

# Reliability Society

NEWSLETTER

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IEEE

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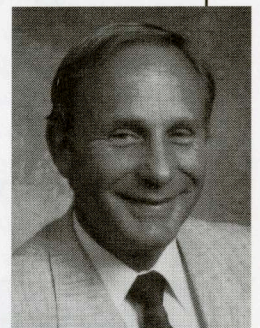
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Editor:  
Bruce Bream

## Message from the President



**T**his letter will be out in time for the Annual Reliability and Maintainability Symposium that will be held in Atlanta in January. I always look forward to this event and I am participating heavily this year myself with two papers, a tutorial and a panel on concurrent engineering. I am pleased to meet any of you folks that are there. I would also like to extend a notice and invitation to any and all interested to attend our Adcom meeting. That is held on the Monday afternoon of the conference. Notice will be posted on the hotel marquis.

The Reliability Society is joining forces now with the Computer Society to jointly sponsor the annual symposium on Software Reliability. It will be held next year in Denver in November. The following years are targeted for Monterrey and then in France. The conference in Denver will be the fourth annual international conference. It has been run in the past by the Computer Society. It is a welcome thing to join forces with them. If any of you are interested in participating or taking a leadership role in this conference please contact me.

Happy new year!  
Dr. Samuel Keene  
President, IEEE Reliability Society

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# Editor's Column .....

Get involved. The reliability field is not standing still. What was current knowledge and techniques has that way of becoming outdated and inefficient. Ways of doing business are being challenged with the impact of concurrent engineering and CAD/CAE. New methods are being proposed from the validity of "standard" reliability assumptions to methods of measuring software reliability. To move forward we need innovation and information exchange. Needs, methods and ideas need to filter across departments, companies, product lines, industries, and countries. Now this is where you are important. It takes someone to get involved and find out what others are doing. It takes someone to lead by exchanging information in a way that is beneficial to all involved. This can be done by attending and presenting at meetings, symposiums, and seminars, or publishing papers, or taking on a chapter position, or working on a committee, or writing a letter to the editor (hint), or discussing topics with friends in another company...(there's a lot more). These outside influences are one of the keys to innovation. There are new ideas out there and ways of accomplishing the task at hand that will save time and effort. All it takes is the initiative to go out and get involved.

**Bruce Bream**  
Editor,  
IEEE Reliability Society Newsletter



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The schedule for submittals is:

Newsletter	Due Date
January	November 19
April	February 26
July	May 28
October	August 27

### ADVERTISING RATES

All copy that contains graphics or special fonts must be camera-ready or delivered on computer disk and be received by the due dates indicated.

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## ADCOM Meeting Highlights

The fall Administrative Committee (ADCOM) meeting was held at the Zerox Training Facility in Leesburg, VA on October 19, 1992. Highlights of the meeting include progress reports from Joe Gruessing, Vice President of Technical Operations, on filling committee vacancies and CALS spinoffs such as software tools. Howard Kenedy reported that the CAD/CAE Workshop had been canceled due to insufficient registrations; however, it was decided that planning should proceed for next year's workshop. Further discussion took place on what the Reliability society should do about embracing Quality Initiatives. It was decided to table the subject until the next meeting when a larger ADCOM attendance is expected. Bernhard Bang reported that there is confusion on the revised registration fees. It was decided that he and Dr. Sam Keene, Jr. would work with IEEE Headquarters to arrive at a suitable solution. Al Plait reported that there is an Archival Program which is collecting, photos, articles and other items of interest on the society. Al is a candidate for Division 6 office. Henry Hartt proposed to provide each chapter a DBase disk of the society membership for the price of the disk. The next ADCOM meeting is in January preceeding the RAMS.

**Bob Jaquess**  
Reliability Society Secretary

# Chapter Activities .....

## Cleveland

The Cleveland Chapter has had two meetings during this period.

Our second meeting was on broadcast HDTV. This meeting was from the IEEE Learning Channel Video Conference Seminars. Three experts: Dr. Jules Bellisio, James McKinney, and Wayne Lulplow talked about:

- HDTV - The next generation information appliance
- How North America will select a new television system
- Digital video compression - The common base technology of all new systems
- Channel Coding - Putting megabits of data on the existing TV channels
- A comparison of the proponent video systems
- Closing summary

All went well. We want to thank Janet Miller for all her hard work in caring for the IEEE Video Conferences.

