
Reliability Society Newsletter

Editors: Gary Kushner and Mark Snyder
Vol. 33, No. 1, January 1987 (USPS 460-200)

Chapter Awards 1985-1986

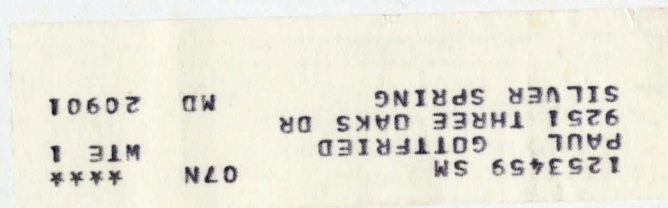
The Reliability Society AdCom held its Annual Chapter Awards Dinner at the Crystal City Marriott, Arlington, Virginia, on Thursday evening, September 18, 1986. Bob Jaquess, Chairman of the Chapter Awards Committee, reported that ten of our 17 chapters had completed awards questionnaires:

- Central New England
- Chicago
- Cleveland
- Denver
- Florida
- Northern New Jersey
- Ottawa/Ontario
- Philadelphia
- Tennessee
- Washington/Northern Virginia.

Their responses included information on chapter activities, technical publications, and membership growth. Bob applauded the efforts of each participating chapter and the thoroughness and completeness of their responses.

The winning chapters and their chairmen are shown below. The AdCom congratulates you and your officers for outstanding efforts on behalf of our members.

First Place	Philadelphia Certificate and \$500 for Chapter expenses <i>Chairman: Fulvio E. Oliveto</i>
Second Place	Washington/Northern Virginia Certificate and \$150 for Chapter expenses <i>Chairman: Larry Shapleigh</i>
Third Place	Central New England Council Certificate and \$100 for Chapter expenses <i>Chairman: Sidney Gorman</i>



RS Newsletter Inputs

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., 24 Porter Road (LJ01/C2), Littleton, MA 01460, per the following schedule:

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 For July Newsletter: by Apr. 15
 For October Newsletter: by July 15
 For January Newsletter: by Oct. 15

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President's Message

Actually, I prefer looking at the present and future rather than looking back. Of course, we can point to some achievements during the last two years, such as finally revising and updating the Constitution and By-Laws (thanks to Harry Reese and company) and resolving the issues concerning our editorial staff for the *Transactions*. But, that is all settled, now.

Speaking of the *Transactions*, Dick Kowalski has made the transition into his Editor job quite well and papers are flowing. No small tip of the hat to Thad Regulinski, Senior Associate Editor, who is not only responsible, in general, for assisting and coordinating the efforts of guest editors for special issues, but will be personally responsible for a special 1987 issue concerned with the USAF R&M 200 Program report. Another 1987 issue will be devoted to Fault Tolerant Computing. In 1988, one issue will discuss R&M in the chemical process industry. Dick, together with his publications committee (Thad; Paul Gottfried, Special Papers Editor; and Ralph Evans, Managing Editor), are wrapping up the publication of an Operations Manual for the Publication Committee, which should be available at the next AdCom meeting (January 1987). These people have worked hard on their tasks and deserve our professional recognition and sincere thanks.

Also, for the future, I have asked the formation of two committees to be staffed for Technical Operations. Paul Gottfried leaves his post on Publications to take up arms to fight for better quality in systems/equipment vis-a-vis reliability in the field. He is the chairman of the Quality Interfaces Committee. A charter has been defined, with the help of inputs from Dick Jacobs, among others, that will (1) identify aspects of QA/Total QC that are of major concern from a reliability perspective (equipment in use), (2) assess the adequacy of research, publications, and educational activities of other professional and technical organizations (the National Quality Forum is one umbrella organiza-

tion, to which we adhere), (3) develop means to promote the awareness of and participation in such activities by our Society's members, (4) develop means to expand Society involvement in such activities where existing efforts appear to be inadequate, and (5) as directed, represent the Society in meetings and activities of appropriate committees and councils. Members of his committee include Dr. A. Blanton Godfrey of AT&T Bell Labs, Jim King of BART, and Dev Raheja of Technology Management, Inc. Those of you who may be interested in working with Paul are invited to contact him directly at (301) 469-3154.

In addition, we have secured the services of Howard Kennedy to chair a committee devoted to the expansion, coordination, definition, and propagation of the faith in Computer Aided Engineering for R&M. (If we add Availability, could the committee be called "CARMA"?) In the event, Howard will be forming the committee officially and one of the first actions will be to gather information on what is happening out there in this area. The society plans to take a strong role in this field and Howard needs all the help we can garner. Some of you who have been working on the committees on the RAM Symposium may have some of the requisite skills to organize some of the work. There has been thinking along the lines of sponsoring a workshop, seminar series, etc. Many of us feel that if R&M doesn't get into the CAE disks, designers will be forced, by circumstance and time, to ignore us. If you agree, now's the time to put your skill where the need is. (703) 979-8220 is Howard's number.

