnson seconded that the minutes of the last TAB meeting be approved as published.

CHAPTER ACTIVITIES REPORT

Gaspar Messina reported that the winner of the Chapter of the Year Award was to be presented at the New Jersey Conference (EMC/VT/APE), with the Cleveland Chapter (VTS/ComSOC) being runner-up.

Gaspar reported that more information is being received from the Chapter Chairs, but that the TAB forms that are sent to the TAB Section are still not being forwarded to the TAB.

McConoughy moved, Johnson seconded that Messina's report be accepted as presented. The vote was unanimous in favor.

TRANSACTIONS EDITOR'S REPORT

Phil Brill reported that the Transactions had been received, and that they were in good shape. The Transactions are still being published on time.

McConoughy moved,提交第二条 że the Transactions Editor's report be accepted as submitted. The vote was unanimous in favor.

NOMINEE COMMITTEE REPORT

Robert Fenton reported that problems continue in getting the scholarships funds to the awardees in a timely manner. The Nominee Committee was assigned the task of recommending changes to the procedure to see if some of the required approval steps can be shortened.

On the issue of the amount of the scholarship discussed fully at the last meeting, Al Goldstein moved, Bill Misquiss seconded that $15K be provided by VT and $5K be provided by Motorola, and with the amount of pressure on both parties to increase the amount to an amount to be determined by the next full Board meeting. Art Goldsmith is to work with the Nominee Committee to determine the amount of stipend which can be expected at today's current dividend rates.

TRANSPORTATION SYSTEMS REPORT

Tony Eastham reported that the TAB needs to continue its efforts to contact the触动的 of the TAB, as well as to the Land Transportation Committee. He also reported that the LTC Board is holding a meeting at the upcoming IEEE/ASEE meeting in Norfolk. Bob McKeon and Art Goldsmith are planning on attending that meeting, and they will report the results of the next Board meeting.

Johnson seconded that the Transportation Systems Report be accepted as presented. The vote was unanimous in favor.

NEWSLETTER EDITOR'S REPORT

Ken Johnson reported that he has one "Professional Listing" ad in hand, one promised by publication deadline, and the possibility of a third listing.

A copy of the IEEE Student Potentials magazine containing the TAB ad was also shown. Tony Eastham reported that an error exists in the ad that the word "Transportation" was replaced by "Communications." The TAB has taken the appropriate steps to rectify the mistake. Any suggestions on this issue should be directed to Bob McKeon.

McConoughy moved, Madden seconded that the Newsletter Editor's report be accepted as given. The vote was unanimous in favor.
IEEE Vehicular Technology Society Newsletter

May 1986

Stu noted that he had inputs from only one individual for the Dallas Conference. He made a request for more recommendations from those present.

A technical report written by Jack Weisbauer indicated that we have only one candidate currently in process for the Fellow award. Bob Fenton expressed concern that he thought that there were two candidates, and that he will contact AI Isberg to determine the Fellow award status.

McConaghey moved, Johnson seconded that the above reports be accepted as presented. The vote was unanimous in favor.

STANDARDS COMMITTEE REPORT

A written report by Jack Weisbauer pointed out that work continues towards the goal of becoming obsolete if timely action is not taken by the Board.

NOMINATIONS COMMITTEE REPORT

Sam McGonaghey noted that he has only one firm commitment to run for election for the January 1987 to December 1987 term. He hopes to get a slate of 10 to 12 to run for the Board position. The letter is to be published in the Newsletter soliciting nominations for the position.

Richard moved, Johnson seconded that the nominations committee report be accepted as presented. The vote was unanimous in favor.

CONFERENCE COMMITTEE REPORT

Evan Richards reported on the status of the following conferences.

VTC/Dallas: The response to the call for papers was much better than anticipated, with several having paper calls being due to lack of time on the presentation schedule. The advance program mailing is running behind schedule; a conference telephone call is being planned to assist the Dallas committee in achieving a timely mailing of the advanced program material.

VTC/Atlantic: John Murray submitted an excellent written report on what to watch for in conducting future conferences. This report has been forwarded to the Dallas committee as well as the files of the members of the Conference Committee for future reference.

VTC/Philadelphia: Dates for the 1988 Conference in Philadelphia tentatively have been selected to be held from June 14 through June 17, with June 14 being registration. The location of the conference is planned to be at the Center City Holiday Inn, 1616 Market Street, in Philadelphia.