Our third meeting was on professional activities. Jim Jayner from Glenbeigh Hospital talked about addiction signs and symptoms. This meeting was just with NASA Employees Assistance Service (EASE). A voluntary, cost free family benefit provided by Lewis Research Center. Many families are facing this problem. Help is available. The auditorium was an appropriate forum for this well received community involvement activity. Only a few seats were not filled. All in attendance learned a lot from the presentation.

We are working on another community involvement project - a workshop. Volunteers have been obtained to staff the management committee. The Workshop will be organized following the Headquarters Instructions entitled "A Guide to Conference Planning."

All-in-all here in Cleveland we are having fun serving our members and looking forward to expanded activities in the future.

**Vince Lalli, Chairman**  
Cleveland Chapter

## Dallas

The Dallas chapter kicked off the '92-93 year with three technical meetings during the fall.

Our September meeting focused on quality: specifically, "The Malcolm Baldrige Award Winning Strategy" by Mr. Chris Witzke, Chief Operating Officer of Marlow Industries. We were privileged to have a speaker representing a 1991 Malcolm Baldrige National award recipient. Marlow Industries is the industry-leader in solid-state thermoelectric cooling devices world-wide.

The presentation was excellent and captivating. He described the factors that led the company toward improvement and the spirit of the workforce. He illustrated the many preparations and long hours needed for the application and subsequent site visit. Mr. Witzke stressed that employees of Marlow won the award through their quality attitudes. The description of the subsequent visit by President Bush was extremely interesting, as Marlow is the only Baldrige winner to have the award ceremony at the plant location.

This speaker was very timely, considering another Dallas-based company, Texas Instruments Defense Systems and Electronics Group, was named this fall as a 1992 Malcolm Baldrige award winner. All of this chapter's officers are from this TI organization.

The October meeting focused on the highly successful terrain following radar equipment, used on the LANTIRN program. Mr. Karl Schmidt of Texas Instruments presented the results of his team's work which resulted in the maximum allowable incentive award. The LANTIRN system was described. Also included was a definition of the reliability program. Reliability growth testing and reliability demonstration testing was discussed in detail. His speech drew much interaction with the specialized audience.

Our November speaker was Dr. Larry Wagner of Texas Instruments. Larry joined TI in 1976 as a failure analyst and has been a manager of the Dallas Failure Analysis Laboratory since 1979. He is



also a Senior Member of the Technical Staff. Larry described how failure analysis has been truly revolutionized in the past decade especially through the development of advanced tools. These tools enable the analyst to cope with the growing complexity and diminishing dimensions of VLSI and ULSI products. Larry's talk focused on interpretation of the tools' output as it relates to understanding the physical causes of failure. Most importantly, Larry described how these analysis tools are being used early in the design validation and qualification procedure thus reducing the critical time-to-market. His speech was showcased with numerous micrographs and drew many questions of interest from the large audience.

Our biggest 1993 challenge is to grow and diversify membership. We're looking forward to serving our members with five more technical meetings in 1993 and a tour of the local DFW international airport tower at the close of the year.

**Julie England**  
Dallas Chapter

## Denver

The executive committee of the Denver Chapter held a weekend retreat meeting at Estes Park, CO to accomplish annual planning for the next year's activities. About 20 members and guests attended the two day event. Meetings planned for the next year include topics such as software reliability, TQM, defect prevention, reliability tools, reliability case history and manufacturing reliability. The TQM meeting was held on October 15th. A social get-together is planned for December 6th. The meeting on Manufacturing Reliability is scheduled for January 1993.

**Bob Jaquess**

## Los Angeles

Dwight Borses, of National Semiconductor, was to be our April guest speaker when the LA Riots broke out. He was prepared to travel from Orange County through the riots to give his presentation (what dedication!) but due to the imposed curfews, we had to cancel our presenta-

tion. It was later rescheduled for July where we had a good turnout. Dwight gave a good presentation on Introduction to Fiber Distributed Data Interface (FDDI-II).

At our May dinner presentation, Dave Franklin and his son Marc presented an overview of Multimedia. They showed videos of the capabilities of multimedia as well as demonstrated an example of creating an animated butterfly.

In June, Chris DeMarch of PacTel traveled from San Francisco to give us a presentation on Microcell - The Advanced Digital Cellular Technology. Chris is a former Hughes Aircraft engineer who has transferred his engineering skills to Cellular technology. He gave a good overview of Microcell as well as answered the many technical questions of cellular technology. PacTel provided us with a Sony Watchman to give as a door-prize as well as literature on Microcell. It was a well attended presentation.