I would like to express my profound thanks to the many who have supported my efforts during the last two years. It is amazing to be confronted with the wisdom, assistance, and friendship of you all time and time again. To the continued success of our Society and your personal endeavors.

Alan Plait
President

Annual IEEE Reliability Society Award

The Annual IEEE Reliability Society Award is presented each year to an individual who has made significant contributions in the field of reliability. These contributions can be in the areas of scientific development, professional achievement, or management. Selection of the winner is based on the overall impact of his or her contribution on the advancement of reliability theory, education, engineering, or its management. The award is presented at the Reliability Society awards function in January each year.

The recipient of the 1986 Annual Award is Beatrice A. Orleans. Ms. Orleans has been cited for her significant contributions in teaching statistics and reliability and pioneering efforts in design of experiments.

Beatrice Orleans has been engaged in private consulting and teaching since March 1980. From 1965 to February 1980, Ms. Orleans was head of the Statistical Engineering Branch and Consultant to the Naval Sea Systems Command and its activities in all statistical aspects of Navy programs and projects. These involved a wide variety of statistical specialties such as: quality control and quality assurance, reliability and maintainability, design and analysis of tests and experiments, Analysis of unplanned data, general purpose simulation and risk analysis for project management and cost estimating.

Ms. Orleans has also originated, lectured, and taught specialized courses in statistical methods to the Command, laboratories and contractors and has been a guest lecturer for the George Washington University Continuing Education Department in Design of Experiments, as well as for the Lucas Institute for Engineering in Birmingham, England. She has also been an instructor in Statistical Inference for STAT-A-MATRIX and the Royal Military Col-



Beatrice Orleans

lege in Canada for their three-week Reliability and Maintainability course.

Beatrice Orleans holds a B.A. in Mathematical Statistics from Hunter College in New York, an M.S. in Statistics from the Columbia University Graduate School of Business and has done Post Masters Graduate Study in Statistics, Quality Control and Management Science at American University and George Washington University in Washington, DC. She is a Fellow of the American Statistical Association and a Senior Member in the American Society for Quality Control.

Election Results

The election results are in for the administrative committee (AdCom) of the Reliability Society of 1989. The new AdCom class of 1989 is composed of

Gus Constantinides
Tony Coppola
Paul Gottfried
Thad Regulinski
Jackie Rodriguez
Bill Thomas

The officers are:

President: **T. L. Fagan**
Vice Presidents: **B. A. Bang**
A. Constantinides
A. Coppola
S. Keene

CONGRATULATIONS TO A VERY CAPABLE AND DESERVING TEAM!

Chapter Activities

Northern New Jersey Chapter

The Northern New Jersey Chapter started 1985 activities in September with a meeting at which Larry Crow of Bell Labs spoke about Reliability Growth Modeling. Larry developed the well-known AMSAA Model of the Army during his career at the U.S. Army Aberdeen Proving Ground. After this presentation, an election was held and Ray Sears of AT&T Bell Labs was elected the Chairperson of the Chapter, Hank Moss of ITT Avionics was elected the Vice Chairman, Mallik Arjunan of ITT Defense Communications was elected Secretary, and John Wronka of AT&T Bell Labs was elected the Treasurer.

The officers met and decided to hold meetings every third Tuesday of the month and chose a list of topics of interest to the members for which speakers could be invited to make presentations.

The October 1985 meeting was addressed by Bob Easton of AT&T Bell Labs on Submarine Cable System Reliability. Mr. Easton talked about the problems and advantages of submarine cables. He said that 58,000 hours of failure-free operation in the cables had been achieved and that it would take one to two weeks to repair, in the case of failure. The November '85 meeting was addressed by Ed Demko of Singer Kearfott and he talked about Dormant Failure Rate Models. He said that the dormant failures should be taken into account in any failure rate prediction. In essence, if you increase the amount of operating time or duty cycle, you end up decreasing failure rate and the electro-mechanical systems tended to benefit from cycling. No meeting was held in December due to the holiday season.

During the January 1986 meeting, Mike Dyer of IBM, Bethesda, Maryland, spoke about Software Reliability. This was a well attended meeting with the increasing interest in reliability of software from both Reliability Engineers and Software Engineers. Mike talked about the IBM experience in software development and three different approaches: audit/code reviews, structured programming and functional correctness models, and Testing vs. Correctness verification. Seven levels of testing were used to test during design and development at each of unit testing, string testing, and integration into subsystems. He also talked about MIL-STD-460 and its applicability.

