

Reliability Society Newsletter



Editor: Alan Plait

April 1979—Vol. XXII—Issue 2

AS I SEE IT

Another RAM Symposium is over and was apparently a complete success. Much credit has to be given to the hard-working members of the Management Board (but that is not to forget the authors and moderators). For myself, the Tutorial Sessions once again exceeded expectations with about a 20 percent increase in attendance. The new Software Reliability Session, given by Myron Lipow and Marty Shooman, had raves and requests for more of same next year. That's a promise!

Due to a variety of difficulties, some articles appearing in recent issues of the *Aviation Week and Space* magazine cannot be reprinted in the Newsletter. However, they make for familiar reading about reliability horror stories. The subject is TACAN programs. You might want to read them for laughter and (sob!) tears. Also, as part of my long-standing kick on better incoming parts control, a January 1979 article in *ELECTRONIC PACKAGING AND PRODUCTION* magazine (pages 225-228) tells about

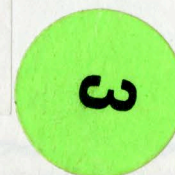
"Burn-in Pays at Hewlett-Packard." Even though previous failure rates were in the range 0.28 percent, vigilance in burn-in testing revealed an increase to 0.73 percent (using a base of 200,000 parts). By use of burn-in, generally, warranty labor costs dropped 40 percent in 1977, the first year electrical test and burn-in was used.

Speaking of reliability, aren't any of you folks out there going to help our nation's meteorologists? Their forecast for Washington, DC weather changed at least three times in the last 24 hours. I write this after the worst snow storm in recent memory. Hey, Up There, did you forget we are supposed to be part of the South?

The next Newsletter will be under the editorial direction of a new person. It has been my pleasure to take over (temporarily) from Naomi McAfee. However, my duties as Vice President-Publications take priority. Nevertheless, as I've said before, keep those cards and letters coming.

Alan Plait

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RELIABILITY SOCIETY 1978 AWARD

The IEEE Reliability Society has presented the 1978 Annual Reliability Award to Marion P. Smith, Honeywell Corporation Manager of Material Quality Assurance. The Award was presented to Marion for his significant technical and management contributions to electronic equipment reliability and for his effective leadership in the development of international Reliability and Maintainability standards. The Award presentation was made at the RAM Symposium by Dr. T. L. Regulinski, President of the Reliability Society. Dr. Regulinski cited Marion for his professional activities with the International Electrotechnical Commission as Chairman of the United States delegation, and for his many humanitarian activities as President of the National Association for Retarded Citizens.



Marion Smith shows off his well-deserved award.



Joseph Naresky, outgoing President of the IEEE Reliability Society, accepts plaque from incoming President, Dr. Thad Regulinski.

INSTALLATION OF NEW AdCom OFFICERS

During the Awards Luncheon held by the Reliability Society during the 1979 RAM Symposium, the 1981 Class was inducted, together with the new officers of the Administrative Committee. The class consists of:

Anthony Coppola
Kurt Greene
Henry Malec
Val Monshaw
Alan Plait
Herman Wuerffel

The new Officers are:

President: Dr. T. L. Regulinski
Vice-Presidents:
Technical Operations—B. Retterer
Publications—A. Plait
Meetings—C. Bird
Membership—J. Victor
Secretary—N. McAfee
Treasurer—I. Feigenbaum

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Reliability Society Newsletter is published quarterly by the Reliability 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 Reliability Soc. Printed in U.S.A. Second-class postage paid at New York, NY and at additional mailing offices.

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ANNOUNCEMENT

STAT-A-MATRIX-INSTITUTE announces its Spring 1979 Catalog in a new expanded format. This semester nine new courses have been added in an effort to broaden the scope of offerings in the Assurance Sciences that can be utilized for certification or simply to increase specific skills. We have expanded our certification programs to include GMP's as well as Nuclear Certification. Also offered this semester are two refresher courses for ASQC Certification; one for Certified Quality Engineers and the other for Certified Reliability Engineers.

CHAPTER NEWS AND INFORMATION

Chapter of the Year Award at Symposium

During the Awards luncheon held at the RAM Symposium, the Chapter Awards were presented as follows, for activities during 1978:

Chapter of the Year—Mohawk Valley—Tony Coppola
Excellent Program, 1st place—Los Angeles—Irv Doshay
Excellent Program, 2nd place—Boston—Bill McCabe
Seven chapters also received consolation awards.

FEBRUARY BULLETIN

I. Doshay
L. A. Reliability Gp Chapter
Jan. 2, 1979

Reliability Group Program on Mechanical Reliability

On 26 February 1979, the Reliability Group Chapter featured a talk by Mr. Charles E. (Chuck) Ingraham, PE, titled "Mechanical Reliability (The Other Half)."

The themes addressed by Mr. Ingraham included the lack of a ready source of data like MIL-HDBK-217 for mechanical predictions, the manner in which the ME accomplishes prediction and reliable mechanical design approaches to packaging of electronic circuits.

Mr. Ingraham is Supervisor of the Mechanical Reliability Group at Garrett AiResearch in Torrance, CA.

Mohawk Valley Chapter

Mr. Alfred Tamburrino, RADC/RBRP, Griffiss AFB, NY 13441, telephone (315) 330-2813, has been elected Chairman of the Mohawk Valley Chapter of the IEEE Reliability Group for the 1978-1979 season.

The next presently scheduled meeting of the Chapter is a joint meeting with ASQC on 19 March 1979 with a speaker from ARINC on Reliability Improvement Warranties.

For details, write or call:

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Cable Address: STATAMATRIX Edison NJ

**JOINT MEETING—RELIABILITY GROUP—
JAN. 9, 1979**

There was a joint meeting of the IEEE Reliability Group—Washington, Northern Virginia and Baltimore Sections on Jan. 9, 1979. Also with the Institute of Environmental Sciences Chapter and Westinghouse Reliability Group. There were 75 attendees with presiding officer Bernard Bang, Chairman of the Baltimore Chapter.

Title of Paper: Field Reliability Experience.
Speaker: Col. Ben. H. Swett, USAF.
Affiliation: Asst. for Reliability and Maintainability, Office of the Undersecretary of Defense (Research and Engineering).

**FEB. 21, 1979—RELIABILITY GROUP
Washington joint with Baltimore Chapter**

Subject: A Historical Review of Selected Organized Reliability Improvement Programs and Their Accomplishments
Speaker: C. Raymond Knight, Executive Vice President, ARINC Research Corp.
Place: Goddard Space Flight Center Employee Recreation Center Greenbelt, Maryland (see map and directions inside)

Reliability Section, Boston Chapter

Lecture Series

"Fundamentals of Life Cycle Costing," Donald R. Earles and Mary Eddens Earles, 48 attendees, October/November 1978 (5 meetings).

Chapter Meetings

1. "A Survey of Parts Reliability Achievement Methods," David W. Jones and Henry A. Wristen, 36 attendees, September 1978.
2. "The Microprocessor Cash Register—Quality/Reliability Problems and Solutions," 37 attendees, Ralph Fleischmann, December 1978.
3. "Automated Logistic Support Analysis Tools," Susan H. Eames and Edward L. Naas, 27 attendees, January 1979.

Upcoming Events

DATE	LOCATION	SUBJECT	SPEAKER
Feb. 21, 1979	Officers Club Hanscom Field Bedford, MA	Software Reliability	Jack Taub, Raytheon
Mar. 14, 1979	Officers Club Hanscom Field Bedford, MA	Nuclear Safety Considerations	Dennis Dumas New England Nuclear
Apr. 26, 1979	Hillcrest Waltham, MA	1979 All Day Seminar on "System Effectiveness for Today's Designs"	Eight Timely Papers

HELP WANTED

Senior Reliability Engineer—Electronics Systems

Position available in Clearwater, Florida for BSEE with 5-10 years experience, including FMEA and MTBF calculations. Responsibilities include clarifications of non-conformances during system testing, corrective action investigations, and program reporting requirements. Part failure analysis is A+.

Contact:
Jim Morrison: (813) 577-1900 x 2524,
or write to:

Sperry Microwave Electronics
P.O. Box 4648
Clearwater, FL 33518

MANUSCRIPTS SOUGHT

A consulting editor for a major publisher is seeking manuscripts for books in most areas of electrical engineering. Emphasis is on reference and professional books. Interested authors should send introductory material (no manuscripts please) to Dr. M. W. Long, 1036 Somerset Drive, Atlanta, Georgia 30327.

CALL FOR PAPERS

**IEEE TRANSACTIONS ON RELIABILITY
SPECIAL ISSUE
DEVOTED TO FAILURE
MECHANISM ANALYSIS**

The Editorial Board of the IEEE Transactions on Reliability is planning a special issue of invited papers on the subject of Failure Mechanism Analysis. Philip H. Eisenberg, Northrop and Alfred Tamburrino, RADC will be the guest editors. The basic objective is to provide a literary forum for the exchange of information among those involved with failure mechanism analysis, especially modern components, and techniques for the investigation of these areas.

Invitation is extended to authors of previously unpublished papers dealing with Failure Mechanism Analysis in the following suggested or related areas:

1. Failure Mechanism Studies—Analysis of the detailed physical/chemical mechanisms of failure processes.
2. Failure Analysis Techniques—Particularly, but not exclusively, as applied to practical analysis of failed devices.
3. Prediction and Mathematical Failure Models for estimate of device failure rates as function of temperature, construction, complexity, etc.
4. Environmental and Accelerated Testing, and Techniques for

**IEEE PUBLISHES BOOK ON
MULTIDIMENSIONAL SYSTEMS**

The publication of *Multidimensional Systems: Theory and Applications*, A Book of Selected Reprints, has been announced by the IEEE PRESS. This collection was edited by N.K. Bose of the University of Pittsburgh.

This volume opens with a specially written paper on multidimensional systems that introduces the reader to the variety of application areas resting on a common mathematical foundation, that summarizes the results of recent wide-ranging research, and that includes an extensive bibliography. This is followed by 24 key reprinted papers carefully selected from a variety of sources.

Among the subjects treated in the reprints are multidimensional polynomial nonnegativity and positivity algorithms, multivariable network theory, multidimensional transform theory for the analysis of nonlinear continuous as well as sampled-data systems, multidimensional deterministic signal processing, multidimensional approximation, and computational complexity. The book concludes with the editor's assessment of the open problems that remain to be solved.

Multidimensional Systems: Theory and Applications is priced at \$14.95 for the paperbound member edition. A clothbound edition is available for \$29.95 (discounted to \$22.45 for IEEE members).

This 304 page book can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Payment should accompany the order.

In addition to being available from the Institute, IEEE PRESS books are distributed worldwide by John Wiley & Sons, Inc.

- data analysis, activation energies, extrapolation, etc.
- 5. Electrical Testing of LSI, sufficiency of, relation to reliability, mathematical treatment, etc.
- 6. System Related Device Reliability—FMEA, fault tolerant design, general microelectronics reliability from a fundamental viewpoint.

In order to assist the Board in planning the special issue, cooperation of prospective authors is solicited with the following target dates:

- March 2, 1979—Author's Letter of Commitment
- March 30, 1979—An Abstract of 300-500 words and biographical sketch
- August 3, 1979—Three copies of full text draft not to exceed 20 double-spaced typed manuscript pages
- November 2, 1979—Author—Reference Consultations completed

Letters of commitment containing a brief description of the essence of the paper, or requests for further information should be addressed to:

Philip H. Eisenberg, Manager
Reliability Section
Northrop Electronics Division
2301 W. 120th Street
Hawthorne, CA 90250

For additional information call Alfred Tamburrino (315) 330-2813.

**ENGINEERING FOUNDATION FELLOWSHIPS
GRANTS FOR 1980**

The Engineering Foundation announces the availability of Engineering Foundation Fellowships during 1980 which is attached. A grant of \$5,500 will be awarded.

Proposals should be submitted directly to the Technical Activities Department at IEEE Headquarters and must be postmarked by *June 1, 1979*.

**ENGINEERING
FOUNDATION FELLOWSHIPS
Sponsored By
The Engineering Foundation
with the cooperation of its Founder Societies**

- American Society of Civil Engineers
- American Institute of Mining, Metallurgical and Petroleum Engineers
- The American Society of Mechanical Engineers
- Institute of Electrical and Electronics Engineers
- American Institute of Chemical Engineers

GENERAL

The ENGINEERING FOUNDATION announces the availability of Engineering Foundation Fellowships during 1980 for State-Of-The-Art reviews in fields recommended by its FOUNDER SOCIETIES.