Upcoming meetings include:

- October 22 - Privacy in Voice Mail
- November 19 - Enhancing Worldwide Competitiveness
- December 5 - Mini-course Hardware/Software Reliability/Safety tools

Our Bulletin Board is very active with over 400 subscribed members. Membership is free. We offer meeting information, Jobline, E-mail, Video Tape Exchange information, Shareware and Demos. Phone is (818)768-7644, 300-2400 baud.

**Loretta Arellan**  
Los Angeles Chapter Chair

## Switzerland

The Swiss Reliability Chapter plans the following activities for 1993:

### Conferences:

Sep. 1-3 - EOBT'93, 4th European Conf. on Electron and Optical Beam Testing of Electronic Devices (see the Conference Calendar for more information).

Oct. 22 - National Conf. on Design Rules for Reliability, Maintainability, Software Quality, and EMC, ETH, Room ETF C1, 9:30 am - 4:30 pm.

## ADCOM Volunteers Needed

Volunteers are needed to fill several vacancies in Technical Operations (Computer Technology and Information Systems Advancements and CALs) Reliability Standards development and Tri-Service Screening document reviewers. The positions involve attending several meetings per year. Individuals who are interested should contact the ADCOM Officers listed in the front of the newsletter.

### Courses:

30-31 Sep. - Failure Mechanisms and Failure Analysis of VLSI-ICs (M. Ciappa)

10-21 Oct. - Reliability and Maintainability of Equipment and Systems (Professor A. Birolini)

### Meetings:

Jan. 18 - Numerical Analysis of Highly Reliable Systems (Professor I. Kovalenko, Ukrainian Academy of Sciences, Kiev)

Feb. 1 - Reliability Aspects in Linear Power Modules (Ch. Zardini, Univ. de Bordeaux, France)

Feb. 22 - Reduction of Standby Power of Electronic Equipment (Dr. L. Miteff, ETH, Zurich)

April 29 - to be determined (Dr. D.W. Ranasinghe, British Telecom Lab., Ipswich)

May 30 - Optimal Reservation of Spare Parts for Complex Systems (B. Willmann, EWZ, Zurich)

July 12 - Application of the Monte-Carlo Method to Statistical Tests (Dr. B. Gerlach, Humboldt Univ., Berlin)

Nov. 11 CARAP, A Powerful and User-Friendly Program for the Computation of Reliability of Complex Systems (M. Brandmaier, ETH, Zurich)

For further informations please call Ms. Karin Ambuehl-Seehaamphai at +41 1 256-2743, fax +41 1 251 2172.

**Alessandro Birolini**  
Chairman

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## Council on Reliability, Quality and Competitiveness

On the recommendation of the Advisory Board, the Board of Directors of the Annual Reliability and Maintainability Symposium (RAMS) has established a Council on Reliability, Quality and Competitiveness. Mr. Thomas L. Fagan has been named as the Chairman of the Council. Other members of the Council are distinguished professionals in the reliability, quality and allied technical fields. Mr. Fagan, an IEEE Fellow and former Congressional Science and Engineering Fellow, has been President of the IEEE Reliability Society, General Chairman of the RAM Symposium and Chairman of the RAMS Board of Directors.

The Council will communicate with Government agencies, industrial and commercial organizations and the public sector on matters of both broad interest and those of specific concern with products and services that are impacted by the consideration of reliability, quality and

the allied Assurance Sciences in their design, manufacture and use. The council will accept and conduct projects from government and industry, on a non-profit basis, that will promote and enhance the application of these technologies, with an objective of improving competitiveness.

The consolidated membership of the sponsors of RAMS exceeds one million engineering professionals in the reliability, quality, industrial, logistics, environmental, aeronautics & astronautics, safety and automotive fields. These sponsors include AIAA, ASQC, IEEE, IES, IIE, SAE, SOLE, SRE and SSS.

