Reliability Society Newsletter

Editors' Message

Later in this issue you will find a revised set of the Reliability Society Constitution and Bylaws. Both the Bylaws and the Constitution are subject to review by the membership. There are thirty days available in which to review these documents and submit your comments to the Constitution-Bylaws Committee, in care of Mr. Harry Reese at:

American Electronics Labs., Inc.
P. O. Box 552
Lansdale, PA 19446

If 10 percent of the membership disapprove either document, then either the Constitution and/or the Bylaws will go back through the cycle to be corrected or changed. If less than 10 percent of the membership disapproves, the plan then becomes valid and will take effect at that time. We have inserted a copy of the amendment procedure for the changing of the Constitution and the Bylaws. The only difference between the changing of the Constitution and the changing of the Bylaws is that the constitutional changes must also be checked by the IEEE Technical Activities Board (TAB), while the Bylaws are controlled by the membership.

Please read both of these documents carefully, since they relate to you and your voice in the Society.

Your Editors,
Gary Kushner and Mark Snyder

NOTE: THE DEADLINE FOR THE OCTOBER 1986 ISSUE IS JULY 18, 1986

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All RS Newsletter inputs should be sent to one of the associate editors, **Gary Kushner**, 499 Brigham St., Marlboro, MA 01752, or **Mark Snyder**, Digital Equipment Corp., 14 Walkup Drive (YWO/G13), Westboro, MA 01581, per the following schedule:

For April Newsletter: by Jan 15
For July Newsletter: by Apr 15
For October Newsletter: by July 15
For January Newsletter: by Oct 15

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Chapter Reports

Central New England Council:

The 1985–1986 season has come to its end as it started, highly successful. The final event of the year was our 24th Annual Spring Reliability Seminar entitled "Product Assurance Technologies: Making the Difference," under the able guidance of Mr. Mark Snyder. The keynote address, "R & M 2000 Accelerates Air Force Improvements," was delivered by Brig. Gen. Frank J. Goodell, special assistant to the deputy chief of staff, logistics and engineering, and to the deputy chief of staff, reliability and maintainability, Headquarters U.S. Air Force, Washington, D.C. The seminar consisted of a wide variety of papers from the commercial, military, and defense industries and covered a broad spectrum of topics from infant mortality to reliability warranties and all stops in between.

The seminar was concluded with a cocktail hour and dinner, at which time our new slate of officers for the 1986–1987 season was introduced. They are Gene Bridgers, Chairman; Arsene "Jake" Bajakian, Vice-Chairman; Jane Ferguson, Secretary; and Norm Smith, Treasurer. Congratulations!

The first meeting for the 1986–1987 is scheduled for September 1986, the exact date not yet determined. Looking forward to seeing you then. Have a safe and enjoyable summer.

Sid Gorman
Chairman

Denver:

The Denver society has had a very productive year. On November 8 an Artificial Intelligence/Expert System Workshop was hosted by Martin Marietta Denver Aerospace. This gave an opportunity to interface with folk who are movers and shakers in AI/AES. The session featured three speakers in the AM and discussion in the PM. The speakers were Dr. Tom Hester, MMDA; Dr. Haviland Wright, Consultant, University of Colorado Center of Artificial Intelligence; and Dr. Randall Fleming, Systems Control Technology.

The program was handled by Dale Butler from the Reliability Homeshop, assigned to Space Station, with program arrangements by Bob Jaquess, Reliability Homeshop, and Deputy Manager Systems Support Engineering. Both have been active in the Reliability Society and ably demonstrated their commitment to furtherance of the principles of reliability and technology by assembling this outstanding panel and bringing this event to the Denver area. It is anticipated that this workshop can become an annual event of the Society, as is the Reliability Software Seminar held each spring.