MASLEY Conference: VTS is co-sponsoring this conference, which will be held at the King Court Hotel in Vancouver, Canada on May 14-16, 1986. The Conference Chairman is Dr. John F. Pelletier.

Joint VTS/Radio & TV Conference: Fenton, Eastham, and Richards are to resolve financial questions with the conference that is planning this conference.

Kent Johnson moved, Roger Madden seconded that the current week Chairman's written and verbal report from the Planning Committee be accepted as submitted. The vote was unanimous in favor.

May 1986

Madden then moved, Johnson seconded that VTS sponsor the 1986 IEEE Winter Conference. He argued that the VTC Commission is already in VTS's accounts (from the '84 Conference), with said scholarship to be renewable on a 5-year cycle at the Board's discretion. The Board vote was unanimous in favor.

On another matter, Bob Fenton indicated that the Conference Committee has carried some forward from the '84 Conference (of which a portion is not yet available) for financial and logistical aid for the upcoming '86 Conference. Since this is in variance with IEEE rules on accounting for conference funds, Bob is to request that the Conference Treasurer provide a letter to the VTS Treasurer indicating the amount of funds involved. Fenton is to use this matter up with the Conference Committee at their next meeting.

CONSTITUTION & BYLAWS REPORT

Roger Madden submitted a corrected version of the VTS Constitution to the Board. After a brief review, Madden moved, Richards seconded that the March 12, 1986 version of the VTS Constitution be adopted for incorporation. Changes to the constitution require that two-thirds of the elected Board members be present and voting. Twelve of the elected 15 Board members were present, thereby providing the necessary quorum for the change. Therefore adopt the new VTS Constitution was unanimous in favor.

Kent Johnson is to publish the new Constitution in the Newsletter, and Roger Madden is to proceed with the IEEE Headquarters to send the Constitution to the VTS membership for approval.

MEMBERSHIP COMMITTEE

Bob Fenton noted that a new membership chair has been appointed. Also, Sam McGonaghey indicated that the recently published VTS membership brochure is in need of correcting in light of some new IEEE changes in member initiation fees.

INFORMATION & TELECOMMUNICATION POLICY

Eric Schimmel moved, Kent Johnson seconded that the VTS President send letter to TAB/SAE/CCIP committee stating that VTS has reviewed its position on FCC Docket 85-17; otherwise, the letter is to be approved by vote of the TAB. The consensus of the VTS Committee that VTS's experience with the Model System indicates that a minimum of 488 Kbps would be necessary to achieve a maximum gain from interest or dividends from such a fund. Fenton reported that the Conference Committee was definitely interested in proceeding with such a plan.

McConaghey moved, Madden seconded that Schimmel's verbiage be accepted as presented. The vote was unanimous in favor.

PUBLICITY CHAIRMAN'S REPORT

Bob McFadden reported that he has sent press releases to some 48 magazines. These press releases were for the VTC '86 Conference and for the AS&EE/IEEE Joint Railroad Conference. Richards moved, Madden seconded that the publicity chairman's report be accepted. The vote was unanimous in favor.

PROPOSITION COMMITTEE REPORT

Sam McGonaghey indicated that the committee is still proceeding toward a November Transactions publication date, although the schedule is getting tight for getting the drafts reviewed.

Milestones Committee Report

Sam McGonaghey reported that the site nominations for the three milestones committee are proceeding well, with Delphi moving further along at this point. Mr. Ron Eline of IEEE Headquarters would like to have all three milestones in a single package to present to the IEEE History and Executive Committees. Mr. Eline also stressed that the Society sharing a portion of the costs involved in providing the plaques.

After discussion, Richards moved, Nissley seconded that Delphi moving forward as backup. After some discussion, the Board decided that Fred should pursue the 1998 Conference held in Detroit. The 1998 Conference would thus be the 49th anniversary of the first VTS Conference, which was held in Detroit.

VEHICULAR ELECTRONICS REPORT

Roger Madden reported on his February 11 attendance at the Conferences Committee meeting in Detroit. He reports that James McDonald, CEO of General Motors, has been selected as the keynote speaker for the conference, and that Donald Peterson (Ford Motor Co.) will be the keynote speaker for the VTS-sponsored conference. The Automotive) will be heading a Blue-Ribbon panel discussion. The Conference appears headed toward an even better year, with all of the available exhibit space (88,000 square feet) being sold.