Interested parties may contact the Council at:

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## Recent Changes in Membership Dues

I'm sure that all of you have noticed major changes in your renewal dues structure. The ADCOM found it necessary to change the fee structure because of rapidly decreasing funds in the society coffers. The primary source of Society financial resources comes from corporate library subscriptions rather than from individual membership dues. Actually, the cost of membership only finances about 25% of the actual expenses associated with membership. With restructuring of corporations, tightening of financial belts, and other maladies associated with the less than booming economy, our society has taken a major hit in the wallet with decreasing subscriptions to the Transactions and proceedings. Consequently, the ADCOM voted to split the society into two basic areas of interest: Systems Reliability and Parts/Physics of Failure Reliability. The first of these is related to the traditional reliability prediction, assessment, management, assurance disciplines covered in the Transactions on Reliability and in the Proceedings of the Annual Reliability and Maintainability Symposium (RAMS). The second area is based on the reliability of parts and the physics of their failure mechanisms as covered in the transactions on Semiconductor Manufacturing and the Proceedings of the International Reliability Physics Symposium (IRPS). Thus the two areas are identified in your renewal form as:

"1081 - Reliability Soc (Includes: Trans on Reliability)" and

"1451 - Reliability Soc (Includes: Trans on Semiconductor Mfg.)"

While it is against Institute policy to list as part of membership dues proceedings sold separately by the Institute, it is the intent of the Society to include the RAMS proceedings with the Systems Reliability membership (1081) and IRPS with the Parts/Physics of Failure membership (1451). We hope this answers some of your questions about the change in your renewal form and in the associated change in benefits. If you have further comments or questions, please call or write Henry Hartt or Sam Keene (addresses and phone numbers on page 2 of this newsletter).

## Reliability and TQM

With companies now depending increasingly on Total Quality Management (TQM) for product reliability, the question of how the reliability profession might contribute to TQM is apropos. The following describes TQM research experience regarding reliability support of Design of Experiment and some "lessons learned" that bear upon this question.

**Lesson #1:** Reliability is often a major driver of the Taguchi loss function through cost of unreliability and thus should be a main objective of Design of Experiment.

This research began with the textbook goal of TQM, which is to reduce loss for the Taguchi loss function. Although the generality and vagueness of the Taguchi loss function prevent its reduction from being a practical objective, its sensitivities can indicate practical objectives. This loss function is usually driven by process cost, product performance and cost of unreliability. Production process changes usually seek higher reliability because product performance is a ground rule and because production cost differences are small. This leaves reliability as the main driver of the loss function through cost of unreliability. Higher reliability should accordingly be a main objective of Design of Experiment.

For a Design of Experiment concerning the welding process that was associated with this research, the recognized objective was higher reliability. No attempt was made to maximize performance. For example, weld weight would effect vehicle flight performance, but no attempt was made to optimize tank flight performance through lighter welds. Furthermore, all considered welding process variations had similar process cost. Thus reliability, as the experiment objective, was implicitly recognized as driving the loss function.

**Lesson #2:** Unreliability (or any rare event) is not an appropriate quality characteristic for Design of Experiment.

Although quantitative reliability is an important objective of process change, it is seldom used as a quality characteristic for Design of Experiment. For this welding process Design of Experiment, the main quality characteristic was tensile strength. Lack of tensile strength could fail a weld, but tensile strength is relatively easy to provide and control. Notwithstanding that Quality Assurance considered large weld cracks or flaws as the major cause of weld failure, the presence of large flaws was also not used as a quality characteristic. No attempt was made to find large flaws because there was little prospect of finding any; sample sizes for each combination of input parameters were kept small to limit experiment cost and all welding process options under consideration would rarely produce large flaws in a weld sample. In comparison, each input option yielded a different tensile strength so that tensile strength provided a means to distinguish between input options. Although tensile strength

does not address the major cause of weld failure whereas the presence of large flaws does, tensile strength is the better quality characteristic because it distinguishes between input options whereas the presence of large flaws does not.

**Lesson #3:** A reliability metric is an appropriate quality characteristic for Design of Experiment.

This research next sought a quality characteristic that addresses the major cause of weld failure with metric rather than binary measurement, so as to provide more information. Flaw length was chosen to quantize the experience that "small weld flaws portend larger ones." Quality Assurance extensively measured and recorded historical flaw lengths but did not use this data to estimate reliability. This flaw length data exhibits an excellent fit to a common distribution. By fitting this type of distribution to flaw size data from Design of Experiment, the likelihood of rare large flaws can be estimated even though no large flaws are experienced. In this way flaw length serves as a reliability metric and thus as a useful quality characteristic.

**Lesson #4:** Reliability analysis is needed to compensate for statistically weak evidence provided by Design of Experiment.