Dr. Hester's paper, entitled "A Fault Isolation Expert System for Space Craft Power Systems," was on the application of AI to fault isolation. It dealt with a research project at MMDA wherein a space craft power system with ten possible faults was evaluated in an attempt to determine how any could be isolated. Obviously, isolating faults manually in a system of that magnitude would be a virtually infinite task—hence the application of AI/ES. While the results indicated that, in the particular study, sufficient faults (70 percent) could not be identified to justify production use, the methodology developed could be applied to achieve such a goal. Questions concerning the application of AI/ES can be directed to Dr. Hester at 977-6625.

The second paper, presented by Dr. Wright and prepared in collaboration with Harry Schatz of Coopers and Lybrand Artificial Intelligence Laboratory N.Y., N.Y., was entitled "A Knowledge-Based Systems Approach to Procedural Reliability." This paper discussed the application of AI/ES to "procedural reliability." Specifically treated was the use of knowledge-based systems in the practice of accounting auditing for implementing standard procedures. The areas discussed were expertise (identified but difficult to describe), pre-computer methods for leveraging expertise, knowledge-based systems technology, knowledge-based systems implementation, and a knowledge system to replace a pre-computer standard procedure in auditing. While this paper was less technical (in scientific terms), it nevertheless examined, in a way applicable to any discipline, how an expert system can be implemented.

The third paper, by Dr. Fleming, was entitled "Expert Systems Application to Reliability, Maintainability, Testability (RMT) Analysis." This paper discussed RMT approaches of today, comparing such areas as Mil-Std approach, RMT Management, RMT Accounting, and RMT Engineering with the same RMT approaches of tomorrow utilizing expert systems for real-time decision support. Highlighted were areas where AI/ES is already available for RMT support, such as software procedural reliability, "smart" testers, and computer aided-preliminary design for testability. Among his conclusions were the following:

1. The need for integrated, automated, early-stage implementation of RMT inputs to help reduce operation and service costs (now 70 percent of life cycle costs).
2. CAD/CAE system for early-stage RMT decision support.
3. The need for generalized generic system and maintenance RMT representations.
4. The development of hybrid ES's which include algorithmic RMT accounting and optimization algorithm.

The meetings were held during the months of March, April, and May. The first meeting was held at the Colorado Engineering Center on March 20 with Ray Bukszar speaking on IBM Field Reliability. The Space Shuttle was discussed at the April meeting, and the May 20th meeting was the all-day Annual Software Symposium at Ford Aerospace.

Sam Keene
Chairman

Philadelphia Chapter:

The Philadelphia Chapter had a busy season, with four talks given during the three monthly meetings and one of our own being elected to fellowship grade. At the January 28th meeting, two were talks given. The first was "Financial Strategies for the Eighties," given by John V. Picone of the University of Pennsylvania. The second paper of the evening was "Engineering Documentation in the Computer Age—Are We Using the Tools Wisely?" and was presented by Donald R. Higgs of the University of Pennsylvania. The February 26th meeting consisted of a talk entitled "G-Forces and Dynamic Flight Simulation," and was followed by a tour of the Naval Air Development Center. The talk was presented by Dr. Leonid Hrebrim and Jack Eyth, both of the Naval Air Development Center in Warminster, Pennsylvania. The last meeting of the season was held on April 22nd, with a paper entitled "Current Research Activities in Robotic Vision," by Dr. W. Mergler.

The Philadelphia Chapter would also like to extend congratulations to Mr. Harry E. Reese, Jr. for being elected to the grade of Fellow in the Institute of Electrical and Electronic Engineers. It reflects great honor on the Philadelphia Chapter for Harry to be given this distinction for his extensive contributions to the field of Reliability Engineering. Since his achievements are well known, this distinction does not come as a surprise to fellow members who know Harry. The nomination of Harry not only recognized his leadership in the Reliability discipline, but also enhanced the entire image of the Reliability Society. Again, our heartfelt congratulations to Harry. The following is a brief Biography of Harry and his accomplishments.

> "For leadership in the development and application of reliability technology for electronic systems"

HARRY E. REESE, JR.