The February meeting was to be addressed by Ed Parascos of Con Edison of New York but due to indisposition he could not make it. Larry Gradin of Ecotech, West New York, NJ, spoke about Reliability Centered Maintenance. He said that there is a greater push from the nuclear industry to use Reliability centered maintenance concept to reduce the risk of introducing anomalies due to scheduled preventive maintenance activities. The March meeting was addressed by Myron Wilson of Evaluation Associates of greater Philadelphia. He spoke about the Reliability & Maintain-

ability of Biomedical Systems. This was of interest to the members with the increasing use of microelectronic parts in such life preserving systems as pacemakers etc. He presented case studies of the use of traditional reliability engineering techniques of fault tree, FMECA and thermal analysis in hemodialysis and CAT scanner systems. He pointed out how single point failures could be reduced by design.

Charles Mercer of McDonnell Douglas Electronics Co., of St. Louis, Missouri, talked in April on Quality & Productivity Improvement Program at MDEC. He said that by changing the traditional control and the commitment assumptions at MDEC, they made radical changes in the productivity. By eliminating the status symbols and by reinforcing the common fate commitment, rapid progress was made. They emphasized presenteeism rather than absenteeism. The last meeting of the 1985-86 was held on May 20, 1986 and Peter Riesz of Lockheed Electronics Plainfield, NJ, was the Guest Speaker. He talked on Life Cycle Cost and Product Assurance. He briefly related the history of LCC modeling and mentioned the Rand model called PROM and went on to describe the PROCTOR model of Lockheed which dealt with the parametric reduction and optimization of costs. He explained how by proper LCC modeling both the hardware and software costs of the development could be optimized.

On the whole, the Northern New Jersey Chapter had a very interesting and fruitful year. This chapter is looking forward to scheduling more useful activities in the current 1986-87 year.

Mallik M. Arjunan

Central New England

The first monthly meeting was held on September 17, 1986. This was a joint meeting of our group and the IEEE Components, Hybrids and Manufacturing Technology Society (CHMTS). The topic was a Stress Screening Update On Parts presented by Mike Cooper of the GTE Communication Systems Division in Needham. This was a topic of mutual interest to both groups and there was lots of audience participation.

The Annual Fall Lecture Series was on Software Reliability Management in November. Jim Dobbins traveled from Virginia to give us this excellent lecture. This was the most requested subject by the membership surveys last year. Jim takes the mystery out of predictions. The IEEE Computer Group deserves to be proud of the efforts to organize the science of Software Reliability Predictions.

The December meeting was presented by John Oddo and

Sayta Bajpai on the unusual problem of predicting Mother Natures' effect on system reliability. This is not likely to be added to MIL-HANDBOOK-217E. This is an example of the reality that we occasionally face to predict the reliability for non-standard parts.

We are anticipating a very interesting January 21, 1987 meeting. Don Harrahy from Mitre Inc. is presenting the description of Mitre's Reliability Center. The location is at the Hanscom Officers Club.

Gene Bridgers

Chapter Profile

We hope to establish the Chapter Profile as a new feature of the RS Newsletter and feature a new article in each edition of the Newsletter. The Central New England Chapter agreed to write the pilot. We encourage the other chapter chairpersons to prepare inputs for their respective chapters.

— CENTRAL NEW ENGLAND —

The Central New England Chapter of the IEEE Reliability Society was founded in 1959 as the Boston Chapter and presently serves about 140 active IEEE members representing a broad industrial and academic community surrounding the Boston area reaching from Rhode Island to southern New Hampshire. The membership from industry represents a comfortable balance between the defense and commercial companies which do business in the area.

Each year, the chapter sponsors an annual program which consists of:

- Five monthly dinner meetings featuring a speaker from the local technical community. Average attendance at the meetings is about 50.
- An annual Fall Lecture Series usually covering four to six evening lectures over a six week period serving about 60 attendees who pay a small tuition. Topics have included Software Reliability, Principles of Reliability, Maintainability Engineering, and Design for Testability.
- An annual all day Spring Seminar is held featuring a prominent keynote speaker and usually eight technical papers presented and published in the Proceedings. The seminar usually draws close to 100 attendees and concludes with the annual Chapter Awards Dinner and the installation of new officers.

The membership is active in other local and national events and typically contribute 20 times annually as speakers or moderators. The student population of the impressive local higher education institutions is encouraged to participate with the chapter by inviting the hosting the student member attendance at the monthly meetings.