The program is directed toward members of engineering faculties and industrial specialists who have established a profes-

sional reputation through publications.

A grant of \$5,500 will be awarded on a competitive basis to a member of each of the FOUNDER SOCIETIES for a proposed research review in a field of direct interest to his FOUNDER SOCIETY.

PROPOSED REVIEWS

Proposed reviews shall provide an analysis in depth of a specific field including recommendations on engineering research needed to advance the state-of-the-art of that field.

A list of recommended fields will be available upon request from the Executive Officer of his professional society.

EVALUATION AND SELECTION OF PROPOSALS

Proposals shall be sent to the Executive Officer of his professional society. A panel organized by his professional society will evaluate and select meritorious proposals. They will be submitted (in rank order) to the Projects Committee of the ENGINEERING FOUNDATION who will make the final selection of a proposal for each of the FOUNDER SOCIETIES for submission to the Board of the ENGINEERING FOUNDATION for final approval.

DEADLINE

All proposals being submitted to the FOUNDER SOCIETIES must be postmarked by June 1, 1979.

Proposals selected by the FOUNDER SOCIETIES for submission to the Projects Committee of the ENGINEERING FOUNDATION must be postmarked by August 1, 1979.

ANNOUNCEMENT OF FELLOWSHIPS

Selected fellows will be notified by letter from the secretary of the ENGINEERING FOUNDATION on or about January 1, 1980, with copies to their FOUNDER SOCIETIES. The FELLOWSHIPS will be effective as of February 1, 1980.

FINAL REPORT

A final report shall be submitted to the ENGINEERING FOUNDATION and to the FOUNDER SOCIETY by each fellow for publication. The ENGINEERING FOUNDATION reserves publication rights.

Appropriate recognition of the ENGINEERING FOUNDATION and the cooperating FOUNDER SOCIETY must be prominently displayed on the title page of the publication.

PAYMENTS

The ENGINEERING FOUNDATION will provide fifty percent of the grant at the start of the fellowship and fifty percent at the end of the fellowship when the final report is presented.

INSTRUCTIONS FOR PREPARING A PROPOSAL

The formal proposal shall contain the following information. Twelve copies are needed.

THE COVER SHEET

The first page of the proposal shall include the title of the review; name of applicant, title, institution and location; name of

person financially responsible for administering the fellowship funds.

DESCRIPTION OF PROPOSED REVIEW

The next section (not to exceed four pages) shall contain the proposed review in sufficient detail to allow an evaluation of its merit on the basis of delineated approach and time required for its fulfillment. Maximum time will be one year.

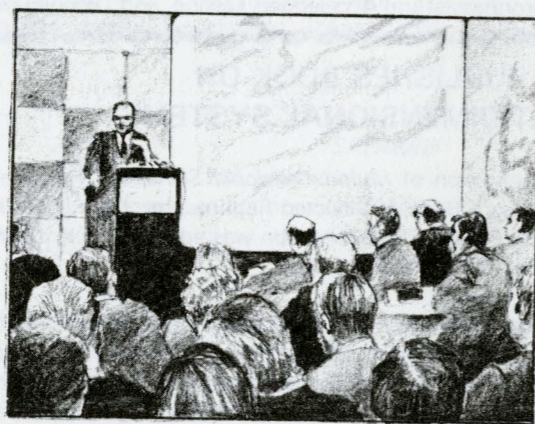
QUALIFICATIONS OF APPLICANT

The next page shall describe the special qualifications of the applicant for conducting the review followed by a biographical sketch and a listing of publications.

PROPOSED BUDGET

The proposed budget shall appear on the last page in specific details describing how the funds will be utilized. The budget cannot exceed \$5,500 and cannot include indirect costs. Such a fellowship award is not renewable.

For further information, please contact Dr. Neil D. Pundit, IEEE Director of Technical Activities at (212) 644-7890.



FIELD RELIABILITY

Joint meeting of Washington, Northern Virginia and Baltimore Sections at Westinghouse Electric Company at Friendship Airport on January 9, 1979, 8:00 p.m.

Maintenance Reliability and Mission Reliability are both important and must be identified early in the life cycle. Reliability growth must take place, both with and without design changes, before systems enter the operational inventory. Adequate evaluation of field experience is an essential element of the process.

Col. Swett is the Assistant for Reliability and Maintainability, in the Office of the Undersecretary of Defense (Research & Engineering). Previous assignments include: navigator, avionics maintenance, scientist-specialist, development engineer, and R&D Director.

A LAYMAN'S LEXICON TO TERMINOLOGY IN ELECTRICAL AND ELECTRONICS ENGINEERING

(All these terms appear in the IEEE Standard Dictionary of Electrical and Electronics Terms. The definitions appearing here result from what happens to a general, non-electrical mind when it is confronted by these terms.)

aggressive carbon dioxide. A type of carbon dioxide that you really hate to have around the house because it's always so lousy to the other gases.

mean time between errors. Practically no time at all.

pilot exciter. One of a group of furry little fellows with blue eyes and suction-cup feet, that keep running up and down on the leading edge of the wings between the motors at thirty-six thousand feet.

high-speed carry. Function of certain electronics specialists who can run the hundred-yard dash in 9.5 sec while carrying a 21-in. TV set down the fire escape and around the corner.

higher-order mode of propagation. Ideal form of conception guaranteed to produce only philosopher-kings. *See also: Leda and the swan.*

pulse power. Slogan of a new militant group whose base of operation is in the left wrist.

trapezoidal waveform. A waveform, dressed up in sequined tights, that performs athletically high up there while the band plays "Over the Waves."

Poisson's equation. Any way you want to figure it, one angleworm plus one angleworm equals two angleworms, in France or anyplace else.

exalted-carrier reception. Usually begins with a flourish of trumpets, goes on through champagne, seven courses plus brandy, and breaks up around three in the morning.

aerophare (air operations). How much it costs to fly from here to there.

twos complement. Threes a crowd.

underfloor raceway. You should hear those mice at three in the morning when there's a photo-finish.

relay mounting plane. Caption of a picture showing a relay getting aboard an airliner.

aliquot. *See: pussyquot.*

movable bridge coupler. Specially constructed receptacle designed to hold two sets of removable false teeth. *See also: choppers.*

close-talking pressure-type microphone. A pushy, wiseguy microphone that often gets fresh while dancing.

electron-beam accessed memories. Ah, those were the days!

bell crank. The nasty old person living across the street from the church, who always calls up to complain about the noise every Sunday.

See also: carillonophobia.

dynamic dumping. The function of garbage collectors with a good deal of verve and charisma.

burn-in. Chief cultural ritual in the South Bronx.

perforator. Person from Detroit who is hired for a brief temporary job in Jersey City just prior to an extended visit to Rio.

pole body. Young woman dedicated to high fashion.

pole body insulation. Mink, if she plays her cards right.

blank character. Person who has been striving for years, unsuccessfully, toward mediocrity. *See also: zero guy.*

root-mean-square. A mean potato consisting of four ninety-degree angles.

uninhibited oil. An oil of a fairly carefree nature.

static dump. A third-floor apartment on Avenue B and East 6th Street.

air-core inductance. What happens when you're inducted into the air-core.

constant-failure period. Birth to death for some losers.

drop-out time. Friday at 4:45 p.m.

commutator nut. What gets off the 4:22 bar car.

commutator shrink ring. Group of unscrupulous psychoanalysts that live in Great Neck but work in NYC. Note: They split fees a lot. *See also: commutator nut.*

pothead. Son of a commutator nut. *See also: dropout.*

self-commutated inverters. Very quiet people who sit all alone in the 4:22 bar car.

Beverage antenna. A subtle sensing instinct possessed by commutator nuts that enables them to home-in unerringly on the 4:22 bar car.

mesh. Commutator nut at the end of the run on the 4:22 bar car.

independent mesh. Commutator nut who absolutely refuses to let the conductor help him down from the 4:22 bar car.

transient overshoot. Commutator nuts who fall asleep on the 4:22 bar car and get off at Manhasset instead of Great Neck.

transient recovery. Women in station wagons who salvage commutator nuts from the 4:22 bar car.

sinusoidal function. *See: postnasal drip.*

excited field loudspeaker. Person who can't quite get a grip on his emotions, addressing somebody on the other side of a field.

excited machine. Machine with a low emotional boiling point.

deenergized operation. Making dictionaries.
bass boost. There's this bass, see, and he's stuck behind a rock at low tide . . . so you get under him and give him a kind of lift.
bell crank hanger. Member of a lynch mob that harbors irrational and extreme antagonisms toward bell cranks. (q. v.)
biased telephone ringer. A compulsive user of telecommunications devices, who has strong preconceptions.
discharge resistor. Crazy person who likes it in the army. *See also:* Catch-22.
kilocycle. A bike for ten centipedes.
pickup point. The lobby of the Hotel Alcazar. *Note:* Used to be in front of the drug store.
degenerate modes. Lifestyles that leave something to be desired.
elements of a fix. Smoky back room, collars up, shifty eyes, cash under the table . . .
high-level firing time. The time when executives' heads roll. *See also:* Götterdämmerung.
gross generation. People born between 1950 and 1960.
gross demonstrated capacity. A capacity demonstrated by a member of the gross generation to behave in a gross manner.
Hamming distance (computer system). The distance a computer system can hurl a ham, measured in cutlets.
self-impedance. Character quality possessed by a person who is his own worst enemy.

electrical conversions. *See:* St. Paul.
mobile station. There's one just north of Saratoga on Route 9. *Note:* Nice clean rest-rooms.
liter. *See:* Litre. *Note:* A litre of watre equals two pints and a quartre.
overshoot, ringing, tilt, droop, dribble-up, glitch, bump, spike, and backswing. Things that happen in an electronic slot-machine when you put in one of those octagonal Canadian nickels.
joule heater. Very small oven in which people who are hypersensitive to cold heat their joules.
Lecher wires. Wires in a telecommunications system, used exclusively for making obscene telephone calls.
post-mortem dump. A cheap funeral.
straightforward trunking. Open and aboveboard behavior on the part of honest elephants.
zero guy. A person for whom absolutely nothing can be said.
pool rectifier. The guy with the broken cue stick who keeps the game clean.
free cyanide. Effective and viable substitute for a company pension plan system.
Boltzman's constant. The girl who, for years, has been going around with Boltzman.
storm guys. Snowplow operators.
spurious count. Actually his father was in dry goods.
Wheatstone Bridge. Bridge between Floating Point and the Bronx.

Thanks to Aerospace & Electronics Systems Society Newsletter, Feb. 1979.

1979 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

April 24-26, 1979, Airport Hilton, San Francisco, California

General Chairman: Frank B. Micheletti, Rockwell International, Anaheim, CA

PRELIMINARY PROGRAM

Tuesday, April 24, 1979, 9:00 a.m.

Symposium Opening - Frank B. Micheletti

SESSION 1: LSI FAILURE MODES

Session Chairman: Murray H. Woods, Intel Corporation

- 1.1 Method of Determining Reliability Screens for Time Dependent Dielectric Breakdown, D. Crook, Intel Corporation, Santa Clara, CA
- 1.2 Low Field Time Dependent Dielectric Integrity, E.S. Anolick and G.R. Nelson, IBM Corporation, Poughkeepsie, NY
- 1.3 Measurement of Alpha-Particle Radioactivity in IC Device Packages, E.S. Meieran, P. Engle and T. May, Intel Corporation, Santa Clara, CA
- 1.4 Component/System Correlation of Alpha Induced Dynamic RAM Soft Failure Rates, C.C. Huang, A.J. Lewandowski, M.J. Nelson and S.R. Orr, Sperry Univac, St. Paul, MN
- 1.5 Analysis of Dynamic RAM's by Use of Alpha Irradiation, G. Schindlbeck, Siemens AG, Munich, Germany
- 1.6 Impact of Soft Errors on Memory System Performance, A.V.S. Satya, V.P. Singh and D.H. Redfield, IBM Corporation, Hopewell Junction, NY

Tuesday, April 24, 1979, 1:30 p.m.

POSTER SESSION

Tuesday, April 24, 1979, 2:00 p.m.