For the small sample sizes provided by Design of Experiment, metric evidence is needed to provide sufficient information to infer high reliability. Because reliability is a binary event, its direct evidence is binary evidence which lacks sufficient information to infer high reliability. Accordingly, indirect metric evidence for reliability is needed. For the welding process, this indirect reliability evidence was made usable via traditional reliability analysis, which was comprised of identifying failure modes, determining their causes and assessing their probabilities. Design of Experiment was simply a new application for common reliability practice in which reliability analysis compensates for inadequate direct reliability evidence by bringing indirect evidence to bear.

In summary, I suggest that reliability professionals contribute to TQM by analysis. The strength of reliability lies in its analysis, which TQM as an empirical/statistical methodology needs in the common cause of insufficient direct evidence. Since empirical methods are presently in favor while analytical methods are in disfavor, reliability professionals should not passively await requests for analysis. They should rather point out the need for TQM to estimate reliability, the inadequacy of direct empirical evidence to demonstrate high reliability and thus the need for reliability analysis to bring indirect evidence to bear.

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## Wanted! A Few Good People to Serve on the RAMS Management Committee

A few energetic volunteers are needed to fill openings on the management committee of the Reliability Symposium. It's a great group of people, its educational and it can be career enhancing.

The management of the symposium is accomplished by sponsor member volunteers, with the concurrence and support of their corporate, government or academic employers. The Advisory Board, which is composed primarily of senior corporate and military management individuals, provides guidance on management of the symposium.

This is an opportunity to work with other professionals in the reliability (and associated) fields and

meet senior management from both military and corporate sectors that are concerned with the analytic and practical techniques necessary to improve the reliability/competitiveness of our products.

If you can secure the necessary support to attend 3 or 4 one day meetings a year, attend the symposium in January each year, are a member of IEEE Reliability Society and are interested in further details on how to join this select group on the management committee, please contact:

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## Leesburg Conference Proceedings

Recently published Combined Proceedings of the 1990 (4th) and 1991 (5th) Leesburg Concurrent Engineering Workshops on Reliability and Maintainability in Computer-Aided Engineering are now available. The 272 page document includes many of the formal presentations made at both Workshops and summarizes the finding of the working sessions at both meetings.

The Workshops, sponsored by the Reliability Society of the IEEE, were aimed at defining the requirements in key new areas of concurrent engineering automation and R&M tools. The several working sessions focused on particular top-

ics of interest. Subjects addressed by the 1991 Workshop, for example, included requirements for reliability tools, DFX and integrated diagnostics, tool integration, requirements management, and system engineering tools.

Proceedings are available at a cost of \$25 plus \$3 postage and handling. They may be ordered by sending a check in the amount of \$28 payable to "IEEE CAE Workshop" to:

CAE Workshop Proceedings  
c/o Howard J. Kennedy  
2207 Pinneburg Ave.  
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## RS Speakers List Address Change

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Co-author of the text "Repairable Systems Reliability" published by Dekker, 3rd printing.

Thirteen reliability presentations since 1989.

Geographical limitations: None.

Transportation requirements:  
Negotiable.

Topics:

- Basic probabilistic and statistical concepts for maintenance of parts and systems
- Exploring heterogeneity to improve reliability
- Good data in, Garbage out!

## Electronic Bulletin Boards

Los Angeles Chapter  
(818) 768-7644  
300-2400 Baud (8N1)

Free Membership  
(400+ members)

Meeting information, Jobline, Email,  
Video Tape Exchange Information,  
Shareware and Demos

Statistics Bulletin Board System  
(316) 265-3036  
1200-2400 Baud (8N1)

Free Membership  
Statistics, Reliability

Computer Aided Logistics System  
(CALs)  
(703)321-8020  
300-9600 baud 8N1

The CALs BBS is reached through this number to the National Technical Information Service (NTIS) BBS. Membership is free.

## ROME LABS - "Field Reliability Assessment Program"

Microelectronics Reliability Div  
"Field Reliability Assessment Program"

Points of Contact: **RL/ERDR, Jim Dobson, Dan Burns**

The Department of Defense (DOD) has recently expanded the Air Force's Field Reliability Assessment Program which has been gathering knowledge about microelectronic field failures since 1987 in close cooperation with the Air Logistics Centers and the Defense Electronics Supply Center. In order to improve fielded system reliability and to reduce maintenance costs, this program has focused on eliminating the root causes of field failures. High replacement rate components have been targeted using maintenance data bases and during visits to field units.