Mr. Reese is Vice President, Quality Assurance, at American Electronic Labs., Inc. He holds a BS degree in EE from Tufts University and an MS in Statistics from Villanova University. He held assignments with Philco, the U.S. Army, General Electric, and Burroughs before assuming his current position with AEL. He has played an effective leadership role in the stimulation, dissemination, and acceptance of good reliability engineering practice worldwide. His work has played an important role in the reliability and maintainability of space program vehicles and in computer-controlled equipment.

Fulvio E. Oliveto
Chairman

IEEE Resolution on the Space Shuttle Accident

The following resolution on the Space Shuttle accident was approved unanimously by the IEEE Board of Directors at its meeting in San Jose, CA, on February 22, 1986:

The Board of Directors of The Institute of Electrical and Electronics Engineers, Inc. expresses its profound sorrow at the recent tragic Space Shuttle accident which took the lives of seven brave astronauts. We feel a special loss and kinship to these dedicated pioneers, two of whom were electrical engineers.

On behalf of our more than 270,000 members worldwide, we would like to express our heartfelt condolences to their families, friends, and co-workers. We are all the poorer for their loss, but their dedication and sacrifice should inspire each of us to rededicate ourselves to the beneficial use of our science and technology for all mankind.

They gave their lives in the quest to explore and make peaceful use of space. It is with resolve that we pledge ourselves to those continuing efforts necessary to make certain that we are worthy of their example and their dream.

IRPS Best Paper Award for 1985

There were six awards for 1985 presented at the 1986 Symposium. The intent was to distinguish only the single "best" paper, while the other five "outstanding" papers were recognized at essentially the same level of contribution. This procedure reflects the statistics of the data from the 1985 questionnaires received. The winners were:

Best: "Electromigration-Induced Short Circuit Failure" by J. M. Towner

Outstanding: "Acceleration Factors for Thin Gate Oxide Stressing" by J. W. McPherson and D. A. Baglee

Outstanding: "Breakdown Energy of Metal (BEM) — A New Technique for Monitoring Metallization Reliability at Wafer Level" by C. C. Hong and D. L. Crook

Outstanding: "Stress-Induced Voids in Aluminum Interconnects During IC Processing" by J. T. Yue, W. P. Funsten, and R. V. Taylor

Outstanding: "Computer-Aided Stress Modeling for Optimizing Plastic Package Reliability" by S. K. Groothuis, W. H. Schroen, and M. Murtuza

Outstanding: "The Identification and Elimination of Human Contamination in the Manufacture of IC's" by R. W. Thomas and D. W. Calabrese

Each author received an engraved plaque citing the achievement, and all 13 awards were presented during the luncheon on Wednesday, April 2, 1986.

Call For Papers — 14th INTER-RAM

INTERNATIONAL • RELIABILITY • AVAILABILITY • MAINTAINABILITY
Conference for the Electric Power Industry
1987 • May 26–29 • Toronto, Canada

The Conference Theme

The theme emphasizes practical applications of RAM techniques in operating, maintaining, improving, upgrading, and extending the life of existing production and delivery systems. It reflects the existing utility operating environment, which is characterized by moderate and uncertain load growth, limited resources, complex regulatory requirements, and increasing public involvement and complexity of system operations.

The present situation has also resulted in an increased emphasis on delivery systems. Therefore, in addition to transmission and generation, specific sessions dealing with maintaining and improving distribution systems are planned.

Audience

Managers, engineers, and technologists involved in operation, maintenance, training, design, manufacture, and research related to transmission, distribution, and generation of electricity. This conference will attract those who are concerned with getting more out of what we have.

Location

The Sheraton Centre Hotel and Towers, Toronto, Canada.

Papers

Papers submitted should be consistent with the theme of the conference. They should discuss practical RAM techniques which have been successfully applied to enhance system performance. In particular, papers dealing with specific case histories are welcome.

Abstracts

Due August 15, 1986.
A 250-word abstract in English must be forwarded to the Conference Secretary:

Dr. M. S. Grover
Ontario Hydro
700 University Avenue, H14-G4
Toronto, Ontario, Canada
M5G 1X6
Telephone: (416) 592-7728
Telex: 06-217662

The selection results will be transmitted to the authors by October 1, 1986. Completed papers of 4000 words will be required by January 15, 1987.