Chapter leadership is provided by an Executive Committee consisting of four elected officers and a number of appointed/volunteer positions rounding out a total of 12 functions which support the annual program. In addition to the Executive Committee, a five-member Steering Committee establishes the long range strategic direction as well as emphasizing the base of administrative excellence.

The Central New England Chapter is proud to be con-

sistently among the top performing chapters, the most recent of which was the Third Place Award for the previous year. We also are interested in seeing one of the IEEE Reliability Society sponsored national symposiums return to the Boston area in the not-too-distant future.

Gene Bridgers

Chairman, 1986-1987

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IEEE Fellow Nominations

It is time to consider any members of the Reliability Society who have earned the honor of being advanced to Fellow grade. The IEEE Bylaws define the Fellow grade as one of unusual distinction in the profession, to be conferred only by invitation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in IEEE designated fields, who has made important individual contributions to one or more of these fields. A nominee must be a Senior Member of the Institute, and have been a member in any grade for at least five years prior to January 1 of the year of election.

The Fellow Committee, appointed by the Board of Directors, has the responsibility of making recommendations to the Board of Directors for nominees to be conferred the grade of Fellow. The Fellow Committee depends primarily upon information furnished by a nominator to point out the qualifications and unique contributions of a candidate. This information is supplemented by an evaluation by the appropriate society and comments from Fellow grade references who can attest to the candidate's achievements.

Any person who is sufficiently knowledgeable of a candidate's achievements can serve as a nominator. If you are aware of a deserving candidate and would like to pursue a nomination, please contact the Reliability Society Awards and Nominations Chairman for assistance:

Naomi J. McAfee
Westinghouse Electric Corp.
P.O. Box 746, MS 246
Baltimore, MD 21203
(301) 765-3400

You may also obtain a nomination kit by request to:

Staff Secretary.
IEEE Fellow Committee
345 East 47th Street
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Included in this Newsletter is a listing of all Fellow grade members of the Reliability Society who may be used as references for a proposed candidate.

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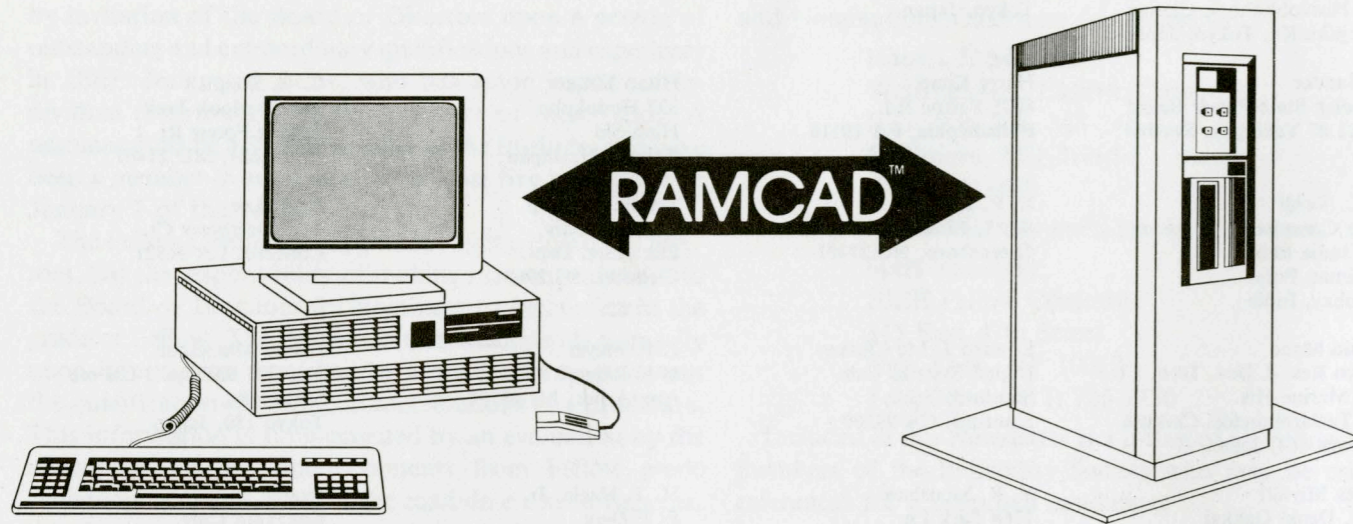
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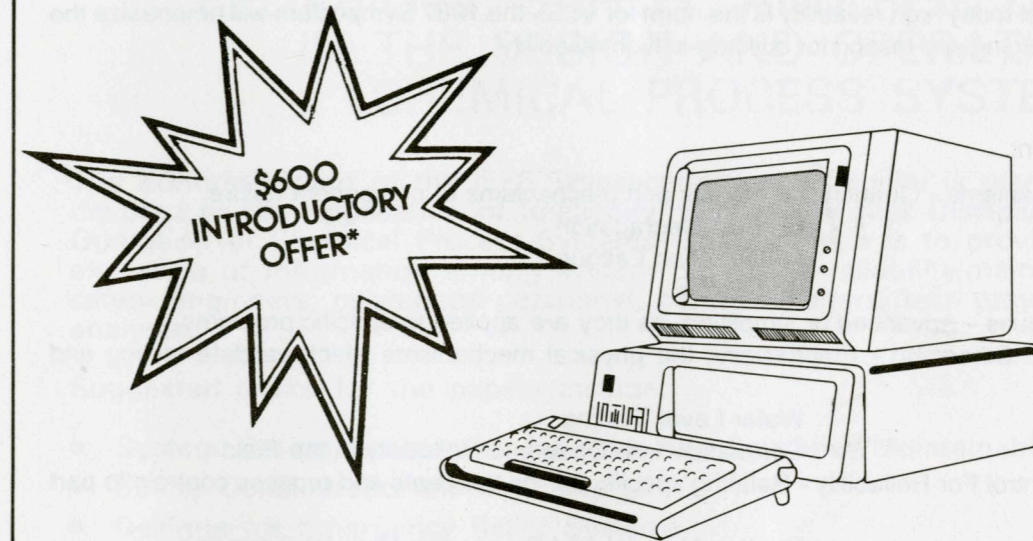
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*Quotations will be available at the RAM Symposium or may be obtained by calling Tom Walsh at 617-762-9252.