Electrical and materials analysis has been used to determine the responsible physical failure mechanisms. Corrective actions have been aimed at component and system design, manufacturing, test, screen, and procurement practices. Cooperation among the microcircuit manufacturer, Government parts procurement authorities, and the Logistics Centers has been very positive. Existing and emerging corporate and non-DOD government field return programs have been investigated. Results of the Air Force program, to date, have identified electrical overstress and retest good as major categories. These point out the need for more robust system (and component) designs, more precise system debug capability, and for improved in-use system failure event monitoring and diagnostics. Several cases have identified other specific, correctable problems involving vibration, corrosion, and particulate contamination. For more information on this program and a summary of the findings, please contact Dan Burns at Rome Laboratory, RL/ERDA, 525 Brooks Rd, Griffiss AFB NY 13441-4505, telephone (315) 330-2868.

## Call for Papers EOBT'93 4th European Conference on Electron and Optical Beam Testing of Electronic Devices

Swiss Federal Institute of Technology (ETH), Zurich, Switzerland  
September 1-3, 1993

**Fields:** Electron Beam Testing, Optical Beam Testing, Scanning Tunneling and Other Local Probe Microscopy Methods (STM, AFM)

**Sponsored by:** IEEE Switzerland Reliability Chapter

**Organized by:** ETH Reliability Laboratory

### GENERAL SCOPE OF THE CONFERENCE

The aim of EOBT is to provide an international biennial forum for the presentation and the discussion of the advances in internal and contactless testing by Electron Beam (EBT), by Optical Beam (OBT), and newly by Scanning Tunneling and other local probe microscopy methods (STM, AFM, etc.). The Conference covers applications on all types of semiconductors, electronic and microelectronic integrated circuits (including test structures), and systems.

Following recent successful conferences in Grenoble (1987), Duisburg (1989) and Como (1991) the Program Committee solicits contributions for the 1993 Conference in Zurich in the following areas:

### Applications

- Semiconductor devices and integrated circuits;
- Interconnecting networks, multi-chip technology, micro packaging;
- Design validation

### Methods

- e-beam: secondary electrons, backscattered electrons, EBIC, resistive, and capacitive methods;
- Optical methods: photoexcitation, electro-optical effects, stimulating techniques, and alternative methods
- STM, AFM, other local probe methods

### Techniques

- Logic state and waveform analysis
- Signal and image processing
- Beam scanning and sampling techniques for time and frequency domain
- Impinging beam modes for activation and reconfiguration

### Equipment

- Signal generation: gun, lasers, needles, choppers, lenses, optics, electro-optics
- Signal detection: detectors, spectrometers
- Positioning and Stimulation: stages, probe cards, ATE connections heating, and cooling units
- Integrated systems: navigation, automation, CAD/CAT-link, FIB

### Design for Testability

- Principles, strategies, accuracy improvements, technology limits

### Applications for Reliability

- Failure analysis
- Sample preparation techniques
- Reverse engineering
- Twinning with other techniques

### SUBMISSION DEADLINE

March 1, 1993 - Closing date for the submission of summaries and short abstracts.

### PAPERS SUBMISSION

Papers will be selected on the basis of a 35 word short abstract and an extended summary consisting in up to five A4 pages (single column) that states clearly and concisely the specific results of previously unpublished work. The working language of the conference will be English and will be used for all presentations and printed material. After the selection of the papers, the authors will be informed of the decision of the Program Committee in May 1993 and will receive instructions for the final layout of papers, transparencies, and slides. Papers should be submitted in five copies preferably by post or express mail to the address mentioned below.

### BEST POSTER AWARD

The EOBT'93 Best Poster Award will be presented before closing the conference.

### TECHNICAL EXHIBITION

In conjunction with the conference a technical exhibition will take place in the immediate vicinity of the conference rooms. This exhibit will present products from the following categories: SEM, Electron Beam Testers, Laser Microscopes, Atomic Force and Scanning Tunneling Microscopes, and their accessories.