Sessions

Papers will be organized into parallel sessions on:
Transmission
Distribution
Fossil and Hydraulic Generation
Nuclear Generation

Exhibits

Arrangements are being made for an exhibition to be held during the conference in the conference hotel. Industrial, technological, and educational exhibits will be welcome. Intending exhibitors are encouraged to make arrangements as soon as possible with:

Mr. D. Anderson
CANATOM, Inc.
55 Queen Street East
Toronto, Ontario, Canada
M5C 1R5
Telephone: (416) 366-9421

REL-CON Europe '86

Mr. Harold Ascher of the Naval Research Laboratory will be giving a Plenary Session Address at the European Reliability Conference (REL-CON Europe '86). An abstract of the paper follows:

MODELS FOR REPAIRABLE SYSTEMS
Harold Ascher
Naval Research Laboratory
Washington, DC 20375-5000

Probabilistic modeling of repairable systems will be presented, followed by a discussion of the shortcomings of such models. Considerable emphasis, therefore, will be placed on statistical analysis of repairable systems failure data. There are fundamental differences between the analyses of repairable and nonrepairable systems failure data. As stressed by O'Connor (1985, p. xvi), however, these essential differences have usually been either overlooked or incorrectly addressed in reliability texts. Great emphasis will be placed on explaining why basic—and inherently simple—concepts have so often been misunderstood.

The paper will be based on the recently published monograph, Ascher and Feingold (1984).

References

H. Ascher and H. Feingold (1984). "Repairable Systems Reliability: Modeling, Inference, Misconceptions, and Their Causes," Marcel Dekker, New York and Basel.

P. O'Connor (1985). "Practical Reliability Engineering, Second Edition," Wiley, New York and Chichester.

IES Workshop

INSTITUTE OF ENVIRONMENTAL SCIENCES

940 East Northwest Highway • Mount Prospect, Illinois 60056 • 312/255-1561

How to Tailor Environmental Engineering Requirements to the RFP
September 9-11, 1986 • Leesburg, Virginia

The Institute of Environmental Sciences will sponsor a three-day tutorial and workshop devoted to helping environmental engineering specialists and management establish and respond to Request For Proposal (RFP) environmental engineering requirements and tasks.

Proper integration of major environmentally related hardware acquisition phases will be examined, including:
- Environmental Qualification
- Reliability Qualification
- Reliability Growth/Development
- Production Acceptance

- Environmental Stress Screening

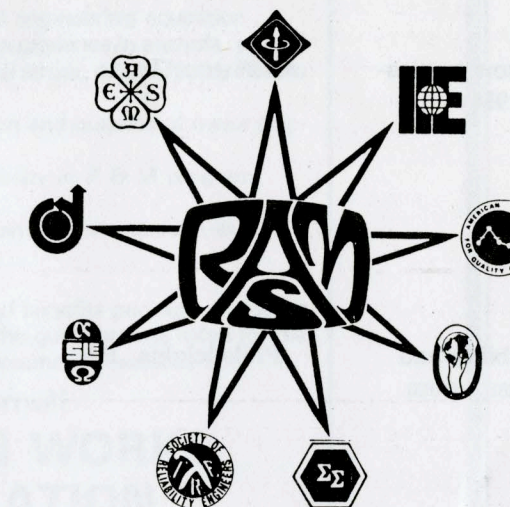Four major questions will form the heart of the program:
1. What has to be done?
2. Who has to do it?
3. When should it be done?
4. How long will it take?

This important tutorial and workshop will be held at the Xerox International Management and Training Development Center, Leesburg, Virginia, September 9-11, 1986. For further details, contact the IES National Office, (312) 255-1561.