Bob Fenton reported on a January visit to the Conferences Planning Committee, where he indicated that VTS wanted to sponsor a Transportation Electronics school. He further reported that the VTS would sponsor the 1987 Conference which resulted in funding to set up a school. Fenton further reported that the Conference Committee that VTS's experience with the Model System indicates that a minimum of 488 Kbps would be necessary to achieve a maximum gain from interest or dividends from such a fund. Fenton reported that the Conference Committee was definitely interested in proceeding with such a plan.

INFORMATION & TELECOMMUNICATION POLICY

Eric Schimmel moved, Kent Johnson seconded that the VTS President send letter to TAB/SAE/CCIP committee stating that VTS has reviewed its position on FCC Docket 85-17; otherwise, the letter is to be approved by vote of the TAB. The consensus of the VTS Committee that the issues have already been adequately addressed by the comments and reply comments that have been filed in response to the proceedings, and that the FCC has some more substantive to the record. The Motion carried with 14 in favor and 0 opposed. The vote was unanimous in favor.

Eric Schimmel is to continue following the security issue being raised by the CCIP committee, and is to report at the next Board meeting.

McConaghey moved, Madden seconded that Schimmel's verbiage be accepted as presented. The vote was unanimous in favor.
Vehicular Technology Conference offers much for radio, communications, automotive and transportation engineers.

VTC-86 to be held May 20-22 at Loews Anatole Hotel in Dallas, Texas, will feature 84 technical papers delivered by practicing electrical engineers specializing in various aspects of communications and transportation. Authors, in most cases, will enhance their presentations with visual aids. Subjects covered are in 13 major technical areas. Following is a list of the papers that will be presented in each area:

VTN-1: Radios

- "Radio Suppression: Science or Black Art" by Clem W. Rowan, Carlos A. Alipieti of Ford Motor Company
- "A Comparison of Horizontal Patterns of Antenna on Skeletal and Complete Support Structures by Kevin J. Connolly, Peter D. Blevins of Colwave RF.
- "MMA Antenna Concepts for Land Mobile Satellite Communications by Dr. Donald G. Bodnar, Georgia Tech Research Institute" and Dr. Yuhya Rakun-Samal of Jet Propulsion Laboratory.

- "The Near Field of Circular Loop Antennas by Q. Balaian and K. Sivak of Motorola, Inc.
- "Evolution of RF Safety Standards and Their Impact on Mobile and Portable Transmitters by Q. Balaian of Motorola, Inc.
- "RF Safety Evaluation of Window-Mounted Antennas by Q. Balaian, O. Garay and T. Manning of Motorola, Inc.

VTN-3: Propagation

- "Power Measurements for the Determination of the Influence of Vegetation and Urban RF Radios by L. J. Boyd of Institut de Recherche de l'Institut de Recherche de l'Université de Cronembourg.
- "Digital Transmission over Mobile Communication Channels" by A. A. Bashir and H. R. Hafner of Carle University, Urbana, Illinois.
- "The Standard Deviations of the Local Mobile Telephone Signaling in Flat, Suburban Terrain by Tom Robinson of Motorola, Inc.
- "A New Scheme for Performance Improvement in Land Mobile Cellular and Mobile Telephone Features in Future Cellular Design by S. K. Johnson of AT&T Bell Laboratories.

DATA TRANSMISSION AND DETECTION

- "Analysis of SNR with Discrimination Detection in Mobile Radio Channels by S. L. B. Elmo to the University of Illinois.
- "Analysis of SNR with Discrimination Detection in Land Mobile Radio by S. L. Elmo to the University of Colorado.
- "Performance of OFDM-PM Scheme for Data Transmission over Rayleigh Fading Channels by A. Cazassas, C. L. Cesar, C. L. Cesar and C. L. Cesar of the University of British Columbia.
- "Digital Transmission Using Stored Land Mobile" by S. Lin and C. C. L. Cesar of German Aerospace Research Establishment.
- "4000 bps High Speed Data Transmission over Cellular System by Atsushi Fukasawa, Takuro Satou and Kiyotaka Tokuda of OKI Electric Industries Co., Ltd.