### CONGRESS ADDRESS

Swiss Federal Institute of Technology (ETH)  
Reliability Laboratory, EOBT 1993  
ETH-Zentrum  
CH-8092 Zurich, Switzerland  
Tel: ++41 1 256 2743  
Fax: ++41 1 251 2172  
Email: eobt93@nimbus.ethz.ch

# Conference Calendar

DATE	CONFERENCE	PLACE
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## CALL FOR PAPERS 1993

1-3 September	EOBT'93, 4th European Conference on Electron and Optical Beam Testing of Electronic Devices	Swiss Federal Institute of Technology (ETH) Zurich, Switzerland
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Papers in the field of Contactless Testing of Electronic Devices and Circuits, including Electron Beam Testing, Optical Beam Testing, Scanning Tunneling and Other Local Probe Microscopy Methods (STM, AFM), are solicited. Submissions must be received before March 1, 1993 and consist of a 35-word short abstract and a five-page extended summary.

Address for informations and for submissions: Swiss Federal Institute of Technology (ETH), Reliability Laboratory, EOBT'93, ETH-Zentrum, CH-8092 Zurich, Switzerland, Phone +41 1 256-2743, Fax +41 1 251-2172, e-mail: eobt93@nim-bus.ethz.ch

17-21 October	1993 International Joint Power Generation Conference	
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The Reliability and Availability (R&A) Committee of the American Society of Mechanical Engineers (ASME) Power Division is requesting technical paper abstracts for the 1993 International Joint Power Generation Conference (IJPGC) in Kansas City, Missouri on October 17-21, 1993. Suggested (but not inclusive) topics for a conference paper are:

- Availability of repowered older power plant units
- Operating availability of cogeneration and waste-to-energy plants
- Plant betterment program impacts
- Practical applications of RCM
- Economic benefits of improved availability
- On-line equipment performance monitoring
- Data for RAM modeling analysis
- Availability of overseas and emerging technologies
- Availability impacts of the Clean Air Act
- Predicting, tracking, optimizing availability at unit or component level
- Practical application of statistical methods for decision making

Abstracts of 20 to 30 typed lines must be submitted by January 31, 1993. Please include the author's name, address, phone number and a brief statement on how your paper is unique and will make a contribution to the advancement of reliability in the power industry. Official acceptance will be issued by May 1993. The technical paper, itself, will be due about June 1993 and will then be reviewed by ASME before printing.

Send all abstracts to: Mr. Jim Lofe (Bin B412), Paper Review Coordinator, ASME Reliability and Availability Committee, Southern Company Services, Inc., P.O. Box 2625, Birmingham, AL 35202, Tel: (205)877-7929

## 1994

20-24 March	PSAM-II International Conference Devoted to the Advancement of System-based Methods for the Design and Operation of Technical Systems and Processes	San Diego, California
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The purpose of PSAM is to provide a forum for the presentation of scientific papers covering both methodology and applications of system-based approaches to the design and effective, safe operation of technological systems and processes. These include nuclear plants, chemical and petroleum facilities, defense systems, aerospace systems, and the treatment and disposal of hazardous wastes. The objective is to share experience to the benefit of all industries.

The following is a list of topics within the scope of the meeting:

- Risk management and decision making
- Risk-based regulation
- Reliability-base design
- Probabilistic and deterministic models for process safety management
- Uncertainty and sensitivity analysis
- Uncertainties in physical and chemical phenomenology
- Expert judgement in assessment studies
- Cognitive models of human behavior
- Design and evaluation of man-machine systems
- Human factors and human reliability
- Risk-based methods for improving operator performance
- Computerized control systems and operator aids
- Organizational factors and safety culture
- Automatic fault detection and diagnosis
- Redundancy Management
- Artificial intelligence in support of process safety management
- Software dependability
- Earthquakes, fires, tornadoes, and other natural phenomena
- Survivability and vulnerability
- Safeguards analysis
- Aging of systems, structures, and components
- Communicating the results of risk assessment and management to peers, decision makers, and the public

**Instructions for Summary Submission:** Four copies of a summary (800-1,200 words, typed, single-spaced) should be submitted to the Technical Program Chairman no later than May 13, 1993. Summaries must contain a title and include all author's names, affiliations, and telephone and fax numbers. Authors should indicate the primary and one alternate category with which their papers are most closely identified. Full papers will be due 10 October 1993. Papers will be published and issued at the Conference.

**Technical Program Chairman:** Professor George Apostolakis, Mechanical, Aerospace and Nuclear Engineering Department, 38-137 Engineering IV, University of California, Los Angeles, CA 90024-1597 USA, Tel: (310)825-1300, Fax: (310)206-2302

## CONFERENCES 1993

22-25 March	International Reliability Physics Symposium	Hyatt Regency Hotel Atlanta, Georgia
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Emphasis will be on building reliability into VLSI devices as the means of achieving the low failure rate expectations of the 90's. Testing methodologies and analyzing for reliability will also be covered. Optoelectronics failure mechanisms and models are also included.