RAM Symposium

1987 ANNUAL RELIABILITY AND MAINTAINABILITY SYMPOSIUM
January 27, 28, 29, 1987

Dunfey City Line Hotel
Philadelphia, PA USA

THEME
Assurance Technologies In The
Automated Engineering Environment

- Environmental Stress Screening
- CAD/CAM
- Software for R & M
- Advanced Technology in R & M

- Combat Resilience
- Military Initiatives
- Maintainability/Testability
- R & M Tutorials

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For more information write:
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P.O. Box 1269
Cocoa Beach, Florida 32931

WATCH THIS PUBLICATION FOR INFORMATION UPDATES

DATE	CONFERENCE	PLACE	CONTACT
1986			
Oct. 19–22	Wafer Reliability Assessment Workshop	Lake Tahoe, CA	Dr. O. D. Trapp Technology Associates 51 Hillbrook Dr. Portola Valley, CA 94025
Oct. 28–30	Mechanical Failures Prevention Group	Patuxent River, MD	T. Robert Shives A113 Materials Bldg. National Bureau of Standards Gaithersburg, MD 20899
Dec. 1–4	IEEE Global Telecommunications Conference 1986	Houston, Texas	Dr. Kwei Tu LEMSCO/B12 2400 NASA Rd. 1 Houston, TX 77258 (713) 333-6545 TELEX: 4620667
1987			
Jan 27–29	1987 Annual Reliability and Maintainability Symposium	Philadelphia, PA	Anthony Coppola RAMS Program Chairman RADC/RBET Griffis AFB New York, USA 13441-5700
March 31– April 2	International Reliability Physics Symposium	San Diego, CA	H. C. Jones Westinghouse Corp. M.S. 3664 P.O. Box 1521 Baltimore, MD 21203 (301) 765-7387

CALLS FOR PAPERS

April 27–29	Third Annual Conference on Electronic Packaging and Corrosion in Microelectronics	Minneapolis, MN	Prof. Morris E. Nicholson Corrosion Research Center 1776 N. Pascal Ave. St. Paul, MN 55113
May 26–29	INTER-RAM	Toronto, Canada	Dr. M. S. Grover Ontario Hydro 700 University Ave., H14-G4 Toronto, Ontario, Canada M5G 1X6 (416) 592-7728 Telex: 06-217662

IEEE Reliability Society Constitution

Table of Contents

Article I
Name and Objectives

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

Section 2. The objectives of the Society 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 Society 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 Student, having a professional interest in any phase of the field of interest of the Society.

Section 2. Nonmembers of the IEEE may become Affiliates of the Society and may participate in Society activities, as provided by the Society Bylaws and subject to the applicable IEEE 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 ap-

proved by the IEEE Technical Activities Board (TAB).

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 an annual assessment or fee from its members, as 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 shall be higher than for IEEE members.

Section 3. The Society may raise revenues by other means, such as advertising, shows, requests for contributions, sale of publications, 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 Societies or sections. Revenue means not explicitly covered by the IEEE Constitution or IEEE Bylaws must be approved by the IEEE General Manager before being adopted by the Society.

Article V
Organization

Section 1. The Society shall be managed by an Administrative Committee (AdCom) of 18 elected members-at-large plus members ex-officio with vote as specified in 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 Bylaws, and the supervision of sub-society affairs, other than by the AdCom, shall be as prescribed in the Society Bylaws.

Section 4. The terms of the 18 members-at-large of the AdCom shall be for three years, with 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 AdCom shall annually elect one of its members as President, and four others as Vice-Presidents, whose terms shall be for one year. A Secretary and a Treasurer shall also be appointed annually for one-year terms. These two officers need not be elected members of the AdCom, and they may be reappointed.

Section 6. The President, under direction of the AdCom, shall have general supervision of the affairs of the Society. The President shall preside at meetings of the AdCom, 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 by vote of the Society AdCom. In the President's absence or incapacity, his/her duties shall be performed by the Vice-President, Technical Operations. If this is not possible, the Vice-Presidents shall select one of their number to act as President.

Section 7. The AdCom may utilize the services of IEEE 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 AdCom.