SESSION 2: PACKAGING AND ASSEMBLY

Session Chairman: Owen D. Layden, USA ERADCOM

- 2.1 The Characteristic Wearout Process in Epoxy-Glass Printed Circuits for High Density Electronic Packaging, J.N. Lahti, R.H. DeLaney and J.N. Hines, Bell Laboratories, Whippany, NJ

- 2.2 Wirebond Fault Infant Mortality: Out of Control Bonding Process or Improper Bonding Metallization? L. Fuke, Hewlett-Packard, Palo Alto, CA
- 2.3 A Metallographic Test for Glass-to-Metal Seal Quality, J. McCormick, RADC, Griffiss AFB, NY and L. Zakraysek, General Electric Company, Syracuse, NY

Tuesday, April 24, 1979, 3:45 p.m.

SESSION 3: METALLIZATION AND PHOTOVOLTAIC RELIABILITY

Session Chairman: John W. Peeples, NCR Corporation

- 3.1 Electromigration of Sputtered Al-Si Alloy Films, E. Nagasawa, H. Okabayashi, T. Nozaki and K. Nikawa, Nippon Electric Company, Ltd., Japan
- 3.2 Electromigration Depletions in Pb-Sn Films, G. Di Giacomo, IBM Corporation, Poughkeepsie, NY
- 3.3 Accelerated Stress Testing of Terrestrial Solar Cells, J.L. Prince, J.W. Lathrop and F.W. Morgan, Clemson University, Clemson, SC, E. Royal, JPL, Pasadena, CA and G.W. Witter, Optional Coating Laboratory, City of Industry, CA

Wednesday, April 25, 1979, 9:00 a.m.

SESSION 4: MOISTURE AND RELIABILITY

Session Chairman: Robert W. Thomas, Rome Air Development Center

- 4.1 Water Vapor Sorption by Package Sealants, R.W. Vasofsky, Clarkson College of Technology, Potsdam, NY
- 4.2 Characteristics of a Surface Conductivity Moisture Monitor for Hermetic Integrated Circuit Packages, R.K. Lowry, L.A. Miller, A.W. Jonas and J.M. Bird, Harris Semiconductor, Melbourne, FL
- 4.3 The Influence of Plastic Encapsulants and Passivation Layers on the Corrosion of Thin Aluminum Films Subjected to Humidity Stress, S.P. Sim and R.W. Lawson, Post Office Research Center, England

- 4.4 Moisture-Induced Aluminum Corrosion and Stress on the Chip in Plastic-Encapsulated LSIs, K. Nishi, H. Inayoshi, S. Okikawa and Y. Wakashima, Hitachi, Ltd., Japan
- 4.5 A New Cyclic Biased T.H.B. Test for Power Dissipating IC's, T. Ajiki, M. Sugimoto, H. Higuchi and S. Kumada, Matsushita Electronics Corporation, Japan
- 4.6 Ionic Contamination-Humidity Effects on GaAs FETs, W.T. Anderson, Jr., A. Christou and K.J. Sleger, Naval Research Laboratory, Washington, D.C.
- 4.7 Effect of Palladium as a Corrosion Inhibitor in Chromium Thin Film Systems, D.J. Sharp, Sandia Laboratories, Albuquerque, NM

Wednesday, April 25, 1979, 1:30 p.m.

POSTER SESSION

Wednesday, April 25, 1979, 2:00 p.m.

SESSION 5: III-V COMPOUND DEVICES

Session Chairman: David Burgess, Hewlett-Packard Company

- 5.1 Reliability Aspects of 0.5 μ m and 1.0 μ m Gate Low Noise GaAs FETs, C. Huang, F. Kwan, S. Wang, P. Galle and J. Barrera, Hewlett-Packard Company, San Jose, CA
- 5.2 On the Reliability of GaAs Power FETs, I. Drukier, J.F. Silcox, Jr., Microwave Semiconductor Corporation, Somerset, NJ
- 5.3 Reliability of Gold Metallized Commercially Available Power GaAs FETs, E.D. Cohen, Naval Research Laboratory, Washington, D.C.
- 5.4 GaAs Medium Scale Integrated Circuit Reliability, P.A. Froess and A. Chu, Hewlett-Packard Company, Santa Rosa, CA
- 5.5 A New Concept of Screening Method of Optocoupler and LEDs, T. Takahashi, S. Todoroki and S. Mitani, Hitachi, Ltd., Japan

Thursday, April 26, 1979, 9:00 a.m.

SESSION 6: ANALYTICAL TECHNIQUES

Session Chairman: Carl Green, Bell Laboratories

- 6.1 Specialized Failure Analysis Technique Utilizing a Plasma Etcher, D.J. DeLorenzo, J.J. Gajda and J.A. Wade, IBM Corporation, Hopewell Junction, NY
- 6.2 PIND and Other Uses of Acoustic Emission Testing in Microelectronics, R.M. Postolka, Dunegan/Endevco, San Juan Capistrano, CA
- 6.3 Detection and Characterization of Defects in Thick Multilayer Microelectronic Components Using Transmission Acoustic Microscopy, C.S. Tsai, C.C. Lee and J.K. Wang, Carnegie-Mellon University, Pittsburgh, PA
- 6.4 Scanning Infrared Microscopy Techniques for Semiconductor Thermal Analysis, C.A. Lidback, Motorola, Phoenix, AZ
- 6.5 The Use of Microfluorescence Analysis for Process Control in the Semiconductor Manufacturing Industry, H.A. Froot, IBM Corporation Hopewell Junction, NY
- 6.6 Analysis of Headspace Vapor in Hermetic Packages Using Plasma Chromatograph/Mass Spectroscopy, T.W. Carr, IBM Corporation, Hopewell Junction, NY
- 6.7 The Chemistry of Failure Analysis, M. Jacques, Litton Corporation, Woodland Hills, CA

Thursday, April 26, 1979, 1:30 p.m.

POSTER SESSION

Thursday, April 26, 1979, 2:00 p.m.

SESSION 7: LSI DEVICE TECHNOLOGY AND RELIABILITY

Session Chairman: Dinesh Mehta, Western Electric Company

- 7.1 PMOS Dynamic RAM Reliability - A Case Study, C.W. Green, Bell Laboratories, Allentown, PA
- 7.2 Reliability of LSI Memory Circuits Exposed to Laser Cutting, M.J. Rand, Bell Laboratories, Allentown, PA
- 7.3 Instability and Failure Mechanisms of Small Area, Nitride-Defined Schottky Barrier Diodes in LSI Applications, S.U. Kim, IBM Corporation, Essex Junction, VT
- 7.4 Ion Implanted P-Resistor Reliability, P.K. Chaudhari and G.R. Nelson, IBM Corporation, Poughkeepsie, NY and A. Naqarajan, IBM Corporation, Hopewell Junction, NY
- 7.5 Analysis of Accelerated Temperature Cycle Test Data Containing Different Failure Modes, G.A. Dodson, Bell Laboratories, Reading, PA

LATE NEWS PAPERS

A limited number of late news items, suitable for 10-minute presentations, reflecting important new developments will be considered if 50-word abstracts and 300-500 word summaries are received prior to February 1, 1979. Please forward abstracts and summaries to **Dr. John Edwards, American Microsystems Inc., 3800 Homestead Road, Santa Clara, CA 95051. (408) 246-0330 x333 or 620.**

ADVANCE REGISTRATION

Attendees are strongly urged to register in advance to avoid unnecessary delays upon arrival at the Symposium.

Advance Registration fees apply only to those postmarked no later than April 2, 1979. Please use Air Mail for Foreign mailing.*

Registration fees include attendance at technical program, a copy of the Proceedings and one Banquet ticket.

* **Foreign Attendees:** Please do not remit fee with advance registration (Advance Foreign Registrants will receive advance Registration rates upon arrival). Only U.S. currency will be accepted.

COMPLETE SYMPOSIUM PROGRAM

A complete Advance Program with abstracts, may be obtained by contacting: **Pat Kennedy, Symposium Publicity Chairman, Hughes Aircraft Company, 500 Superior Ave, Newport Beach, CA 92663**

HOTEL RESERVATIONS

Reservations for hotel accommodations must be made directly with the:

**Airport Hilton
P.O. Box 8355
San Francisco, CA 94128
(415) 589-0770**

Special room rates, \$34 single occupancy and \$42 double occupancy, will apply only if you **identify your request with the 1979 International Reliability Physics Symposium referencing code IEEE-IRPS. One night deposit is required to guarantee room.** To qualify for the special rates, IRPS attendees must make reservations no later than April 2, 1979.

LADIES HOSPITALITY

The Savoy East will be available during the Symposium for use by wives of attendees. Group tours and other events are being planned.

SYMPOSIUM PROCEEDINGS

A complete Proceedings of this Symposium will be mailed to each Symposium attendee and additional copies will be available for purchase through IEEE, Service Ctr., Single Copy Sales Unit, 445 Hoes Lane, Piscataway, NJ 08854 after August 1, 1979. Request Catalog 79-CS-1425-8 PHY. The price is \$16 per copy; a 25% discount will be allowed IEEE members.



CONSTITUTION AND BY-LAWS

Orig. Const. Approved 06/12/51
Amended 07/07/53
11/09/54
09/09/58
11/14/62
03/03/64
Revised 09/30/70
10/06/78

IEEE RELIABILITY SOCIETY

CONSTITUTION

Article I Name and Objectives

Section 1. This organization shall be known as the IEEE Reliability Society.

Section 2. Its objectives shall be scientific, literary, and educational in character. The Society shall strive for the advancement of the theory and practice of electrical engineering and of the allied arts and sciences, and the maintenance of a high professional standing among its members, all in consonance with the Constitution and Bylaws of the IEEE and with special attention to such aims within the field of interest of the group as are hereinafter defined.

Section 3. The Society shall aid in promoting close cooperation and exchange of technical information among its members and to this end shall hold meetings for the presentation of papers and their discussion, and through its committees shall study and provide for the needs of its members.

Article II Membership

Section 1. Membership in the Society shall be available to Members of the IEEE in any grade, including students, having a professional interest in any phase of the field of interest of the Society.

Section 2. Affiliates may become Society members only and may participate in Society activities, as provided by the IEEE Bylaws and subject to the applicable IEEE Constitution and the IEEE Bylaws and any additional limitations imposed by the Society Bylaws.

Article III Field of Interest

Section 1. The Field of Interest of the Society shall be that of Reliability of electrical, electronic and related products, and shall include scientific, technical, industrial or other activities that contribute to this field, or utilize the techniques or products of this field, subject, as the art develops, to additions, subtractions or other modifications directed or approved by the IEEE Technical Activities Board.

Section 2. The field of interest of the Society may be enlarged, reduced or shifted moderately as the needs of the occasion indicate with the provision that such revisions shall be processed as an amendment to this Constitution.

Article IV Financial Support

Section 1. The Society shall collect from its members an annual assessment or fee, in accordance with the IEEE Bylaws. The amount of the fee shall be prescribed in the Society Bylaws.

Section 2. The Society may make registration charges at its Society meetings, symposia, conferences, and conventions. The registration fee for nonmembers of the IEEE may be higher than for IEEE members.

Section 3. The Society may raise revenues by other means, such as advertising, shows, requests for contributions, and charges for sending out notices to non-Society members, provided such means are consistent with applicable IEEE Constitution and IEEE Bylaws, and do not encroach on revenue fields of prior established groups or sections. Revenue means not explicitly covered by the IEEE Constitution or IEEE Bylaws must be approved by the General Manager, before being adopted by the Society.

Article V Organization

Section 1. The Society shall be managed by an Administrative Committee of 18 Members of the Society plus Members "ex-officio with vote" as specified by the Bylaws. (There may also be members "ex-officio without vote".)

Section 2. Technical Committees may be established as needed to develop specific areas of the Field of Interest.

Section 3. Sub-Societies may be formed as provided in the IEEE rules and regulations, and the supervision of sub-society affairs, other than by the Administrative Committee, shall be as prescribed in the Society Bylaws.

Section 4. The terms of the 18 Members-at-large of the Administrative Committee shall be for three years, 6 Members to be elected each year. Only two consecutive terms are permitted, but eligibility is restored after a lapse of one year.

Section 5. The Administrative Committee shall annually elect one of its Members as Chairman, and four others as Vice-Chairmen, whose terms shall be for one year. A Secretary and a Treasurer shall also be appointed annually for one-year term. These two officers need not be elected members of the Administrative Committee, and they may be reappointed.