MODULATION AND CODING TECHNIQUES

- "Differential Detection of Minimum Shift Keyed Signals by Steven N. Goode of Motorola, Inc.
- "Data Transmission Performance of 18 Kbps Non-Coherent OOK in the Land Mobile System by Scott N. Carney of Motorola, Inc.
- "Fractional-Bit Differential Detection of MSK- A New Scheme for Performance Improvement in Land Mobile"
Transportation Systems

Bob McNight
Transportation Systems Editor

Advanced Train Control System Project gains momentum and exposure to suppliers

The Advanced Train Control Systems project gained a wider audience following a public meeting held on May 9. Estimates are that about 250 railway men, managers, and suppliers will take part in a series of meetings to discuss the project. The Advanced Train Control Systems (ATCS) project is a tool which will enable the railroad industry to modernize the methods used to maintain and plan our day-to-day operations, according to Vice President William S. Simpson. The ATCS project is a joint venture of the Railway Association of Canada and the Association of American Railroads.

Bob McNight
**Four Levels of ATCS**

The four levels of ATCS Control Systems show four distinct levels, each of which can be built upon to provide an integrated type of control. The ATCS system has 39 functional modules as a result of the different configurations depending upon what a railroad desires to have. What comprises the four levels was described by John A. Bech, Assistant Vice President Operations, CN Rail. Level 10 is the foundation level and would accommodate the automatic train dispatcher's work station. Level 11 would provide automatic train control and, or, track forces working along the wayside, would provide the necessary data. Basicly Level 11 is a computer-aided manual block systems. Level 20 would add a vital data communications link coupled with microprocessor control to the locomotives and selected maintenance-of-equipment way. Now there is a two-direction communication between the dispatcher and trains and other mobile equipment. A data link will be the major means of sending movement authority to trains. Voice radio would still be available.

**System Engineering Results**

System engineering results were achieved by a consortium of system engineers led by ARINC Research Corp., presented system architecture to the AAR task forces consisting of 60 officers from 16 railroads at a meeting in November 1984 in Kansas City. Key architectural proposals were accepted by this temporary agency. The consortium, to be known as the interlocking computer associated with the track work, was to be mandatory. The data link in the event of a break in the circuit must be separate from the voice radio. Cost and technical difficulty will require immediate radio coverage.

**Four Levels of ATCS**

Level 10 introduces automatic train dispatching, train control, and wayside equipment. Level 15 introduces automatic train dispatching, train control, and wayside equipment. Level 20 introduces automatic train dispatching, train control, and wayside equipment. Level 25 introduces automatic train dispatching, train control, and wayside equipment. Level 30 introduces automatic train dispatching, train control, and wayside equipment. Level 35 introduces automatic train dispatching, train control, and wayside equipment. Level 40 introduces automatic train dispatching, train control, and wayside equipment. Level 45 introduces automatic train dispatching, train control, and wayside equipment.
Professional Activities

May 1986

Frank E. Lord
Professional Activities Editor

CAREER MAINTENANCE AND DEVELOPMENT

The title of this column is taken from the name of a committee and task forces under the aegis of the United States Activities Board (USAB) that address matters that are not entirely technical, that, nevertheless, have an effect on our professional lives.

In 1977, Martin Ristenbatt, working with the Region 4 Director, Paul Carroll, established the Career Maintenance and Development (CMD) Task Force and served three years as its chairman. When task forces become permanent parts of USAB they are designated "committees" and CMD has since made this transition. In little more than a year CMD sponsored a major event, the Careers Conference, and since then they have held three more such conferences.

Harry Cronson and Wally Decker subsequently chaired this committee, contributing a great deal to the conference. The present chairman is Charles Kost.

The Committee addresses many subjects and issues contributing to the improvement of our profession. Many of these activities go unpublicized. One output of this committee, however, is available for the asking, the pamphlet Professional Practices for Engineers and Their Employers. You might consider perusing this document. These guidelines are designed to benefit both engineers and their employers' section describes practices that are already common in America's best-run companies. It is an interesting exercise to compare your own professional behavior with the suggestions presented for individuals. You can obtain a copy of this pamphlet by contacting:

Bill Anderson
IEEE Washington Office
1111 - 19th Street, N.W. - Suite 609
Washington, DC 20036
(202) 783-0008

Points emphasized in the pamphlet often surface in a variety of forms at the Careers Conferences. Other observations emerge as well, including the fact that engineers do not pay as much attention to these matters as they should.