1987 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM
 April 7 - April 9, 1987 • Town & Country Hotel • San Diego, California

The twenty-fifth Annual Symposium, co-sponsored by the IEEE Reliability and Electron Devices Societies, emphasizes device reliability as the dominating influence in the development of new VLSI technologies and circuit designs. With the awareness that today high reliability is the norm for VLSI, the 1987 Symposium will emphasize the role of design, processing, packaging and testing for building-in high reliability.

Papers will deal with work on:

- Physics of Failure Mechanisms - Quantitative models and mechanisms of component failure.
 - Hot Electrons
 - Electromigration
 - Oxide Breakdown
 - Contact Degradation
 - Metallization Fatigue
 - Soft Errors
- Failure Analysis Techniques - Advanced or simplified, as they are applied to specific problems.
- Accelerated Testing and Screening - Emphasizing the physical mechanisms which validate testing and screening techniques.
 - Burn-in
 - Smart Oven Testing
 - Wafer Level Testing
 - Correlation with Observed Reliability in the Field
- Design and Process Control For Reliability - Relating specific design concepts and process controls to part reliability.
 - Latent Defects
 - Particle Control
 - Computer Aided Manufacturing
 - Statistical Process Control
 - Starting Material and Processing Material Controls
 - Margin Testing and DRAM Repair Criteria
 - Oxide and Metal Process Monitor and Reliability Testing
 - Design Rules for Improved Reliability

In the following or related areas:

- VLSI (Microprocessors, Memory, PLA, DRAM, Redundancy, and Repair, etc.) - MOS, Bipolar, CMOS, I²L, SOS
- Semiconductor/Insulator Interfaces, Contacts and Metallization
- Packaging, Bonding, Die Attach, Coatings and Encapsulation
- Hybrids (Materials, Processes and Components)
- Displays, Sensors, and Solar Cells
- Microwave, Optoelectronic, and SAW Devices
- GaAs Devices and Interface Effects on III-V Devices
- New Devices and Technologies
- Passive Components
- Attachment of Leadless Ceramic Chip Carriers and other Surface Mount Technologies
- Medical Electronics
- Automotive Electronics
- Low Temperature Operation

For general conference information contact:

David Yaney, General Chairman
 1987 International Reliability Symposium
 AT&T
 Bell Laboratories
 555 Union Blvd.
 Allentown, PA 18103
 (215) 439-6118

Call for Papers

**SPECIAL ISSUE DEVOTED TO APPLICATION OF
 RELIABILITY, SAFETY, AND RISK DISCIPLINES
 IN THE DESIGN AND OPERATION OF
 CHEMICAL PROCESS SYSTEMS**

The Editorial Board of the IEEE Transactions on Reliability is planning a special issue devoted to the Application of Reliability, Safety, and Risk Disciplines in the Design and Operation of Chemical Process Systems. The objective is to provide a forum for the exchange of information among system designers, reliability/maintainability engineers, safety engineers, operations personnel, plant managers, loss prevention personnel, and risk analysts.