Section 6. The Chairman, under direction of the Administrative Committee, shall have general supervision of the affairs of the Society. He shall preside at meetings of the Administrative Committee, at general meetings of the Society, and at the "Annual Meeting of the Society", and have such other powers and perform such other duties as may be provided in the Society Bylaws, or as may be delegated to him by vote of the Society Administrative Committee. In his absence or incapacity his duties shall be performed by a Vice-Chairman selected by him. If this is not possible, the Vice-Chairmen shall select one of their number to act as Chairman.

Section 7. The Administrative Committee may utilize the services of Headquarters as bursar, for all or part of the 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 Bylaws and subject to the provisions of the Society Bylaws and to any special limitations imposed by the AdCom.

Section 8. The duties and responsibility of the officers shall be as defined hereunder and in the Society Bylaws and as delineated by the Administrative Committee.

Section 9. The Vice-Chairmen, as soon as expedient after election, shall, with exception of the membership committee, appoint the standing committees provided by the Society Bylaws. The Society Chairman shall appoint the Membership Committee as provided by the Society Bylaws. Other special or Ad Hoc Committees may be authorized by vote of the AdCom and shall be appointed by the Chairman. Committee members thus appointed shall serve until their successors are appointed or the committee dissolved.

Section 10. The Chairman shall be an ex-officio member of all committees of the Society. He is a member of the IEEE Technical Activities Board and when notified of a meeting of said Board, he shall insure representation of the Society at such meetings by himself, or by an alternate. If an alternate cannot be found, the Chairman shall present the views of the Society by a letter of proxy.

Section 11. Newly elected Chairman, Vice-Chairmen, and members of the Administrative Committee shall assume office on the first of January of each year, unless a different time is provided by the Society Bylaws.

Section 12. The Reliability Society, or any officer or representative thereof, does not have any authority to contract debts for, pledge the credit of, or in any way bind the IEEE.

Article VI

Nomination & Election of Administrative Committee

Section 1. Nomination and election of the 18 members-at-large of the Administrative Committee shall be as prescribed in the Society Bylaws. Provision shall be made for nominating petitions from the Society membership to place a name on the ballot.

Section 2. Within-term vacancies on the Administrative Committee shall be filled by appointments, for the unexpired terms, by the Chairman with the consent of the Committee.

Article VII

Meetings

Section 1. The Society may hold meetings, conferences, symposia, or conventions either alone or in cooperation with Sectional, Regional, or National Convention Committees of the IEEE, or other technical organizations, subject to IEEE rules and regulations. The Society shall sponsor at least one technical conference of national (USA) scope each year, which may be held during the International Convention, or during some other IEEE meeting or as a separate conference.

Section 2. Conferences or sessions on governmentally classified material are prohibited.

Section 3. The Administrative Committee shall hold at least three meetings per year, one an Annual Meeting during or closely adjacent to the IEEE International Convention. Other meetings of the Administrative Committee shall be held at such times as are found necessary and/or convenient. Special meetings of the committee may be called by the Chairman of the Society at his own discretion or upon request of three other members of the committee.

Section 4. Seven members of the Administrative Committee shall constitute a quorum. All members shall have an equal vote, both elected and ex-officio with vote.

Section 5. A majority vote of those members of the Administrative Committee attending a meeting shall be necessary for the conduct of its business except as otherwise provided in this constitution.

Section 6. Business of the Administrative Committee may be handled by correspondence, telephone or telegraph where, in the opinion of the Chairman, matters requiring action can be adequately handled in that manner. A majority vote of the members of the Committee is necessary for approval of actions handled in that manner, unless otherwise provided.

Article VIII

Amendments

Section 1. Amendments to this Constitution may be initiated by petition submitted by twenty-five members of the Society, or by the Administrative Committee. Amendments may be adopted by a two-thirds vote of the Administrative Committee present in meeting assembled, provided that notice of the proposed amendment has been sent to each member of the Administrative Committee at least one week prior to such meeting; or amendments may be adopted by a two-thirds mail vote of the members of the Administrative Committee provided a 30-day period is provided for such responses. A petition to amend the Constitution must be submitted to the TAB of the IEEE for approval. After such approval, the proposed amendment shall be publicized in the Society Transactions or Newsletter with notice that it goes into effect unless ten percent of the Society members object within 30 days. If such objections are received, a copy of the proposed amendment 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. When a mail vote of the entire Society membership is made necessary, approval of the amendment by at least two-thirds of the ballots returned shall be necessary for its enactment.

Section 2. Suitable Society Bylaws, and amendments thereto, may be adopted by a two-thirds vote of the Administrative Committee present in meeting assembled, provided that notice of the proposed Society Bylaw, or amendment, has been sent to each member of the Administrative Committee at least one week prior to such meeting; or a Society Bylaw, or amendment, may be adopted by a two-thirds mail vote of the members of the Administrative Committee provided a 30-day period is provided for such responses. In either event, the proposed Society Bylaw or amendment shall be published in the Society Transactions or Newsletter. No Society Bylaw, or amendment, shall take effect until it has been published and has been mailed to the TAB Secretary of the IEEE; and he has obtained approval of the General Manager.

Article IX

Publications

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

Section 2. The Chairman, with the advice and consent of the Administrative Committee, shall appoint such editors as may be required to implement the Publication Program. The duties of an editor, and his compensation, if any, shall be as prescribed in the Bylaws.

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Amended	10/09/58
New Proposal	08/02/63
Revised	01/06/64
	03/03/64
	03/24/66
	11/18/75
	10/06/78

IEEE RELIABILITY SOCIETY

BYLAWS

1. These Bylaws provide detailed guidance for the supervision and management of the Reliability Society (S-R) affairs in accordance with the Society Constitution. Amendments may be made by means of the procedures described in Article IX, Section 2, of the Constitution:

"Suitable Society Bylaws, and amendments thereto, may be adopted by a two-thirds vote of the Administrative Committee present in meeting assembled, provided that notice of the proposed Society Bylaw, or amendment, has been sent to each member of the Administrative Committee at least one week prior to such meeting; or a Society Bylaw, or amendment, may be adopted by a two-thirds mail vote of the members of the Administrative Committee, provided a 30-day period is provided for such responses. In either event, the proposed Society Bylaw or amendment shall be published in the Society Transactions or Newsletter. No Bylaw, or amendment, shall take effect until it has been published and it has been mailed to the TAB Secretary of the IEEE, and he has obtained approval of the General Manager."

The required publication and the submittal for IEEE approval shall be arranged by the Secretary of the Administrative Committee (AdCom) as soon as possible following AdCom vote to adopt, and prior to implementation.

2. Membership: There shall be only one grade of Society membership available to all IEEE members, based on the payment of the annual fee (see Bylaw No. 8.1).

2.1 Honorary Members: Such membership, exempt of the payment of the annual fee, shall be based on the recommendation of the Awards Committee and the endorsement of the AdCom.

2.2 Affiliates: Affiliation may be based on membership in other societies that have been recognized for affiliate purposes by specific action of the AdCom and the IEEE Executive Committee. A list of approved societies will be maintained by the Technical Activities Secretary of the IEEE. Further, affiliates may join in accordance with any other provision that may be incorporated in the IEEE Bylaws, rules, and regulations.

A Society Affiliate cannot serve in elective office in the Society or in a Chapter or vote for candidates for these offices. An Affiliate can serve in any appointive office in the Society or a Chapter of the Society. A Society Affiliate is entitled to receive notices of all meetings sent to Society members, to receive copies of publications of the Society, to attend and participate in any function of the Society by payment of IEEE member charges, and to receive any award bestowed upon by the Society. A Society Affiliate may not receive any IEEE benefits that are derived through IEEE membership except as approved by the Executive Committee of the IEEE.

2.3 Other Forms of Membership: Other forms of membership, and the special fees associated therewith, such as Student, Life, Temporarily Unemployed, etc., shall be as specified in the IEEE Bylaws, rules and regulations.

2.4 Special Provisions: Any special members (life or honorary, e.g.) and affiliates of the Society on July 1, 1963, may continue even though their respective attainment of such special membership or affiliation was by a means other than as defined above.

3. Administrative Committee (AdCom): Article V, Section 1, of the Constitution provides that the AdCom shall consist of 18 elected members-at-large plus ex-officio members. Article VII, Section 4, provides that a quorum shall be seven members, without distinction between the members-at-large and the ex-officio members with vote, and that all members shall have an equal vote.

3.1 Each retiring Society President shall be for a period of three years an ex-officio member with vote. If he is also re-elected a member-at-large during the three-year ex-officio period, he shall exercise only one vote.

3.2 Unless otherwise provided, a majority vote of the members attending an AdCom Meeting shall be sufficient for the conduct of its business.

3.3 In order to assure a continuously active AdCom, elected AdCom members who miss three consecutive meetings will be dropped from membership, in the absence of extenuating circumstances as determined by the President. Vacancies thus or otherwise created shall be filled for the unexpired term by appointment by the President, with the consent of the AdCom.

3.4 Robert's Rules of Order (Revised) shall govern conduct of AdCom meetings on all matters not otherwise specified in these Bylaws or the Constitution.

4. Nomination and Election of the AdCom: The Nominating Committee shall be reconstituted by the Society President on or before May 1 of each year. The Nominating Committee shall consist of a Chairman and four or more members of the Society, of which two shall not be members of the AdCom.

4.1 A slate of nominees for members-at-large vacancies of the AdCom shall be prepared by the Nominating Committee. When practical the slate should contain more candidates than vacancies to be filled. Recommendations for such nominees shall be solicited by a letter to the Chairmen of all Sub-Societies and Standing Committees. In addition, the Chairman of the Nominating Committee shall cause to be published and distributed to the entire society membership a call for nominations; a nominating petition carrying a minimum of 25 names of Society members, excluding students, shall automatically place that nominee on the slate to be presented to the AdCom.

4.2 The election to fill forthcoming vacancies of the AdCom membership-at-large shall be by mail ballot to the holdover elected members of AdCom. The deadline for the return of ballots shall be not less than 30 calendar days after the actual date of mailing the ballots. Election shall be based on the highest number of votes, taken in descending order until all vacancies are filled. Ties shall be broken by the AdCom. The Chairman of the Nominating Committee shall submit the names of such elected members to the Chairman of the TAB.

4.3 The Society President each year shall issue instructions to the Chairman of the Nominating Committee to insure an orderly progression and completion of the election procedures prior to October 1.

4.4 In the preparation of the slate of nominees and in the election, proper consideration shall be given to both geographical representation and technical interests.

5. Officers: Following the election of incoming AdCom members-at-large, the Nominating Committee shall submit nominations by mail, for President and Vice Presidents, to all who will be elected members of the AdCom for the succeeding calendar year. Floor nominations for President submitted by written petition of three voting members of the AdCom shall be added to the ballot if received by the Nominating Committee not later than 15 days after notification of completion of the election of new members. The deadline for the return of ballots shall be before December 1 and not less than 30 calendar days after the actual date of mailing of the ballots. A majority of returned ballots shall determine election.

5.1 The term of elected officers shall be one year, commencing on January 1. The President may be re-elected to a second term of one year. A President, having served his elected terms, shall not again be eligible for election to the presidency until a lapse of three years. A Vice President may hold office for not more than three consecutive years, in any of the four Vice Presidential posts. Eligibility is restored after a lapse of one year.

5.2 The Secretary and the Treasurer shall be appointed by the President. If they are not elected members of AdCom, they shall be ex-officio members with vote. The Secretary and the Treasurer may be reappointed.

The Secretary and the Treasurer shall be responsible for keeping the records of the AdCom in the areas commonly ascribable to their functions. They shall prepare and distribute reports, notices, or such other documents as may be required by the President and the AdCom. The Treasurer shall serve as Chairman of the Finance Committee, shall recommend annual budgets for approval by the AdCom and TAB, shall represent AdCom with TAB on financial matters, and shall monitor actual expenses in accordance with approved budgets.

5.3 All officers shall continue to serve until their successors take office.

5.4 The President shall manage the affairs of the Society and shall speak for the Society on all matters not specifically delegated to others.