Harry Cronson wrote a report on the fourth conference, which was held last October 2-4 in Cambridge, Massachusetts. Before launching into the report he made the independent observations that follow:

"Why are most engineers so apathetic about their careers? Maybe they have little power in their organizations. If unprivileged, they'll change jobs for more challenging assignments elsewhere. I believe engineers have more power and discretion than they realize and could improve themselves and their organizations by using more initiative. While engineers are primarily responsible for their careers, organizational nurturing is also essential. The Careers Conference is the only IEEE forum, perhaps the only industry forum, where a mix of engineers, managers, scientists, engineers, and people discuss developing and nurturing engineering careers, which I believe want to be apathetic about. An engineer's effectiveness on the job is not only personally satisfying, but also impacts the productivity and competitiveness of the United States, and possibly the ultimate survival of the free world."

The following extracts from Harry's report will convey to you the flavor of the Conference:

The 2-day conference was divided into seven sessions. The first three and with the recently completed Study of Engineering Utilization by the American Association of Engineering Societies (AAES) and funded by NSF and DOD. Titles of the other sessions were:

Duality: Viable Career Options

The second day's session dealt with the more interaction between industry and academia. Industry people provided the perspective of graduate and undergraduate students should participate in the decision-making process. Project managers should involve engineers, as well as managers.

Session 6 on Career Management in a Changing Environment had some particularly interesting items:

John Sloan, ALCORN, spoke on the economic and technical environment for engineering in the 1980's and 1990's. He concluded that the environment for engineering careers in the next 15 years is likely to be characterized by change and challenge. Engineers will have to become more business savvy. Successful engineers should be more receptive to human interaction. Engineering careers will be more rewarding than they have been in the last 15 years and status of engineers is likely to be better recognized and rewarded by business leaders and society as a whole.

"Taking Charge of Your Own Career" was discussed by Ray Eversoll. His premise was "we can't depend on anyone else for our careers." He concluded that there were three major areas of individual professionalism selling a service. 3) Lifelong learning is a major area that is emphasized, the point that engineers must recognize the need to sell the service. The most professional and effective sales strategy involves no compromise of ethics, only a compromise of a philosophy of personal gain.

Some comments from Session 2, a panel discussion on Better Utilization of Engineers, were:

Gene Dalton (Brigham Young University) A major problem is that engineers don't understand their careers and organizations. Engineers must understand what their organizations value and learn how to manage their managers.

Charles Kost (Texas Instruments) 0 Career maintenance and development is a three-component plan: 1) challenging work assignments, support systems, 2) mentoring, 3) systems.

Fred Landis (University of Wisconsin-Milwaukee) 0 Underutilization is more of a problem than misutilization.

0 Age changes people's expectations. As they grow older, they become more interested in people, but are not interested in work. They like to do what they like.

0 Career activities have been going on for well over 20 years. American management has not learned much about engineers' careers over these 20 years, through the advantage of their job to do their present job better.

William Shearer (ATS Bell Laboratories) 0 Objectives and responsibilities should be a company-wide responsibility.

0 There should be more interaction between industry and academia. Industry people offer the perspective of students and what they need and what university people should work on.

Engineers should participate in the decision-making process. Project managers should involve engineers, as well as managers.

Some other comments:

0 Career management in a Changing Environment had some particularly interesting items:

John Sloan, ALCORN, spoke on the economic and technical environment for engineering in the 1980's and 1990's. He concluded that the environment for engineering careers in the next 15 years is likely to be characterized by change and challenge. Engineers will have to become more business savvy. Successful engineers should be more receptive to human interaction. Engineering careers will be more rewarding than they have been in the last 15 years and status of engineers is likely to be better recognized and rewarded by business leaders and society as a whole.

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For those interested in more detail, the complete report runs 8 pages and will be available from the Washington Office.

OPEN LETTER TO MEMBERS OF THE SOCIETY

President Kennedy once said, "Ask not what your country can do for you, but what you can do for your country." I am posing a similar proposition to you now.