Suggested topics for the papers include:

- System Design Techniques for achieving Reliability/Maintainability requirements
- Safety Considerations During Design
- Designs for Emergency Relief Systems
- Designs for Transportation of Hazardous Materials
- Probabilistic Approaches in System Design
- Evaluation of Design Alternatives
- Impact of lessons learned from industrial accidents on System Design/Operation
- Use of Safety Statistics in design/operation of systems
- Modeling of System Reliability, Availability and Maintainability (RAM)
- Applications of Risk Assessment
- Applications of Hazard Analysis (HAZAN)
- Applications of Hazard and Operability Safety (HAZOP)

Highest priority will be given to practical papers over theoretical papers, and those which will treat particulars over generalities.

Prospective authors' target dates are as follows:

- February 28, 1987 - Author's letter of commitment
- May 31, 1987 - Submission of manuscript (4 copies)
- September 30, 1987 - Submission of revised manuscript

Send letters of commitment that briefly describe the paper's essence, or letters of inquiry, to the Guest Editor: or Senior Associate Editor:

Mr. James J. Rooney, P.E.
 JBF Associates, Inc.
 Technology Drive
 1000 Technology Park Center
 Knoxville, TN 37932-3341 USA
 phone: 615-966-5232

Dr. Thad L.D. Regulinski
 Goodyear Aerospace Corp.
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 Goodyear, AZ 85338
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Workshop Announcement

THE UNITED STATES AIR FORCE RESEARCH AND ENGINEERING SCHOLAR PROGRAM

Offers 1987 summer appointments as resident visiting scholars of the CENTER FOR EXCELLENCE IN RELIABILITY AND MAINTAINABILITY at the AIR FORCE INSTITUTE OF TECHNOLOGY (AFIT) to participate in the

RELIABILITY ENGINEERING DESIGN WORKSHOP

The workshop is aimed at university / college faculty who teach undergraduate or graduate design courses in electrical, mechanical, industrial, aeronautical, or systems engineering curricula.

- WORKSHOP OBJECTIVE:** Integration of reliability concepts into the content of the design courses and into the design process.
- QUALIFICATIONS:** Applicants must be U.S. citizens and faculty members of accredited U.S. universities, colleges or technical institutions, who teach design courses and who have a complete set of design lecture notes with their associated problems, assignments, tests and examinations.
- TERMS OF APPOINTMENT:** Successful candidates will receive a stipend of \$100/day for four weeks, \$50 per diem allowance, and air/ground transportation to and from workshop site, excluding car rental.
- WORKSHOP SITE:** Center for Excellence in Reliability and Maintainability, AFIT, Wright-Patterson Air Force Base, Dayton, Ohio 45433.
- WORKSHOP PERIOD:** A continuous four-week period commencing 15 June and terminating 10 July 1987.
- APPLICATION DEADLINE:** 2 March 1987.
- NOTIFICATION OF APPOINTMENT:** 6 April 1987.
- TO APPLY:** Address requests for application form to: RELIABILITY TRAINING INSTITUTE P.O. Box 275, Avondale, Arizona 85323-0100. Include with the request a SELF-ADDRESSED AND STAMPED ENVELOPE.

Call for Participation

WORKSHOP

TELECOMMUNICATIONS PRODUCTS/SERVICES: QUALITY AFTER SALE

April 28 through Noon April 30, 1987

Hotel La Sapiniere, Val David (near Montreal), Canada

Sponsored By: IEEE Quality Assurance Management Committee

OBJECTIVE

With constant evolution of telecommunications products and services, there is a need for a better understanding of how the concepts of "quality" and "quality improvement" apply not only to new product design and to product manufacturing processes, but to both new and old product and service deployment, evolution, and support as well. The goal of this workshop is to provide a forum for discussion among developers, manufacturers, providers and users of telecommunications products and services so that a better understanding can be reached as to the meaning of "quality after sale" and those processes that must be improved to enhance customer satisfaction. Specifically, the following topics will be discussed:

- Customer Related Performance Measurements
- Handling of Engineering Complaints, Product Change Notices and Software Patch Admin.
- Life Cycle Cost of Ownership
- Customer/Designer/Marketing Interface
- Feedback Mechanisms from the Field
- Quality Improvement Programs
- Verification against Requirements
- Verification for Compatibility
- Reliability (Hardware and Software)
- Maintainability
- Human and Administrative Factors and Quality in Ordering, Engineering, Installation and Operation

IMPORTANT DATES

- January 1, 1987 Deadline for abstracts & statements
- February 15, 1987 Notification of acceptance
- March 22, 1987 Deadline for registration & payment of workshop fees