5.5 The four Vice Presidents shall be the following:

- Vice President, Technical
- Vice President, Publications
- Vice President, Meetings
- Vice President, Membership

Their function shall be to manage the activities in their respective fields of endeavor, which shall cover the following functional areas:

a. Vice President, Technical

- 1) Standards and Definitions
- 2) Intersociety Technical Liaison
- 3) Committees or Sub-Societies operating in specific technical subareas of the Reliability Society field of interest

b. Vice President, Publications

- 1) Transactions
- 2) Newsletter
- 3) Other publications as authorized by the AdCom

c. Vice President, Meetings

- 1) Reliability and Maintainability Symposium
- 2) Reliability Physics Symposium
- 3) Speakers' List
- 4) Other major meetings sponsored or co-sponsored by the AdCom

d. Vice President, Membership

- 1) Professional Development
- 2) General Membership
- 3) Chapters

5.6 The Vice President for Technical Operations shall fulfill the duties of the President in his absence or incapacity.

5.7 The Junior Past President shall be responsible for the following functions:

- 1) Constitution and Bylaws
- 2) Nominations and Awards
- 3) Fellow evaluation

6. Sub-Societies: Sub-Societies are voluntary associations of a significant portion of the total Society membership and, hence, are not equivalent to the standing committees, which are appointive.

6.1 Chapters: Chapters are sub-societies organized on a geographical basis. This subject is fully treated in the IEEE Bylaws, in the IEEE Group/Society Section of the Technical Activities Manual, and in the Section Manual.

6.2 Technical Sub-Societies: A sub-Society may be organized to cover a specified portion of the field of interest of the Society. Each technical sub-society shall be governed by a Technical Committee. The Chairman and Steering Committee for a technical sub-society shall be appointed by the AdCom President or appropriate Vice President with the advice and consent of the AdCom. Sub-Societies may organize sessions at a Society Symposium or Technical Conference and may also organize separate, specialized symposia. Sub-Societies may organize special issues of the Transactions or a special section in an issue. Any service for sub-society members, beyond those provided all Society members, must be paid for by the sub-society members. If this takes the form of a special sub-society assessment, its form and amount must be endorsed by the AdCom and approved by the General Manager of the IEEE.

6.3 Sub-Society Chairmen: Sub-Society Chairmen may be either ex-officio members of the AdCom without vote or elected members of the AdCom, with vote.

7. Publications: The Society shall sponsor such publications as are approved by the AdCom, including a Transactions and a Newsletter.

The President, with the advice and consent of the AdCom, shall appoint the editor for each publication.

7.1 Term of Office: An editor shall be appointed for a one-year term and may be reappointed from year-to-year without limit. The compensation for an editor may be set by the Vice President for Publications, with the advice and consent of the AdCom.

7.2 The Editor of the Transactions shall be an ex-officio member of the AdCom, with vote, or an elected member and shall be Chairman of the Papers Procurement and Review Committee.

7.3 The Newsletter Editor shall be an ex-officio member of the AdCom, with vote, or an elected member, and shall be a member of the Papers Procurement and Review Committee.

7.4 The Editors shall be responsible for implementing the publication program defined by the AdCom. In accordance with the guidance of the Vice President for Publications and general IEEE rules and regulations, the Editors shall designate associate editors, special guest editors, and manuscript reviewers.

7.5 Editorial expenses shall be subject to review and approval of the Vice President for Publications and the Treasurer, and subject to constraints of the AdCom budget.

8. Society Funds: The Society may raise funds as specified in Article IV of the Constitution and in the IEEE bylaws and rules and regulations.

8.1 The annual Society fee shall be set by the AdCom when approving the annual budget.

8.2 IEEE Headquarters shall act as bursar for all Society funds except as specified hereunder. Billings and receipt of the annual fee shall be via the IEEE Membership and Fiscal Departments. All other fiscal affairs shall be handled through the office of the Technical Activities Secretary.

8.3 The general committee for a symposium or technical conference sponsored by the AdCom may, with the advice and consent of the AdCom, authorize the symposium Treasurer or Fiscal Officer to open an account to be used for the deposit and disbursement of funds related to the symposium. In each case, the AdCom shall be advised of the name of the bank, the anticipated size of the account, the names of the account signatories, and of arrangements of insurance and for bonding. Symposia jointly sponsored with other technical societies where a charter of operations with those societies is approved by the AdCom and the IEEE, need not seek additional authorization to open an account.

8.4 For other special circumstances, such as co-sponsorship of a symposium, the AdCom shall make prudent arrangements to safeguard the Society funds that may be involved.

9. Society Business: The President and officers shall conduct the Society affairs subject to the advice and consent of the AdCom, except where other authorization is specified.

9.1 No AdCom meetings shall be held for the purpose of transacting business unless each member shall have been sent notice of the time and place of such meeting 20 days prior to the scheduled date of the meeting; provided, however, that if less than a quorum attend a duly called meeting, tentative actions may be taken which will become effective upon subsequent ratification, either at a meeting or by mail by a sufficient number of members as to constitute a majority. Minutes of such meetings shall be mailed by the Secretary to each Committee member who shall register his disapproval of any actions taken at such meetings, within ten days after receiving said minutes, or he shall be deemed to have ratified.

9.2 An appropriate order of business at meetings of the Administrative Committee shall be:

1. Roll Call
2. Reading of the minutes of previous meeting
3. Reading of report on business transacted other than at meeting
4. Reading of Communications
5. Reports of Officers
6. Reports of Committees
7. Unfinished Business
8. New Business
9. Adjournment

9.3 The organization of the Administrative Committee under the President, consists of the Junior Past President, the Secretary, the Treasurer, and four Vice Presidents in charge of major groups of activities, with committees as indicated in the attached organization chart. The ad hoc committee structure may be altered by the President, with the consent of AdCom, without modifying these Bylaws.

9.4 The business of the Society shall be administered by an Operations Committee that shall consist of the

President
Junior Past President
Secretary
Treasurer
Four Vice Presidents

10. Committees: Committees shall be designated as Standing Committees, which continue to perform their functions until terminated by the AdCom or ad hoc committees established for delineated purposes with a specific time limit.

10.1 Standing Committees: Standing Committees shall be appointed by the President or appropriate Society Vice President, with the advice and consent of the AdCom. It will be discretionary with the appointer to appoint any part or all of any Standing Committee, or to appoint the Chairman only of a committee and request the latter to appoint additional committee members. The terms of office of the Chairman and members of a Standing Committee shall be for one year or until a successor is appointed. Chairmen of Standing Committees, unless they are drawn from the elected members of the AdCom, will be ex-officio AdCom members without vote.

10.2 Ad Hoc Committees: Special or ad hoc committees may be established by the President or Vice Presidents with the advice and consent of the AdCom. For each such case, the purpose, objectives, number of members, how the members are to be selected, and the terms of the members shall be specified. Ad hoc committees may be continued by action of the President or appropriate Vice President with the consent of the AdCom.

10.3 General Functions of Technical Committees: Each technical committee shall:

- a. Receive, generate, and review papers within its scope in cooperation with the Transactions Editor and the Papers Review Committee.
- b. Organize and operate sessions at meetings of IEEE at all levels and at meetings of other organizations with which the Society is desirous of cooperating, in accordance with the rules in effect at such meetings.

- c. Arrange through appropriate editors for publishing pertinent papers in IEEE publications in cooperation with the cognizant Technical Program Committees.
- d. Generate and develop appropriate standards in its field for processing by the IEEE Standards Committee, through the Society Standards Committee and otherwise in accordance with Institute policies.
- e. Monitor technical state-of-the-art in its field, detect the need for new technical developments, and take action to stimulate interest in such development.
- f. Foster closer relationships between this Society and other Societies, Groups and organizations with common interests.

11. Standing Committee Functions:

11.1 Standards and Definitions Committee: The function of this Committee shall be to recommend (to the IEEE Standards Board) standards for engineering practices, including definitions, and terminology related to the field of reliability to be followed in electronics and allied industries.

11.2 Papers Procurement and Review Committee: This Committee is essentially the roster of referees. Under the direct chairmanship of the Transactions Editor, its functions shall be to:

- a) Review all papers submitted to the Society for suitability and technical accuracy and approve publication in the Society's Transactions.
- b) Review, when requested, papers on pertinent subjects for the PROCEEDINGS or other publications of IEEE.
- c) Recommend to the PROCEEDINGS or other IEEE media, for publication, any paper that it considers suitable.
- d) Solicit and promote the writing of papers on the subject of Reliability for the purpose of publication in the Transactions, the PROCEEDINGS, or other IEEE media.

11.3 Newsletter Editor: The function of the Newsletter Editor shall be to solicit and promote the collection of information pertinent to the Society and its activities, and publish a Newsletter on a regular schedule.

11.4 Meetings Organization: The function of the Meetings Organization shall be to work with the major meetings of interest to the Society. The committee for each meeting shall be headed by an Administrator or Representative appointed by the Vice President for Meetings. The following policies govern the operation of these committees:

- a) Administrators or Representatives are appointed when acceptable to serve on the governing bodies of meetings co-sponsored by the Society. They are delegated authority to make administrative decisions based on the general policies set by the AdCom and to arrange for the appointment of Society members to the various committees for the meeting. Administrators are appointed for a term of office coincident with that of the governing body of the meeting. If the meeting's governing body requires decisions that are not covered by or are in conflict with established policy, the Administrator shall refer the question to the AdCom for its action.

- b) Representatives are appointed to serve on program, arrangements, or other meeting committees at the request of committee chairmen or the general committee for a meeting and are delegated authority to act within the scope of committee activity. Representatives are appointed to attend the Convention Record meetings to secure optimum arrangements for the publication of papers sponsored by the society.

11.5 Speakers Committee: The functions of the Speakers Committee shall be to:

- a) Obtain and publish a list of speakers for reliability and related subjects who are available for appearance at IEEE Chapter meetings. Such list should contain information about the speaker, subject he is qualified to present, and conditions concerning his availability.
- b) Cooperate with Sections, Chapters, or other S-R committee chairmen in promoting or furnishing qualified speakers for specific meetings.

11.6 General Membership Committee: The functions of the General Membership Committee shall be to:

- a) Supply information, to the members and Sections, on S-R and advantages of membership in it.
- b) Provide promotional material to the members and Sections, plan membership drives, and take other positive actions to increase membership.
- c) Make recommendations to Operations Committee or AdCom whether to accept a new society as the basis for allowing affiliate membership.
- d) Decide on the qualifications of applicants for Society membership, where such decision is delegated to the Society.

11.7 Chapters Committee: The functions of this Committee shall be to:

- a) Compile data pertaining to the organization of S-R Chapters, pertinent chapter activities of interest to each other, and disseminate this information to the Sections, Chapters, and the Membership Committee.
- b) Administer selection of Chapters for the annual Chapter Award.
- c) Create and promote interest in the Sections for the formation of S-R Chapters.
- d) Foster close relations between the Chapters and the AdCom and provide AdCom assistance to the Chapters wherever possible.

11.8 Professional Development Committee: The functions of this Committee shall be to:

- a) Provide liaison between the AdCom and the various professional activities functions of IEEE in regard to professional interests of Society members.
- b) Devise standards of qualification and performance for professionals in the field.
- c) Propose for approval by the AdCom programs for the examination and certification or citation of professionals in the field.
- d) Promote the professional image of reliability professionals paralleling that of other engineering disciplines.

- e) Foster interest and knowledge in the fields of electronics and reliability, particularly among educators and students, but also among those active in the profession who may desire additional professional training in reliability, develop and present training conferences as required to serve the needs of the profession, and stimulate the offering of accredited university-level courses and degree programs as appropriate to the field.
- f) Develop guides to individual career planning based upon the outputs of the technology forecasting and assessment efforts.

11.9 Constitution and Bylaws Committee: The functions of the Constitution and Bylaws Committee shall be to:

- a) Maintain records of the Constitution and Bylaws.
- b) Ascertain that the Constitution and Bylaws are not in conflict with any requirements or rules of IEEE Headquarters.
- c) Recommend changes in the Constitution or Bylaws as necessary to conform to the developments of the Reliability Society, its Administrative Committee, and its membership and mode of operation.
- d) Interpret the Constitution and Bylaws as requested by the President.

11.10 Nominations and Awards Committee: The functions of the Nominations and Awards Committee shall be to:

- a) Nominate new AdCom candidates and AdCom officers as defined in Sections 4 and 5 of the Bylaws.
- b) Conduct and report elections as defined in Sections 4 and 5 of the Bylaws.
- c) Propose for AdCom approval candidates for Society and IEEE awards, Fellow grade, and other honorary status, in accordance with requirements, requests, and rules and regulations of IEEE.