Each year, the Society selects five persons to its 15 member Board of Directors. Each year, the search is made to find five of our Members who are willing to stand for election, and who have the support of their employers to serve for the three year term. And who will you be Directors, de facto, not de jure. The search is not an easy one, and that is why I call upon you:

Call on one of the three main areas of interest, Mobile communications, Automotive Electronics, and Land Transportation systems. The ideal Board would have a mix of representation in all of these areas. We strive to do, albeit not always successfully. Our membership is predominantly communications oriented, thus it is only natural that Board is thus oriented. But this year we welcome the new members of the former Land Transportation Systems Board to put forward Board Candidates. We are also anxious for those with Automotive Electronics interests to put forward their talent.

You can do something for your Society. If you know someone, whom you believe would make a good candidate for the Society Board of Directors, please write to me at the address below, or give me a call. All I need is the persons name, address and telephone number. I will consider these candidates for the Board. I will see that they appear on next fall's ballot. The rest will be up to the membership. But don't stop there, if your man gets on the ballot, campaign for him!

Experience has shown that our Membership rarely elects an unknown. So if your man has not been active in the Society and yet you believe he would make a good candidate, then encourage him to volunteer for a Committee assignment. Many of our present Directors have followed this path.

Every effort will be made to have at least two candidates for each Board seat. If we are successful, then there will be five candidates, each of whom have picked the person who is of Board caliber, then he should be willing to serve in an appointed committee capacity and then run again.

Ask not only what your Society can do for you, but what you can do for your Society.

Sam Conboy, Chairman
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The concept of a better two-way radio service for the general public is not dead. Via the docket reproduced below, the FCC intends to explore the feasibility of creating a new Consumer Radio Service in a segment of the 460 MHz band currently occupied by the General Mobile Radio Service (GMRS), formerly known as the Class A Citizen's Band. Since this is a Notice of Inquiry, specific proposals are not made, but responses to general concepts are requested. The trick will be to develop a rulemaking proposal which can deliver a technically and economically viable service with only 200 KHz of spectrum. A major consideration will have to be the co-existence or displacement of existing licensees in that band. Get your best ideas and get them to the FCC by May 30.

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Vehicular Electronics

Bill Fleming
Vehicular Electronics Editor

TRW Inc. has found a new automotive target for electronics: the pump, hoses, and fluids used in hydraulic power steering systems. It will replace those with an electronically controlled motor that provides a lower cost, more responsive, and safer power steering system. Although other U.S. makers of power steering systems are working on similar units, they are not close to production as TRW is.

The new system, called Powertronic, can be delivered to the auto assembly plant, pre-tested and ready to be bolted in place. This is a tremendous advantage over hydraulic systems which include extensive hydraulic equipment which can only be tested after final assembly. This "modular" construction is much in demand by automakers because it reduces assembly time, inventory and plant size.

Unlike hydraulic systems, which are mechanically coupled to the engine and consume power continuously, a system driven by the electric motor puts its energy from the battery and uses power only when needed for a steering maneuver. This results in horsepower gains and also gives an estimated extra 0.5 mile per gallon fuel savings. The system also saves space and weight, knocking seven pounds off the heft of today's typical hydraulic system while reducing the number of pieces in the steering system from 18, required for hydraulic systems, to just 3 required for the electronic system. This reduces the automaker's inventory handling of power steering parts by 85%. Maintenance costs will also be reduced because leaky hydraulic oil systems, which account for nearly two-thirds of steering-system warranty claims, will be eliminated.

The Powertronic system can be programmed to different levels of steering effort. For example, the unit can produce a low-effort, "luxury-car" feel or a high-effort "sports-car" feel. The steering effort can be pre-set by the manufacturer or by the customer if the auto manufacturer chooses to provide customer selectable settings.

The system also provides steering effort which is proportional to speed. For example, low effort is provided for parking whereas higher effort is provided to give a better feel of road at high speed.

By 1990 the company expects to produce 500,000 units. By 1992 TRW estimates a market of 3 million electronically controlled steering units. Electronic steering provides a launching point for a number of advanced suspension projects. TRW is currently looking at integrated packages with electronically controlled suspension and four-wheel steering.

Cut-Away-View Of TRW Powertronic Electronically Controlled Steering System

The Chameleon Car

Using advances in microprocessing and other technologies, U.S., Japanese and European car makers and their suppliers are putting together vehicles that automatically and quickly adapt many of their operations to suit the tastes of different drivers or one owner's varying requirements. These cars are known as 'chameleons,' "personality cars," or "his and hers" automobiles. This means that automobile suspensions can work in a smooth environment and that the suspension can work in a smooth manner when the owner is driving. In addition, steering can be varied between feeling loose with lots of play to feeling very quick with sensitive feel car. And transmissions can be varied from shifting smoothly or to automatic gear shift jerk-like actions.