ORGANIZING COMMITTEE

Tom Rogers, Chm (NYNEX, New York)
Adrian Dolinsky (NYNEX, New York)
Paul Giloth (AT&T-BL, Naperville, IL)
Bob Kessler (Bell Canada, Montreal)
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January 1987

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Alan King (Bell Comm. Research, NJ)
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Frank Townsend (EBASCO, New York, NY)

INFORMATION FOR PARTICIPANTS

The eleven areas listed above will be covered in short presentations of up to 15 minutes followed by discussion. These presentations should emphasize current practices, problems, future directions, and initiatives. Speakers will be encouraged to present results of practical significance and to raise open questions. Case studies should be presented, wherever possible, to illustrate the results. Speakers should submit an abstract (between 200 and 500 words) of a proposed presentation on a particular topic. A full paper will not be required. Other Participants should submit a brief statement of their relevant experience on a particular topic. The abstracts and statements should be submitted to the organizers as soon as possible, as the cutoff date is January 1, 1987. The attendance will be limited in order to facilitate open discussion and enhance interactions. Presentations will not be published but a summary of the workshop discussions prepared by the organizers will be presented at GLOBECOM '87.

ADDRESS ALL CORRESPONDENCE

Mrs. Patricia Delfino
NYNEX Enterprises
441 Ninth Avenue
8th Floor
New York, N.Y. 10001

Telephone (212) 502-7135
Fax (212) 502-7059 or 7103
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Videotapes Available

THE 1985 AND 1986 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUMS

Sponsored by

The IEEE Electron Device Society
and
The IEEE Reliability Societies

All 41 technical presentations of the 1986 Symposium are available as a set of eight 1/2" VHS video tapes or one or more of the tapes in the set can be ordered separately. Only the formal paper presentations are on the tapes. The question and answer periods following each presentation are not taped. It is possible to provide these tapes at reasonable quality and price by using the VHS format which permits 120 minutes per tape at the slowest speed (least degradation in signal). On the 1986 tapes only, the paper numbers have been continuously superimposed in the lower right-hand side of the picture to assist the researcher in fast-forwarding to find a particular paper presentation.

It was decided in 1985 that video taping was desirable and would be an effective means to relate the symposium information, especially films of the growth of shorts or opens, pattern checking using voltage contrast SEM, and human spittle as it projects from the mouth during normal conversation to cause a contamination related failure. So 1985 was a startup year for video taping and not all the taping was successful. From the 1985 Symposium 29 of the papers presentations are available on seven 1/2" VHS video tapes.

Tape numbers have been coded to reflect the year and paper number sequence.

For example: "RP857174"

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7174 = PAPERS ARE 7.1 TO 7.4

See the Advance Program or Proceedings to identify the titles and authors.

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Proceedings Available

The following proceedings are available on a first come first served basis for the cost of postage and handling:

International Reliability Physics Symposium 1978 through 1986
Annual Reliability and Maintainability Symposium 1973 through 1986

Contact : Joseph P. Malizia
Rural Route 1, Box 1645
Nequasset Road
Woolwich, Maine 04579
Tel: (207) 443-2711

Conference Calendar

DATE	CONFERENCE	PLACE	CONTACT
1987			
Jan. 27-29	1987 Annual Reliability and Maintenance Symposium	Philadelphia, PA	V. R. Monshaw RCA Astro-Electronics P.O. Box 800 MS 55 Princeton, NJ 08540
Mar. 17-19	6th Symposium on Reliability in Distributed Software and Database Systems	Williamsburg, VA	Prof. Edwin C. Foudriat University of S. Florida College of Engineering Dept. of Comp. Sci. & Eng. Tampa, FL 33620
Mar. 31-Apr. 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
Apr. 7-9	1987 International Reliability Physics Symposium	San Diego, CA	David Yaney 1987 International Reliability Symposium AT&T Bell Laboratories 555 Union Blvd. Allentown, PA 18103 (215) 439-6118
Apr. 23	25th Annual Spring Reliability Seminar	Framingham, MA	Miss Vivian Thorsen Technical Program Raytheon Corp. (Met 5-1-210) 528 Boston Post Road Sudbury, MA 01776