11.11 Fellow Committee: The function of the Fellow Committee shall be to prepare for AdCom approval, evaluation of Fellow nominations forwarded to the AdCom by the IEEE Fellow Committee.

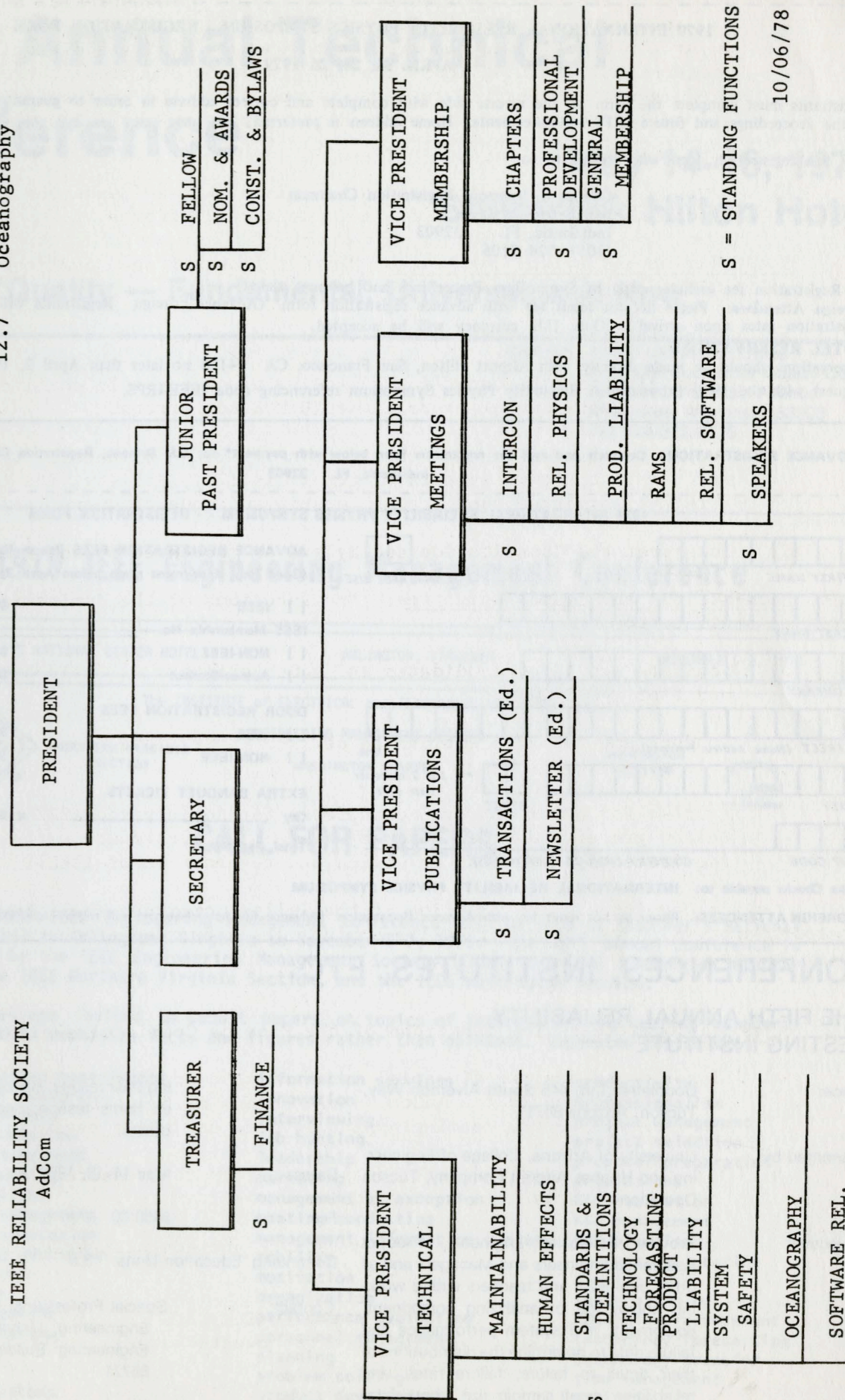
11.12 Finance Committee: The functions of the Finance Committee shall be to:

- a) Compile and analyze financial data and make appropriate recommendations to the AdCom on such items as budgets, publication costs, meeting expenses, fees and other revenue, etc.
- b) Act as consultant and functional supervisor to Treasurers of various meetings held by the Society.
- c) Make periodic reports to the Operations and Administrative Committees on the financial status of the Society.
- d) Observe financial operations of the Society and take appropriate action to see that money is spent or invested wisely and in the best interests of the Society.

12. Ad Hoc Committee Functions: The functions of these committees are to foster interest and developments in the designated areas, as an integral part of the activities of the Reliability Society and as directed by the officers and the AdCom. Typical areas will be: 12.1 Maintainability

- 12.2 Human Performance Reliability
- 12.3 System Safety
- 12.4 Software Reliability
- 12.5 Product Liability
- 12.6 Technology Forecasting
- 12.7 Oceanography

IEEE RELIABILITY SOCIETY
AdCom



1979 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM - REGISTRATION FORM

APRIL 24, 25, 26 1979

Registrants must complete the form on the reverse side with complete and correct address in order to guarantee receiving a copy of the Proceedings and future IRPS announcements. Home address is preferred.

Mail this registration form with payment* to:

Charles S. Symeon, Registration Chairman
540 Seabreeze Drive
Indialantic, FL 32903
(305) 724 7106

* Registration fee includes copy of Symposium Proceedings and banquet ticket.
Foreign Attendees: Please do not remit fee with advance registration form (Advance Foreign Registrants will receive advance registration rates upon arrival). Only U.S. currency will be accepted.

HOTEL RESERVATIONS

Reservations should be made directly with Airport Hilton, San Francisco, CA 94128 no later than April 2, 1979. Identify your request with the 1979 International Reliability Physics Symposium referencing code IEEE-IRPS.

ADVANCE REGISTRATION: Complete and mail the registration form below with payment* to: C.S. Symeon, Registration Chairman, 540 Seabreeze Dr., Indialantic, FL 32903

1979 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM - - REGISTRATION FORM

<input type="text"/>	<input type="text"/>	ADVANCE REGISTRATION FEES (Please Remit*) (Good only if payment made before April 2, 1979)
FIRST NAME	COMMITTEE USE	<input type="checkbox"/> IEEE \$55 _____
<input type="text"/>		IEEE Membership No. _____
LAST NAME		<input type="checkbox"/> NON-IEEE \$70 _____
<input type="text"/>		<input type="checkbox"/> Author/Student \$55 _____
COMPANY		DOOR REGISTRATION FEES
<input type="text"/>		<input type="checkbox"/> IEEE \$65 _____
STREET (Home Address Preferred)		<input type="checkbox"/> NON-IEEE \$80 _____
<input type="text"/>	<input type="text"/> ** Use 2 character state code *	EXTRA BANQUET TICKETS
CITY	STATE	Qty _____ x \$20 _____
<input type="text"/>		Total Remitted _____
ZIP CODE	COUNTRY (NON-U.S. ATTENDEES)	

Make Checks payable to: INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

*FOREIGN ATTENDEES: Please do not remit fee with Advance Registration (Advance Foreign registrants will receive advance registration rates).

CONFERENCES, INSTITUTES, ETC.

THE FIFTH ANNUAL RELIABILITY TESTING INSTITUTE

Place: Doubletree Inn, 445 South Alvernon Way, Tucson, Arizona 85711

Presented by: University of Arizona, College of Engineering and Hughes Aircraft Company, Tucson Operation

Objective: Provide Reliability Engineers, Product Assurance Engineers and Managers and all other engineers and teachers with a working knowledge of analyzing component, equipment, and system performance and failure data to determine the distributions of their times to failure, failure rates, and reliabilities; small sample size, short duration, low cost tests, and methods of analyzing their results; Bayesian testing; suspended items testing; sequential testing; and others.

Dates: May 14-18, 1979

Fee: \$450.00

Continuing Education Units: 3.0

Contact: Special Professional Education, College of Engineering, University of Arizona, Old Engineering Building, Tucson, Arizona 85721

Telephone: (602) 626-3054

33rd Annual Technical Conference

May 14-16, 1979
Shamrock Hilton Hotel

"Quality — Fundamental, Universal, and Now"

Contact: Public Information Office
American Society for Quality Control
161 West Wisconsin Avenue
Milwaukee, Wisconsin 53203
Tel. 414-272-8575

1979 IEEE Engineering Management Conference

STOUFFER'S NATIONAL CENTER HOTEL ARLINGTON, VIRGINIA NOVEMBER 5-7, 1979



NORTHERN VIRGINIA SECTION

The INSTITUTE of ELECTRICAL and ELECTRONIC ENGINEERS, Inc.

ENGINEERING MANAGEMENT SOCIETY
and
WASHINGTON CHAPTER

WASHINGTON SECTION



CALL FOR PAPERS

The 1979 IEEE Engineering Management Conference will be held at Stouffer's National Center Hotel in Arlington, Virginia on November 5-7, 1979. The 1979 annual conference is sponsored by the IEEE Engineering Management Society (EMS), the IEEE Washington Chapter (EMS), the IEEE Northern Virginia Section, and the IEEE Washington Section.

Authors are invited to submit papers on topics of interest to engineering managers. Papers should emphasize facts and figures rather than opinions. Suggested topics are:

- | | | |
|----------------------------|--------------------------------|------------------------|
| administrative experiments | information services | productivity |
| behavioral research | innovation | professionalism |
| business models | interviewing | project management |
| capital formation | job hunting | project selection |
| capital investment | leadership | proposal preparation |
| career planning | marketing | regulations |
| communications | management by exception | R&D evaluation |
| computer management | meeting conducting | R&D management |
| computer simulation | management information systems | R&D planning |
| continuing education | mobility | resource allocation |
| cost control | motivation | simulation |
| creativity | organization | space planning |
| data management | performance evaluation | technology assessment |
| decision making | personnel management | technology forecasting |
| education | planning | technology transfer |
| hiring | problem solving | time management |
| human reactions | product development | training |

SUBMISSION OF PAPERS

Papers will be accepted or rejected on the content of the paper summary submitted. The complete summary is limited to four pages including all text, figures, photographs and references. Accepted summaries will be printed in a Conference Digest distributed to all attendees at registration. Authors are encouraged to submit the full papers to the IEEE Engineering Management Society Transactions Editor for possible publication.

The summary text should be typed single spaced on white 8½" x 11" (21.5 x 28 cm) bond paper. The title should be centered in capital letters one inch (2.5 cm) from the top of the first page. The author's name and affiliation should be two lines below the title and the text should start three lines below this heading. Left and right margins should be 1½" (3.7 cm), and top and bottom margins should be 1" (2.5 cm) on all pages. Double space between paragraphs.

The digest will be produced by photographing directly from the author's original manuscript with a reduction of about 72% in linear dimensions. Letters and symbols in all diagrams should be sufficiently large and clear.

All summaries must be received by **MAY 31, 1979** by

Dr. Edward A. Wolff
1021 Cresthaven Drive
Silver Spring, MD 20903

For information call:
Office: (301) 344-7496
Home: (301) 439-1152

IEEE Offers 3-Day Intensive Course on "Microprocessor Programming"

The IEEE's intensive three-day Microprocessor course featuring a "Take Home Microprocessor and Power Supply" will be co-sponsored by the Educational Activities Board and the IEEE Sections listed below:

Binghamton Section	Binghamton, NY	April 5-7, 1979
General Dynamics	Ft. Worth, TX	April 1979
Fort Wayne Section	Ft. Wayne, IN	May 3-5, 1979
Black Hills Subsection	Rapid City, SD	June 4-6, 1979
Lexington Section	Lexington, KY	Fall 1979

Developed by Dr. William Eccles of the University of South Carolina, the course is one of the finest offered by the IEEE. It has been designed to update mid-career engineers familiar with the design of logic circuits and on how to understand the use of the microprocessor as a replacement for wired logic and controllers. Each registrant will receive his/her own Motorola MEK6800D2 kit, preassembled and tested; power supply; operating notes and manuals.