Section 9. The Vice-Presidents, as soon as expedient after election, shall, with exception of the Membership Committee, appoint the standing committees provided by the Society Bylaws. The Society President 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 serve until their successors are appointed or the committee dissolved.

Section 10. The President shall be an ex-officio member of all committees of the Society. The President is a member of the IEEE TAB and, when notified of a meeting of said Board, shall represent the Society at the meeting, or send an alternate. If an alternate cannot be found, the President shall present the views of the Society by a letter.

Section 11. The newly elected President, Vice-Presidents, and members of the AdCom shall assume office on the first of January of each year, unless a different time is provided in the Society Bylaws.

Section 12. The officially constituted officers of the Society shall have the authority to obligate the funds and assets of the Society to promote the Society's activities, as prescribed in the IEEE Bylaws. Contracts may be executed only by the IEEE. Proposed contracts for Reliability Society activities shall be submitted to IEEE Headquarters for review and execution.

Article VI
Nomination & Election of the Administrative Committee

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

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

Article VII
Meetings

Section 1. The Society may hold meetings, conferences, symposia, or conventions either alone or in cooperation with other IEEE entities, or other technical organizations, subject to the IEEE Bylaws. The Society shall sponsor at least one technical conference of national (USA) or international scope each year.

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

Section 3. The AdCom shall hold at least three meetings per year, one an Annual Meeting. Special meetings of the Committee may be called at the discretion of the President or upon request of three voting members of the AdCom.

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

Section 5. A majority vote of those voting members of the AdCom attending a meeting shall be necessary for the conduct of business, except as otherwise provided in this Constitution.

Section 6. Business of the AdCom may be handled by correspondence, telephone, or other electronic communication where, in the opinion of the President, matters requiring action can be adequately handled in that manner. All such actions shall be made a matter of record by citation in the minutes of the following AdCom meeting. A majority vote of the voting members of the AdCom is necessary for approval of actions handled in that manner, unless otherwise provided in the Constitution or Bylaws.

Article VIII
Publications

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

Section 2. The President, with the advice and consent of the AdCom, shall appoint the Editor of each publication. Other editors may be appointed as prescribed in the Bylaws. The duties of an editor, and his compensation, if any, shall be as prescribed in the Bylaws.

Article IX
Amendments

Section 1. Amendments to this Constitution may be initiated by petition submitted by twenty-five members of the Society, or by the AdCom. Amendments may be adopted by at least two-thirds of the voting members present in meeting assembled but not less than fifty percent of the total voting members of the AdCom, provided that notice of the proposed amendment has been sent to each member of the AdCom at least 20 days prior to such meeting; or amendments

may be adopted by a two-thirds mail vote of the voting members of the AdCom provided a 30 day period is provided for such responses. Amendments to the Constitution must be approved by the TAB. After such approval, the amendments shall be published in the Society *Transactions* or Newsletter, with notice that they go into effect unless 10 percent of the Society members object to the AdCom within 30 days after the effective publication date stated in the instructions in the publication. If such objections are received, a copy of the proposed amendments shall be mailed with a ballot to all members of the Society at least 30 days before the date appointed for return of the ballots, and the ballots shall carry a statement of the time limit for their return to the IEEE office. When a mail vote of the entire Society membership is necessary, approval of the amendments by at least

two-thirds of the ballots returned shall be necessary for enactment.

Section 2. Suitable Society Bylaws, and amendments thereto, may be adopted by a two-thirds vote of the voting members of the AdCom present in meeting assembled, provided that notice of the proposed Society Bylaw, or amendment, has been sent to each member of the AdCom at least 20 days prior to such meeting; or a Society Bylaw, or amendment, may be adopted by a two-thirds mail vote of the voting members of the AdCom provided a 30 day period is provided for such responses. No Society Bylaw, or amendment, shall take effect until it has been published in the Society *Transactions* or Newsletter and has been mailed to the TAB Secretary.