Apr. 27-29	Third Annual Conference on Electronic Packaging and Corrosion in Microelectronics	Minneapolis, MN	Prof. Morris E. Nicholson Corrosion Research Center 1776 N. Pascal Avenue St. Paul, MN 55113
Apr. 28-30	Workshop Telecommunications Products Services: Quality After Sale	Val David, Canada	Mrs. Patricia Delfino NYNEX Enterprises 441 Ninth Avenue 8th Floor New York, NY 10001 (212) 502-7135
May 26-29	INTER-RAM	Toronto, Canada	Dr. M. S. Grover Ontario Hydro 700 University Avenue H14-G4 Toronto, Ontario, Canada M5G1X6 (416) 592-7728 Telex: 06-217662
CALLS FOR PAPERS			
June 1-3	IASTED International Concerence on Reliability and Quality Control	Los Angeles, CA	Canadian Secretariat IASTED P.O. Box 25, Station G Calgary, Alberta, Canada T3A 2G1 (403) 270-3616
June 24-26	IASTED International Concerence on Reliability and Quality Control	Paris, France	Canadian Secretariat IASTED P.O. Box 25, Station G Calgary, Alberta, Canada T3A 2G1 (403) 270-3616
Sept. 22-25	IV International Conference on Reliability and Expolitation of Computer Systems Relcomex '87	Wroctaw, Poland	Prof. Wojciech Zamojski RELCOMEX '87 Wroctaw Technical University Institute of Engineering Cybernetics Janiszewskiego STR 11/17 50-372 Wroctaw, Poland Tel. 21-26-77

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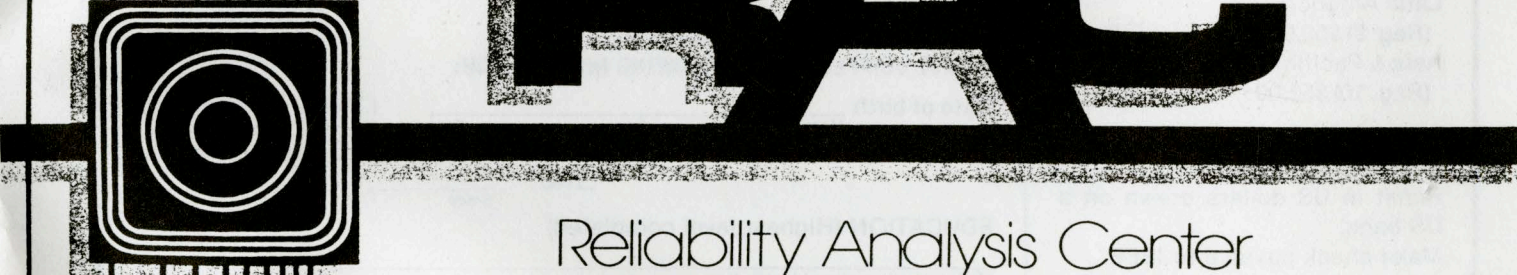
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There is no better time than now to join the IEEE Reliability Society. Membership gives you ready access to meetings and conferences in your areas of interest, and to the prime movers in engineering, science, and business.

This Transactions and the Newsletter — both included in your Reliability Society Fee — keep you abreast of the latest developments in your field. You also receive automatically a free copy each of the Proceedings of the:

- Annual Reliability and Maintainability Symposium
- International Reliability Physics Symposium.

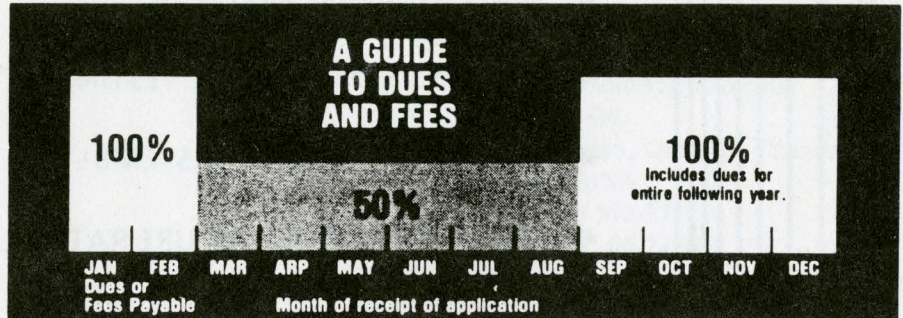
As an IEEE member, you can choose from a wide offering of standards, products, and services (books, conference records, employment surveys, short courses, and other helpful aids) — all at reduced member rates.

Active local Reliability Society chapters in many locations throughout the United States offer opportunities for your personal professional participation and growth. Association with other Reliability Society members helps you to exchange information and experiences on current technical problems and to learn how others are solving them.

Your membership entitles you to reduced registration fees for activities sponsored or cosponsored by the IEEE or Reliability Society. This could save you more than the cost of annual membership, if you are very active.

Don't wait. Fill out the membership application below and mail in today. If you are already a member of the Reliability Society, show this application form to a colleague — sign up another member.

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