The emphasis throughout this Workshop is "total immersion" that will enable the participant to acquire a vast knowledge of microprocessor technology in a short period of time. Programming exercises includes simple input via keyboard, output on LED's and on seven segment displays, traffic signal control, timing, clock operation, data acquisition analog processing, chip diagnosis and many others.

Enrollment is limited to 50 registrants. We advise participants to register early to insure their participation. Registration fees up to 14 days before the course data are \$475.00 and \$525.00 for IEEE members and non-members respectively. At the door, registration fees are \$500.00 and \$595.00 for IEEE members and non-members respectively.

BOSTON IEEE AES SOCIETY
282 Marrett Road
Lexington, Mass. 02173

432-page 8½" x 11" book *Radar Technology* edited by Dr. Eli Brookner, who is the lecturer. This book (\$35 list price) together with supplementary notes (containing over 500 vignettes) is given out free to attendees. The time, place and course content are briefly outlined below.

Date: April 16, 1979 (Monday)
Time: 8:00 am to 9:30 pm
Place: Marriott Hotel, Los Angeles, CA (next to Los Angeles International Airport)

Course Content: Fundamentals of Radar: Phased Arrays, Cobra Dane, Foreign Radars, Mettra; Signal Processing: SAW, Acoustoelectronic, CTD, CCD, BBD, FFT, Winograd FTA,

One Day "Radar Technology" Course

The Boston IEEE AESS is putting on their very well received one-day intensive radar lecture course in the Los Angeles, CA area. This up-to-date course was previously given in Monterey, CA, one day before the Tri-Service Radar Symposium (86 attended) and in Washington, D.C. (104 attended). It is based mainly on the Radar Lecture Series (over 260 registered) given in Boston during the spring of 1978. The course is framed around the new

Microcomputers (μ C) and Microprocessors (μ P), Memories, Josephson-Junction, Logic; Solid State: Bipolar, AN/TPS-59, Seasat A, GaAs FET; Tubes: Differences, Life, Cathodes (CPC, TFEC), Efficiency, MM, EBS; Tracking Prediction and Smoothing: α - β , Kalman and Weiner Filters in Very Simple Terms; Detection. (All above acronym terms described in detail.)

Cost: \$95 (IEEE Members), \$100 (Nonmembers); Add \$15 for late fee after April 6, 1979. Fee includes course text: *Radar Technology* (\$35 list price) plus supplemental notes.

Dr. Eli Brookner is a Consulting Scientist with the Raytheon Company Equipment Division. He conceived and helped design the Wake Measurement Radar, the first TWT radar put into space. He has consulted on the Cobra Dane, NATO Sea Sparrow, SIRCS, Milirad, AEGIS, MSR, Cobra Judy, WAAS, and Pave Paws Radars. Dr. Brookner is an IEEE Fellow and has received the first Franklin Institute Premium Award.

For further details on course, contact Duane Matthiesen (Boston IEEE AESS Vice Chr.), (617) 271-2835.

IEEE Reliability Society, Washington/No. Virginia Section

**accelerated testing of
semiconductor devices
tutorial** by D. S. Peck & O. D. Trapp
Sheraton Inn-Washington NE
New Carrollton, MD
May 14-16, 1979

IEEE Reliability Society Tutorial — Accelerated Life Testing

IEEE-ATSD, 608 H. Street SW, Washington, DC 20024 (202) 347-7088

COURSE DESCRIPTION

Today's complex semiconductors, microprocessors, VLSI, PROMs, RAMs, CODEC, etc., are straining our limited reliability prediction estimates. Method 1016 in the new issue of MIL STD 883B (31, Aug. 1977), when implemented on new procurement documents, forces a re-evaluation of accelerated life test methods. The Reliability Group is proud to sponsor this Tutorial to help you establish a firm, practical working understanding of Accelerated Life Testing. This 20-hour course is presented in three days.

The course Handbook includes text, tables, specialized graph paper, comprehensive set of failure mechanisms, vendor lists for life test facilities, equipment and materials and study problems (with answers) of frequent concerns in applying accelerated life testing methods. It provides a focus for lectures and work-sessions during the tutorial and a permanent reference work for regular use afterwards.

Course hours are from 8:15 A.M. to 5 P.M. daily.

(space is limited — register now)

COURSE INSTRUCTORS

D. Stewart Peck has been responsible for reliability evaluations of electron devices since 1955 at Bell Telephone Allentown (PA) Laboratories. This includes specifications, application engineering, and purchase specifications for commercial semiconductor devices. Mr. Peck is a Fellow of the IEEE and past General Chairman of the International Reliability Physics Symposium.

O. D. "Bud" Trapp is a consultant and founder of Technology Associates, a consulting firm specializing in Reliability Physics, Semiconductor Technology, and Training. Dr. Trapp is a senior member of the IEEE, past Chairman for the SCV Electron Devices Society, SCV Reliability Society, and is now a member of the Board of Directors of the International Reliability Physics Symposium.

ENROLLMENT

Yes! Enroll me today. **Payment enclosed**

Advanced Registration Fees — Payment must be received before April 17, 1979.

Payment received on or after April 18, 1979 must pay the **Late Fees.**

	Registration Fees	
	Advanced	Late
<input type="checkbox"/> IEEE Member Member No. _____	\$275	\$300
<input type="checkbox"/> Non-Member*	\$340	\$365

Yes! I want to attend the IEEE-Reliability Society Tutorial on Accelerated Life Testing. I understand my space will be reserved only when payment is received.

Sorry I cannot attend, but please send _____ copies of the Accelerated Testing Handbook at \$125 each. (Payment must be enclosed.)

Make Checks Payable to "IEEE-ATSD"

Signature _____

*Non-members fee difference may be applied to IEEE & Reliability Group membership if application is completed and sent to IEEE-ATSD Office before May 23, 1979.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY: _____ STATE _____ ZIP _____

OFFICE PHONE: _____
Area Number Ext.

HOME PHONE: _____

Please add my name to your mailing list for announcements of future seminars and tutorials.

Please send IEEE & Reliability Society membership information and forms.

Monday, May 14 — 8:30 A.M.

I. Introduction

Definition of Reliability — FITS — Device reliability vs system reliability — failure patterns for short life and long life devices — implications of system reliability on device failure rates — need for accelerated-stress tests

II. Life Distributions

Descriptions of exponential, normal, log-normal and Weibull distributions — relationships to physical failure mechanisms — applicability of log-normal distributions to semiconductor devices — available computer programs

Lunch
PM

III. Data Handling

Plotting of data — confidence intervals — separation of freaks from main population — separation of data with multiple failure mechanisms — truncated data — hazard plotting
Problems

Tuesday, May 15 — 8:15 A.M.

IV. Accelerated Tests

Temperature acceleration — Arrhenius equation — calculation of activation energy — step-stress tests — non-temperature accelerated tests (humidity, temperature cycling, current, bias, α -particles, etc.)

V. Failure Rate Calculations & Predictions

Failure rates from log-normal distributions — predictions from accelerated tests and from field data — Duane Plots — infant mortality vs main population

Lunch
PM

V. Failure Rate Calculations & Predictions (continued)

VI. Failure Mechanisms

Failure mechanisms in semiconductor devices (including α -particles) — acceleration by temperature and other environments; current, voltage, humidity, etc. — response to dynamic vs static environments
Problems

Wednesday, May 16 — 8:15 A.M.

VII. Development of Screens and Life Tests

Accelerated-stress screens and life tests for system reliability requirements — relative effectiveness for infant mortality and for long term failures — warranty goals
Problems & Solutions

Lunch
PM

VIII. Life Test Facilities & Materials

Ovens — circuit board materials — sockets — connectors — solders — electronic support equipment — commercial test facilities

REGISTRATION INFORMATION

REGISTRATION

Registration must be made in advance and should be made *no later than 10 days before the start of a session*. Since attendance must be limited, late registrations will be accepted only on a space-available basis. The registration fee covers the course handbook, meeting materials, lunches and coffee breaks. Hotel accommodations and meals other than as specified are not included in the fee. Telephone registration is acceptable... (202) 347-7088. Full registration is due and payable on May 14, 1979. Make checks payable to IEEE-ATSD.

HANDBOOKS AVAILABLE IN ADVANCE

Handbooks will be mailed in advance to all USA & Canadian Registrants who pay before May 1, 1979. If non-USA Registrants wish to receive their Handbook in advance an additional \$10.00 must be added for Air Mail postage and payment received before April 17, 1979.

IEEE Pushes New LERA— Bill Dubbed 'Double Pi'

IEEE's year-long effort in 1978 to effect pension reform in the form of a Limited Employees Retirement Account (LERA) is well on its way toward a fresh start in 1979. While retaining essentially the same form, the bill has a new number—H.R. 628 (double pi). At the time of writing, IEEE's Pension Task Force says it is awaiting formal introduction of the bill "any time now" in the House of Representatives by Rep. James Corman (D-Cal.).

Meanwhile, both Rep. Corman and task force members are laying groundwork for passage of the bill. "The main roadblock to passage of such legislation last year was the Treasury Department because of the revenue loss," says IEEE Washington staffer Leo Fanning. "This year, we have an earlier start. Through ongoing discussions with Treasury we can explain our position and determine what they will support."

HANDBOOK SALES TO NON-REGISTRANTS

The course Handbook is available to non-participants at a cost of \$125.00. It can be ordered by checking the appropriate box on the reply card. Payment in full must be received with such orders. (Non-USA Air Mail delivery, add \$10.00 per copy.)

CANCELLATIONS, REFUNDS, SUBSTITUTIONS

Confirmed registrations can be cancelled up to seven (7) days before a seminar starting date with no obligation. Later cancellations are subject to a 10% service fee, but cancellations not made by four (4) days before a session date are subject to the entire fee. Substitutions for confirmed registrants may be made at any time with no charge.

HOTEL ACCOMMODATIONS

Registrants should make their own room reservations at Sheraton Inn, Washington-Northeast, 8500 Annapolis Road, (Exit 30 West-1-495), New Carrollton, MD 90784 — (301) 459-6700, before May 4, 1979. Identify yourself with the IEEE Tutorial to receive special rate of \$27-single, \$32-double. Room charges are **not** included in the registration fee. (The Sheraton Inn can be reached easily by METRO to New Carrollton and a five minute Metro bus connection.)

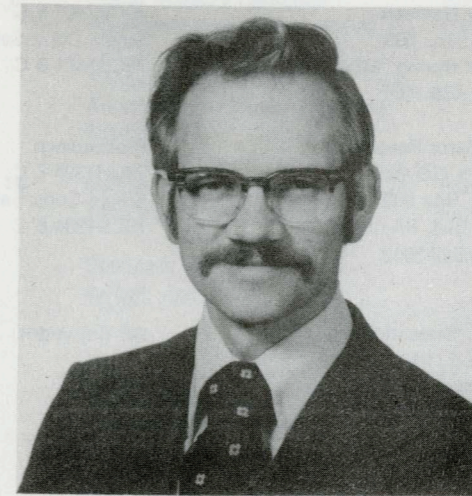
In late December, Pension Task Force members paid a visit to the offices of Sen. Lloyd Bentsen (D-Tex.) to explain engineers' need for a LERA and to enlist some backing on the Senate side.

According to inside sources, two other versions of the LERA may be reintroduced this session as well. One thrown in the hopper last year by Sen. Robert Dole (R-Kans.) and another originally introduced by Rep. Barber Conable (R-N.Y.). Both bills would allow employees to put \$1000 per year into an Individual Retirement Account (IRA) until vested in their company plan. The IEEE-backed LERA would allow engineers and other employees to tax-defer \$1500 or 15 percent of income, whichever is smaller, annually until they are 100 percent vested. Post-vested IRA deposits are also allowed under the Corman bill.

Late breaking news flash:

On Jan. 15, the opening day of the 96th Congress, Rep. James Corman introduced H. R. 628 in to the House of Representatives.

ADCOM MEMBER BIOGRAPHIES



Orlin D. Trapp

Dr. Trapp received his B. A. from Westmar College and his Ph.D. in Physical Chemistry from Iowa State University in 1957. Dr. Trapp joined Westinghouse Electric Corporation Research Laboratories and was engaged in the study of polymers and of solid state processing. Later he assumed the responsibilities of Manager of Process Analysis and Reliability Engineering at Westinghouse's Molecular Electronics Division.