IEEE Reliability Society Bylaws

Table of Contents

1. Purpose: These Bylaws provide detailed guidance for the supervision and management of Reliability Society affairs in accordance with the Society Constitution and the IEEE Bylaws.

2. Membership: All IEEE members, regardless of grade, may become Society members upon payment of the annual fee (see Bylaw No. 8.1).

2.1 *Honorary Members:* Honorary membership in the Society, exempt of the payment of the annual fee, may be bestowed upon any IEEE member by recommendation of the Awards Committee approved by majority vote of the Administrative Committee (AdCom). Honorary members are not eligible to hold elective office in the Society.

2.2 *Affiliates:* Members of societies that have been recognized for affiliate purposes by specific action of the AdCom and the IEEE Executive Committee are eligible for Affiliate membership upon payment of the annual fee (See Society Bylaw 8.1). 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.

An Affiliate cannot serve in elective office in the Society or in a Chapter nor vote for candidates for these offices. An Affiliate may serve in an appointive office in the Society or a Chapter of the Society. An Affiliate is entitled to receive notices of all meetings sent to Society members, to receive 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 by the Society. An 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 *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 with and without vote. Article VII, Section 4, provides that a quorum shall be seven voting members, without distinction between the members-at-large and the ex-officio members with vote, and that all voting members shall have an equal vote. Persons under paid contract to the Society may be ex-officio members of the AdCom but shall not be voting members.

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

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

3.3 In order to assure a continuously active AdCom, elected AdCom members who miss three consecutive meetings shall 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 Chairperson 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 Chairpersons of all Sub-Societies and Standing Committees. In addition, the Chairperson 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. Persons under paid contract to the Society shall not be eligible for election to the AdCom.

4.2 The election to fill forthcoming vacancies of the AdCom membership-at-large shall be by mail ballot to the 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 Chairperson of the Nominating Committee shall send the names of such elected members to the Chairperson of the TAB.

4.3 The Society President each year shall issue instructions to the Chairperson of the Nominating Committee to insure an orderly progression and completion of the election procedures prior to October 1. Terms of the newly elected AdCom members shall begin on the following January 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. 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 no later than 15 days after notification of completion of the election of new AdCom 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/her 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 Operations
Vice-President, Publications
Vice-President, Meetings
Vice-President, Membership

Their function shall be to manage the activities in their respective fields of endeavor, including control of funds budgeted for these activities. These are:

a. Vice-President, Technical Operations
1. Standards and Definitions
2. Intersociety Technical Liaison
3. Committees or Sub-Societies operating in specific

technical sub-areas 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. International Reliability Physics Symposium
3. 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 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 Chairperson 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 approved by the AdCom.

6.3 *Sub-Society Chairpersons:* Sub-Society Chairpersons 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.

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

7.2 *Transactions:*

7.2.1 The *Transactions* editors shall be an Editor, a Managing Editor, and a Senior Associate Editor and Associate Editors as are appointed by the Editor.

7.2.2 The Editor of the *Transactions* shall be an ex-officio member of the AdCom, with vote, or an elected member. The Editor shall be appointed as prescribed in the Constitution.

7.2.3. The Managing Editor of the *Transactions* shall be selected by the Vice-President, Publications, with the advice and consent of the AdCom.

7.3 *Newsletter:* The Newsletter Editor(s) shall be an ex-officio member(s) of the AdCom, with one vote, or an elected member.

7.4 *Publications Program:* The Publications Program, and the duties of the editors, shall be as prescribed in the Publications Operations Manual. The Vice-President, Publications is responsible for preparation and maintenance of the Publication Operation Manual.

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

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 voting members as to constitute a majority. Minutes of such meetings shall be mailed by the

Secretary to each AdCom 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 AdCom shall be:
1. Roll Call
2. Reading of the minutes of the previous meeting
3. Reading of reports on business transacted other than at the 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 the AdCom, without modifying these Bylaws.