Inside the automobiles, seats, mirrors, windows, and other powered devices slide into place to suit the driver at that moment. Radio and climate controls adjust immediately to pre-set preferences. Joe Zinnock, engineering director of the Automotive Product Technology Laboratory for TRW Inc. says that "It's an idea being driven by competition and the customer -- customers have been given a peek of what's possible technologically, and they are hungry"[3,4].

A rudimentary component of the chameleon car is the TRW memory-seat module now available in General Motor's luxury cars. At the present time this module can be used to program (pre-select) and automatically recall two different seating positions of the General Motors six way power seat. TRW expects to extend the system to pre-programmed radio tuning and climate control settings and mirror position settings. Thus, two or more drivers -- or the same driver in different moods -- could change the cabin environment with the touch of a single pre-select button. Eventually this feature could be extended to control operation of the vehicle suspension, steering, gear shifting pattern, and engine calibration.

Chevrolet Corvette Indy

At a recent Detroit Auto Show Chevrolet showed a concept vehicle called the Corvette Indy. This vehicle was a showcase for future Corvette hardware, such as four-wheel drive, four-wheel steering, active suspension, and electronic navigation. Four-wheel drive is required because the 32-valve V-8 engine puts out over 600 hp, and two-wheel drive just can not transfer that much power to the road in an effective manner. The engine is a British-built 2.6L design. The concept vehicle was developed jointly by Lotus and General Motors [5,6].

Test Instrumentation For Non-Contact Vehicle Ground Speed Measurement

In Germany, a new type of optical sensor for non contact ground speed measurement of vehicles has been developed by Optron-Messtechnik. The sensor accurately measures both forward and transverse ground velocities of the vehicle in a non contact fashion thereby eliminating problems of wear, damage, slip and bounce inherent to the conventional contact fifth wheel measurement technique. The sensor is said to be accurate over all types of road surfaces including asphalt, concrete, cobblestones, Belgian block, brick, sand, gravel, dirt, grass, ice, and snow.

Because the measurement is non contact, velocity vectors, both longitudinal and transverse, are reliably measured, even during skid maneuvers. When a height sensor is used in conjunction with the ground speed sensors, motion of the chassis such as pitch and roll can also be accurately measured during vehicle maneuvers. In order to obtain operation with all types of road surfaces a halogen reflector lamp is built into the instrument to give reflection over surfaces ranging from snow to dirt. In addition, the height measurement is independent of environmental conditions, partly because of its use of an infrared diode illumination of the ground. The instrument is simply installed on one vehicle using an adjustable suction holder and works accurately without need for exact positioning of the instrument with respect to the ground. Accuracy of both the velocity measurements and range measurements are said to be within 0.1%. The range of operation is up to 100 km/h.

Operation of the sensor depends on signal processing of images of the roadway received by the sensor. The image is split into two parts, via a grating or filter. The two images are then compared electronically to establish a time delay between the leading edge and trailing edge of the images thereby determining the velocity of the vehicle. At least I think this is how the sensor operates, very little information is provided as to the exact operating mechanism of the sensor.
Communications

J. R. Cruz
Communications Editor

ABSTRACTS


A theory for data-aided equalization and cancellation in digital data transmission over dually polarized fading radio channels is presented. The present theory generalizes and extends previous work by admitting decision feedback structures with finite-tap transversal filter implementations. Subject to the assumption that some past and/or future data symbols are correctly detected, formulas and algorithms for evaluating the least mean-square error for different structures are presented. In a sequence of curves we evaluate and compare the performance of various structures for a particular propagation model and several fading events. We find improvement in performance for decision feedback over linear equalization. More importantly, we discovered that in this application, as in the single-channel transmission case, decision feedback/canceler structures are much less sensitive to timing phase than linear equalizers.


Performance signatures for dual-polarized transmission of M-state quadrature amplitude-modulated signals over dispersive multipath digital radio channels are theoretically derived in this work. We report on two major findings. Firstly, we show that for the assumed propagation model, a co-polarized interferer exhibits negligible behavior and impacts on digital radio outage time in direct relation to its power level. Secondly, our theoretical finding is based on a new application of performance signature curves for two co-polarized multipath channels. This treatment permits the prediction of multipath-induced digital radio outage for specified ratios of power in the copolarized and cross-polarized signals. Theoretical findings are qualitatively supported by measured performance signature obtained from a laboratory simulation of the model.