In 1968 Dr. Trapp joined Fairchild Semiconductor as Manager of In-Process Quality Control for Integrated Circuits. Prior to founding the consulting firm, Technology Associates, Dr. Trapp established a Component Reliability Department at Memorex Corporation.

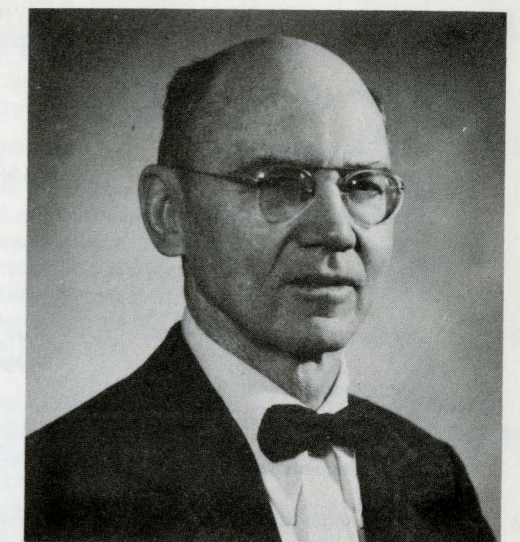
Technology Associates specializes in Semiconductor Processing and Process Control and in Reliability Physics problems of solid state devices in their manufacture and in their application in equipment.

In 1974 Dr. Trapp was an IEEE Regional Outstanding Lecturer, in Tokyo, Japan; Hong Kong; Calcutta, Bangalore, Bombay, and New Delhi, India; and Tehran, Iran. He has published and presented many other papers.

Dr. Trapp is the author of the book, "Silicon-On-Sapphire Technology," published by Dataquest in 1975.

Dr. Trapp is a Registered Professional Engineer in California and is a Senior Member of the IEEE, a member of The Electrochemical Society, and the American Chemical Society. He is a past Technical Program Chairman of the IEEE Reliability Physics Symposium and past Chairman of the IEEE Reliability Group of the Santa Clara (California) Section. Dr. Trapp was the IEEE Electron Devices Group Chairman for the Santa Clara Valley (California) Section for 1976-78. He is also a member of IEEE Reliability Group ADCOM and member of the Board of Directors of the IEEE International Reliability Physics Symposium.

Dr. Trapp is the co-author of the "Semiconductor Technology Handbook," published in 1978. Hundreds of copies are in use by over 50 firms in the United States and Europe. This "Handbook" is used in the Semiconductor Technology Seminars presented by Dr. Trapp.



Vernon E. Gardner,
Chairman Technology Forecasting

This Committee serves as an interface between the Reliability Society ADCOM and the IEEE Technology Forecast and Assessment Committee and enhances the stature of Technology and Forecasting Activities.

Veg received his B.S.E.E. from the University of North Dakota and after a brief period of teaching and working in industry spent thirty-three years with the Navy Dept., the last eight years in the reliability area. Since his retirement from the Government four years ago he has been employed by consulting firms as a Reliability Engineer. He is a registered professional Engineer in the District of Columbia and California, a Life Senior Member of the IEEE, a Life Member of the Electrochemical Society and a Member of Tau Beta Pi. He is a past Chairman of the Washington Chapter, Group on Reliability, and is presently the Chairman of the new Northern Virginia Section.



CALENDAR OF COMING MEETINGS

DATE	CONFERENCE	LOCATION	INFORMATION CONTACT	PUBLICATION
Apr. 3-5	Specifications of Reliable Software Sponsors: Comp.	Hyatt Regency Cambridge, MA	Harry Hayman P. O. Box 639 Silver Spring, MD 20901 (301) 439-7007	79CH1401-9 C Single Copy Sales: 79CS1401-9 C
Apr. 23-25	Int'l Symposium on Computer Architecture Sponsors: TCCA, SIGARCH-COMP. Est. Attendees: 300	Marriott Hotel Philadelphia, PA	Dr. Barry Borgerson Sperry Univac P. O. Box 500 Blue Bell, PA 19424 (215) 542-2013	Proceedings 79CH1394-6 C Single Copy Sales: 79CS1394-6 C
Apr. 23-25	American Power Conference Sponsors: ILL. Inst. Tech., PES & 8 other Engr. Societies Exhibit: No Est. Attendees: 3800	Palmer House Chicago, IL	R. A. Budenholzer 246 E-1, IIT Chicago, IL 60616 (312) 567-3196	AP Copyright
Apr. 23-25	16th Annual Rocky Mountain Bioengineering Symposium Sponsors: EMBS (Co-sponsors), Reg. 5	Fitzsimons Army Medical Center Denver, CO	Dr. Neal Kendig Pulmonary Function Lab Fitzsimons Army Med. Center Denver, CO 80240 (303) 341-3834	Record
Apr. 24-26	Electro Sponsors: Reg. 1 Exhibit: Yes	Coliseum New York, NY	W. C. Weber, Jr. Program Chairman, Electro 999 N. Sepulveda Blvd. El Segundo, CA 90245 (213) 772-2965	
Apr. 24-26	Reliability Physics Symposium Sponsors: R, ED Exhibit: No Est. Attendees: 600	San Francisco Airport Hilton San Francisco, CA	Dr. Frank B. Micheletti Rockwell International 3370 Miraloma Avenue Anaheim, CA 92803 (714) 632-4380	Record
Apr. 30-May 4	Int'l Microwave Symposium & Workshops Sponsors: MTT Exhibit: Yes Est. Attendees: 950	Sheraton Twin Towers Orlando, FL	R. E. Henning College of Engr. University of South Florida Tampa, FL 33620 (813) 974-2581	Digest
May 14-16	29th Electronic Components Conference Sponsors: EIA, CHMT-IEEE Exhibit: No Est. Attendees: 500	Hyatt House Cherry Hill, NJ	Mr. Charles Tapp Sandia Laboratories Dept. 8460 Livermore, CA 94550 (415) 422-2851	
May 14-17	Industrial and Commercial Power Systems Conference Sponsors: IA Exhibit: No	Washington Plaza Seattle, WA	T. E. Sparling T. E. Sparling & Assoc 1920 Eastlake Ave. Seattle, Wa 98102 (206) 325-7770	Record
May 15-17	National Aerospace & Electronics Conf. (NAECON) Sponsors: AES, EM, Dayton Sec. Exhibit: Yes	Dayton Convention Ctr. Dayton, OH	NAECON 140 E. Monument Ave. Dayton, OH 45402 (513) 255-3627	Record
May 15-17	IEEE Electrical and Electronic Measurement & Test Instrument Conference Sponsors: Ottawa Sec., Instrum. & Meas. Soc Exhibit: Yes Est. Attendees: 1000	Skyline Hotel Ottawa, Ontario Canada	Harry Ashworth Bell Northern Research P. O. Box 3511 Station C, Ottawa, Station C, Ottawa, Ontario KLY 2H7 (613) 596-4271	Limited Interest

DATE	CONFERENCE	LOCATION	INFORMATION CONTACT	PUBLICATION
May 15-18	Power Industry Computer Application Conference (PICA) Sponsors: IEEE Power Engr. Society, IEEE Cleveland Section Exhibit: Yes	Bond Court Hotel Cleveland, OH	James R. Smercina Cleveland Electric Illumination P. O. Box 5000 Cleveland, OH 44101 (216) 623-1350 Ext. 3389	Record 79CH1381-3 PWR OOP Option: 1 Sub-option: 1G Single Copy Sales: 79CS1381-3 PWR
May 16-18	Pulp & Paper Industry Technical Conference Sponsors: IA Exhibit: Yes	Pittsburgh Hilton Pittsburgh, PA	Mr. M. E. Kunsman (Conf. Chairman) Westinghouse Electric Corp. Industry Sales Support Div. 2040 Ardmore Bldg. Pittsburgh, PA 15221 (412) 256-6836	Record
May 17	Trends & Applications: Advances in Systems Technology Sponsors: C, Washington Sect., NBS, ICST, Mid-Eastern Area Comm. Exhibit: No	National Bureau of Standards Gaithersburg, MD	Shirley Watkins NBS Bldg. 225 B226 Washington, DC 20234 (301) 921-3517	79CH1402-7 C Single Copy Sales: 79CS1402-7 C
May 20-24	Cement Industry Technical Conference Sponsors: IA Exhibit: No Est. Attendees: 700	Innisbrook Resorts Tarpon Spring, FL	F. W. Cohrs Florida Mining and Materials Corp., Cement Division P. O. Box 6 Brooksville, FL 33512 (904) 796-7241	Record
May 30-June 1	Laser Engineering and Applications Sponsors: QEA, OSA-on behalf of EDS and MTTS	Washington Hilton Hotel	Susan C. Henman Courtesy Associates 1629 K. Street N. W., Suite 700 Washington, DC 20006 (202) 296-8100	
June 4-5	Chicago Spring Conf. on Consumer Electronics Sponsors: IEEE-BCCES & Chicago Sect. IEEE Exhibit: Yes Est. Attendees: 1400	Arlington Park Hilton Arlington Heights, IL	Anthony Troiano 1000 Milwaukee Ave. Glenview, IL 60025 (312) 391-8582	
June 4-6	Conference on Plasma Science Sponsors: NPS Exhibit: Yes Est. Attendees: 350	University of Montreal Montreal, Canada	Claude Richard Hydro-Quebec Inst. de Recherch P. O. Box 1000 Varennes, Quebec, Canada JOL 2 PO (514) 652-8241	Record 79CH1410-0 NPS Single Copy Sales: 79CS1410-0 NPS
June 4-7	National Computer Conference Sponsors: Comp., AFIPS Exhibit: Yes	New York, NY	Ms. Marjorie Greimel American Federation of Information Processing Society 210 Summit Avenue Montvale, NJ 07645 (201) 391-9810	Record
June 5-7	1979 Cleveland Electrical-Electronics Conf. & Exposition Sponsors: Reg. 2 Cleveland Sect. IEEE, CES, CWRU, CSU, ERA Exhibit: Yes Est. Attendees: 5000	Cleveland Convention Center Cleveland, OH	Mike Lapine 2728 Euclid Ave. Cleveland, OH 44115 (216) 241-5515	Record 79CH1395-3 Reg 2 Single Copy Sales: 79CS1395-3 Reg 2

DATE	CONFERENCE	LOCATION	INFORMATION CONTACT	PUBLICATION
June 11-13	Int'l Conference on Communications, ICC'79 Sponsors: CSCB, Boston Sec Exhibit: Yes Est. Attendees: 1800	Sheraton Hotel Boston, MA	Richard C. Stiles Dir. Telecommunications Planning, GTE Labs Inc. 40 Sylvan Rd. Waltham, MA 02154 (617) 890-8460 Duane Matthisen (617) 862-5500 Ext. 5400	
June 13-15	Symp. on Applications of Ferroelectrics Sponsors: SU	Sheraton-Ritz Hotel Minneapolis, MN	S. T. Liu Honeywell Corporate Technology Center 10701 Lyndale Ave. S. Bloomington, MN 55420 (612) 887-4457	Record 79CH1382-1 SU OOP Option: 1 Sub-option: 1D Single Copy Sales: 79CS1382-1 SU
June 18-20	Computers in Radiology Sponsors: COMP.	Newport Beach, CA	Prof. J. Sklansky Univ. of California School of Engineering Irvine, CA 92717 (714) 833-6726	79CH1403-5 C Single Copy Sales: 79CS1403-5 C
June 19-21	Power Electronics Specialists Conf. Sponsors: AES Exhibit: No	Bahia Hotel San Diego, CA	Jerrold Foutz, Code 9234 Naval Ocean Systems Chmn. San Diego, CA 92152 (714) 225-2752 Dr. Paul Pittman Westinghouse Research Labs	Record
June 20-22	Fault Tolerant Computing Sponsors: COMP Est. Attendees: 200	Concourse Hotel Madison, WI	Prof. Charles R. Kime Dept. of Elect. Engr. & Comp. University of Wisconsin 1425 Johnson Drive Madison, WI 53706 (608) 262-0206	Record 79CH1396-1 C Single Copy Sales: 79CS1396-1 C
June 25-27	Design Automation Conference Sponsors: COMP., ACM-SIGDA, DATC, N. A.	San Diego, CA	David W. Hightower Texas Instruments Inc. Dallas, TX (214) 238-5667	Record