(See the conference advertisement in this issue of the newsletter.)

(Continued on next page)

**DATE                      CONFERENCE                      PLACE**

5-7 July                      23rd Reliability & Maintainability Symposium                      Tokyo, Japan

Sponsored by the Union of Japan Scientists and Engineers

The symposium welcomes the papers focusing on: 1) component, device and systems reliability, 2) mechanical and structural reliability, 3) reliability and maintainability management, 4) reliability design theory and technique, 5) data collection and analysis, 6) reliability test, 7) failure analysis, 8) maintainability and availability, 9) reliability and safety, 10) software reliability and computer aided reliability engineering, and 11) TQC and reliability.

Contact: Prof. Yoshihisa Suzuki, Dept. of Management Engineering, Tokyo Metropolitan Institute of Technology, 6-6 Asahigaoka, Hino, Tokyo 191 JAPAN, Tel: +425-83-5111, Fax: -81-3-3463-5214

Nov. 1-5                      4th International Symposium on the Physical & Failure Analysis of Integrated Circuits                      Singapore

Organised by the IEEE Singapore Section in co-operation with the Centre for Integrated Circuit Failure Analysis & Reliability, National University of Singapore.

The Technical Committee is now inviting the submission of papers for presentation at IPFA 93. Papers should deal with work on:

Failure Mechanisms, Failure Analysis Techniques, EOS/ESD Studies, Reliability Testing, Design and Process Control for Reliability in LSI/VLSI, Semiconductor-insulator interfaces, contacts and metallisation, Packaging, bonding, die attach and encapsulation, Opto-electronic devices, Power devices

Authors are requested to submit two copies of a 500 word summary and a 50 word abstract to:

Technical Committee Chairman, c/o IPFA 93 Secretariat, IEEE Singapore Section, PO Box 1066, Kent Ridge Post Office, Singapore 9111. Tel: (65) 291-9690 Fax: (65) 292-8596

Final date for submission of summary and abstracts: 1 March 1993.

A four day exhibition of FA & Reliability related equipment and services will be held concurrently with the Symposium.

Contact: SWEE Yong Khim, IEEE Singapore Section, 200 Jalan Sultan, #11-03, Textile Centre, Singapore 0719, Tel: (65)291-9690, Fax: (65)292-8596  
or IPFA, 93, Daniel Chan, National University of Singapore, Electrical Engineering Department, 10 Kent Ridge Crescent, Singapore 0511, Email: ELECSHD@NUSVM.BITNET

**1994**  
24-27 January                      Annual Reliability and Maintainability Symposium (RAMS)                      Anaheim Marriott  
Anaheim, CA USA

## 1993 International Reliability Physics Symposium

March 22-25, 1993 ■ Hyatt Regency ■ Atlanta, Georgia USA

The 1993 Symposium continues to emphasize building reliability into VLSI devices as the means of achieving the low failure rate expectations of the Nineties. "Building-in-Reliability" papers will be presented that trace the progression from: reliability physics - reliability engineering - design-for-tolerance - fabrication/assembly process control. Emphasis will be on key input variables during manufacture and how the input variables impact reliability when out of control. The 1993 Symposium continues its long standing tradition of presenting reliability physics papers on new VLSI failure mechanisms and new understanding of existing failure mechanisms.

### For Conference Information:

#### USA

Dr. David Baglee  
General Chairman, IRPS  
Intel Corporation, MS F9-99  
4100 Sara Road  
Rio Rancho, NM 87124  
USA  
Tel:505-893-3446  
Fax:505-893-1049

#### Asia

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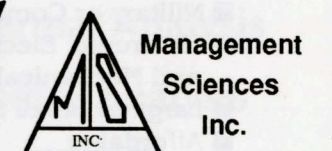
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MRP MECHANICAL RELIABILITY	NAVY HANDBOOK DTRC-90/010
FME FAILURE MODE, EFFECTS & CRITICALITY	MIL-STD-1629A
MPP MAINTAINABILITY	MIL-HDBK-472
SRP SYSTEM RELIABILITY	MIL-HDBK-338 MIL-STD-756

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