The transmission performance of digital radio systems is controlled by spectral null propagation fades. To statistically model such fades, a mathematical model for frequency-selective fading is needed. New propagation data obtained in Gainesville, Florida, were used to generalize Ruelle's model to accommodate a wide range of fade shapes and to model group delay response. The introduction of the delay response data into the model of the fading channel enabled the classification of the fades as minimum phase and nonminimum phase. We found that 24 percent of all fades have significant delay distortion, and can be characterized as being minimum phase or nonminimum phase. In the range of practical

REFERENCES


The German cellular radiotelephone system C is a "full" cellular radiotelephone system in the 900 MHz range in order to meet the mid-term demand. This informative article discusses this system in detail.


This article examines MTS-E (an advanced 900 MHz Cellular Telephone System) - its development, performance, and description and gives an idea where CASS (computer-aided system design) and field measurements can be included in the design and development of a mobile telephone system.


Enhancements of the Dynat M&C Cellular Portable Radiotelephone and its applications in U.S. cellular systems is described. Also discussed are the Dynat M&C loop and its design to the needs of the UK and projections for future cellular system design.


This system consists of a vehicle-mounted multi-service and two portable transceiver units (used as a portable telephone). The philosophy and characteristics of this system in Japan is described.
Section 7. The Board of Directors shall utilize the services of Headquarters as bursar for all or part of Society funds, as provided by the IEEE Bylaws. If any part of the Society funds are received and deposited separately, the terms and conditions shall be in accordance with IEEE policies and Society Bylaws and subject to any special conditions of the Board of Directors.

Section 8. Neither the Vehicular Technology Society or any officer or member thereof shall have authority to contract debts for, pledge the credit of, or in any way bind the IEEE or the Vehicular Technology Society, except within the terms of previously approved budgets.

Article 6
Meetings, Conferences, Conventions and related Business

Section 1. The Society may hold meetings, conferences, symposia or conventions either alone or in cooperation with Sectional, Regional or the Convention Committee of the IEEE or other organizations, subject to the IEEE Bylaws. The Society shall sponsor at least one technical conference of major scope each year, which may be held as a separate conference.

Section 2. Meetings, conferences or conventions of the Society shall be open on an equal basis to all members of the IEEE. The Society shall no sponsor or co-sponsor a meeting which is subject to security clearance.

Article 7
Publications

Section 1. Publications undertaken by the Society shall be subject to IEEE policies and to any further guidance or controls prescribed by the Board of Directors or its duly appointed committees. The Society shall be responsible for the financial aspects of its publication program.

Section 2. The President, with the consent of the Board of Directors, shall appoint such editors as may be required to implement the publication program. The duties of an editor shall be as prescribed in the Society Bylaws.

Article 8
Amendments

Section 1. Amendments to this Constitution may be initiated by a petition submitted by at least 50 members of the Society or by the Board of Directors. An affirmative vote of at least 10 members of the Board of Directors is required to initiate an amendment by the Board of Directors. Proposed amendments to the Constitution brought by petition will be presented as if approved by the Board of Directors.

Section 2. Approved or petitioned amendment proposals will be published in the Society Transactions and/or the Newsletter. A copy of the proposed amendments shall be mailed with a ballot to all members of the Society at least 30 days before the date appointed for return of the ballots, and the ballots shall carry a statement of the time limit for their return to the IEEE office. Approval of the amendment by at least two-thirds of the members voting shall be necessary for further action.

Section 3. Amendment proposals approved by the Society membership must be submitted to the IEEE Technical Activities Board and the IEEE Executive Committee for approval before being adopted.

Section 4. Amendment of the Society Bylaws may be initiated by a petition signed by at least 20 members of the Society or by a Director of the Society.

Section 5. Proposed amendments to the Society Bylaws must be mailed to each Director at least 20 days prior to a scheduled meeting of the Board of Directors.

Section 6. Proposed amendments of the Society Bylaws must receive at least 10 affirmative votes to be adopted.

Section 7. Adopted amendments will not be enacted until at least 30 days subsequent to publication in the Society Newsletter.