9.4 The business of the Society shall be administered by an Executive Committee that shall consist of:
President
Junior Past President
Four Vice-Presidents
Secretary
Treasurer

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 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 Chairperson only of a committee and request the latter to appoint additional committee members. The terms of office of the Chairperson and members of a Standing Committee shall be for one year or until a successor is appointed. Chairpersons of Standing Committees, unless they are drawn from the elected members of the AdCom, shall 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.

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 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 IEEE policies.

e. Monitor the technical state-of-the-art in its field, detect the need for new technical developments, and take action to stimulate interest in such developments.

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 *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, Meetings. The following policies govern the operation of these committees:

a. Administrators or Representatives are appointed 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.

11.3 *General Membership Committee:* The functions of the General Membership Committee shall be to:

a. Supply information to IEEE members and Section, on the Society 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, including membership booths at co-sponsored Society meetings.

c. Make recommendations to the Executive Committee or the 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.

11.4 *Chapters Committee:* The functions of this Committee shall be to:

a. Compile data pertaining to the organization of Society Chapters and 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 Awards.

c. Create and promote interest in the Sections for the formation of new Society Chapters.

d. Foster close relations between the Chapters and the AdCom and provide AdCom assistance to the Chapters wherever possible.

e. Monitor Chapter activity and make recommendations for termination of Chapters whose activities do not meet the standards established in the IEEE Bylaws.

11.5 *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.

11.6 *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.

c. Recommend changes in the Constitution or Bylaws as necessary to conform to the developments of the

Society, its AdCom, and its membership and mode of operation.

d. Interpret the Constitution and Bylaws as requested by the President.

11.7 *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.

11.8 *Fellow Committee:* The function of the Fellow Committee shall be to prepare for AdCom approval evaluation of Fellow nominations which have been forwarded to the AdCom by the IEEE Fellow Committee.
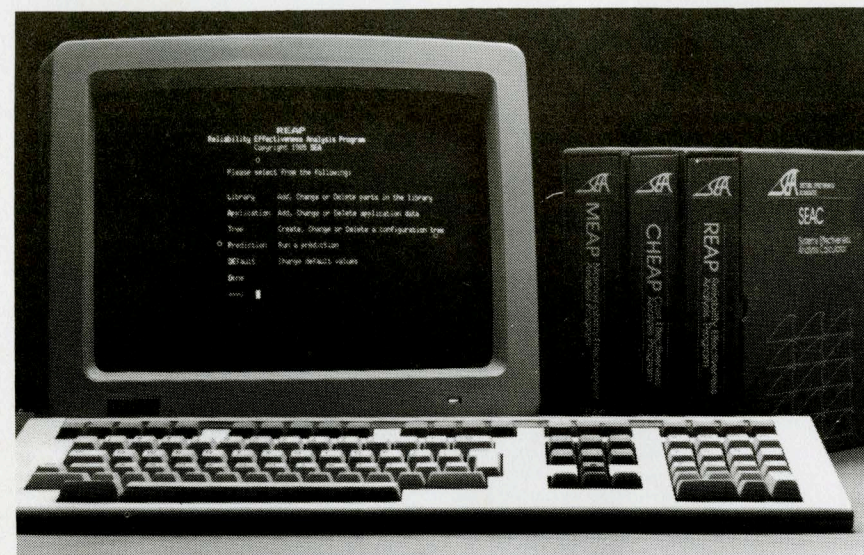
11.9 *Finance Committee:* The functions of the Finance Committee shall be to:

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 Executive Committee and the AdCom 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 described in Section 10.3 of the Bylaws and as directed by the officers and the AdCom. Typical areas may include:

Maintainability
Human Performance Reliability
Systems Screening
Software Reliability
Advanced Reliability Techniques
IEEE Energy Technology Assessment
International Reliability
Mechanical Reliability
Nuclear System Safety & Reliability
Quality Assurance Management
Health Care Engineering Policy

13. Amendments: Amendments to these Bylaws may be made as prescribed in Article IX, Section 2 of the Constitution. The required submittal for IEEE approval, and publication, shall be arranged by the Secretary of the AdCom as soon as possible following AdCom vote to adopt, and prior to implementation.