Reliability Society

NEWSLETTER

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Editor:
Bruce Bream

President's Report

On Reliability Society Elections

Each year the Reliability Society elects six Administrative Committee (Ad Com) members and five officers. The process begins with the establishment of a nominating committee consisting of a chairperson and four or more members of the Reliability Society, of which two shall not be members of Ad Com.

Dr. Samuel J. Keene is the chairman of the Nominating Committee for the 1994 elections.

A slate of nominees for members-at-large vacancies of the Ad Com is prepared by the Nominating Committee. A nominating petition carrying a minimum of 25 names of Reliability Society members, excluding students, shall automatically place that nominee on the slate.

The slate of nominees, containing more nominees than vacancies, is sent to the voting members of the Ad Com. Election, for a three year term, is based upon the highest number of votes, taken in descending order until all vacancies are filled.

Following the election of incoming Ad Com members-at-large, the nominating Committee submits nominations for the President and four Vice Presidents to the voting members of the Ad Com. (The newly elected members of Ad Com vote for these officers; the outgoing Ad Com members do not). A majority of the returned ballots determines the election.

Dr. Thad L.D, Regulinski, (F)IEEE, Ad Com Member and past president of the Reliability Society presented a resolution dated 21 January 1993 at the January Ad Com meeting recommending that a committee be established to study the mechanism for the election of officers and Ad Com members of the Reliability Society. The committee was to make recommendations at the March Ad Com meeting.

I appointed the following committee on the Elections Initiative:

Chairman, Harry E. Reese
Dr. R. A. Kowalski
N. J. McAfee
A. O. Plait
Dr. T. L. D. Regulinski

The committee recommendations (unanimous) were presented at the March Ad Com Meeting.

(continued on page 5)

Editor's Column

There seems to be a building response to the proposed changes to the Reliability Society that were mentioned in last months edition and are further presented this month. Letters to the editor are being included to spur discussion on the society name change and quality initiative issues. Now is the time to voice your opinion (in the design stage). Your letters and comments are welcomed. You can also contact Sam Keene or Vince Lalli (see article on page 8) to voice your opinion on these issues.

I encourage you to submit letters and short technical articles for publication in the Newsletter. As I have mentioned before, one of the purposes of our society is to disseminate information to the members. The transactions and conferences provide a forum for more technical material. The newsletter should be able to serve the role of general information and experience provider. Along these lines I'd appreciate hearing of new books, techniques, or other bits of wisdom that would be of interest to the membership.

Bruce Bream
Editor,
IEEE Reliability Society Newsletter

ERRATA

Please note that credit for last months article, "Emerging Technology Initiatives and Directions" should also be extended to Ken LaSala, Chairman of the Human Performance Reliability Committee, Hank Wolf, Chairman of the Computers and Information Committee, and Dr. Hal Chenoweth, Westinghouse, who contributed material to the article.

Reliability Society Newsletter Inputs

All RS newsletter inputs should be sent to:
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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.

Ad Size	One Time	2-3	4+
Full Page	$400	375	350
Half Page	$300	280	260
Third Page (vertical)	$240	225	210
Quarter Page	$205	190	180
Eighth Page	$120	110	100

Discounted per issue rates are shown for ads run in more than one issue.

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Letters to the Editor

To The Editor:

I fully agree with the Newsletter Editor that our society should address both reliability and quality. In fact I feel that we must address quality, as quality and reliability are directly related.

There are two aspects of quality: (1) Do it right the first time, and (2) Find the defects and clean them up. Most people only think of quality in terms of the second aspect. That is why most of the people feel that quality and reliability are separate entities.

However, the first aspect is intimately related to reliability. I know of a case where hybrid circuits were improved from 70% first time yield to about 90%. To the pleasant surprise of the Project the field failure rate was reduced to one third of the original rate. The article, "Influence of Quality of Manufacturing on Electronic Equipment and System Reliability", published in the July-Sept., 1987, Quality and Reliability Engineering International journal, by Ender and Gerling clearly demonstrates this point. A figure in this article indicates that quality uncovered defects are positively correlated to reliability failures for their equipment. I call quality defects "visible flaws" and reliability failures "invisible flaws". The more visible flaws one experiences the more invisible flaws the equipment has. We should therefor concentrate on fast feedback of quality defect information to affected activities to reduce the chance of flaw formation in the products. In deed, that was what some Japanese companies had done, i.e. even only one defect found in quality is enough to trigger corrective actions to prevent its recurrence.

It is unfortunate that the original Quality and Reliability Symposium was changed to Reliability and Maintainability Symposium. Reliability and Maintainability are really not related. Only the outcome of reliability efforts serves as an input to maintainability. Quality efforts improve reliability.

Kam L. Wong
Kambea Industries
1130 Ronda Dr.
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Dear Editor:

This has reference to your column in the April issue of Reliability society's newsletter about change in the reliability society charter.

Your article has echoed my sentiments or a question I have been asking other reliability engineers from last more than two years. And there are people on both side of the arguments as stated in the news letter.

Yes, reliability starts with the design and if a design is not reliable and does not meet the operational and performance requirements rest everything else is worth less.

However, can the reliability of a product be achieved in the field without a good quality control process or management? Is the consumer interested in the reliability designs, models and predictions or the real performance without frequent failures in the field? Is the product working as and when required by the customer?

Customers in most cases talk about reliability but refer to it as a quality issue. In fact many customers use the word reliability and quality to mean the same thing.

What about reliability of the production processes since production is normally controlled by the quality organization? Those of us who work in the design and production environment know very well how a wonderfully predicted system reliability takes a nose dive once the production starts. We Call FRACAS (Failure Reporting and Corrective Action) a task of reliability engineering to follow the design through the production and fix the problems.

We have lost market share in autos and consumer electronics to Japan not on the technology or poor design but due to unreliable processes or our inability to meet the trouble free operation for the warranted period. That is because reliability tasks were divorced in the production.

Another question: where is real home for reliability engineers? Nowhere. Reliability engineers are reporting to Engineering, Quality, Logistics or any other organization in various companies. There is no uniformity in responsibilities either. With "right sizing" being the buzz word in the industry today, reliability tasks are performed by anyone in various organizations irrespective of their technical expertise or training.

So what is the answer? In my opinion, reliability is surely a design function but can not be separated from the quality functions if overall product reliability and market share is our concern?

Reliability is

$$\int_0^t \text{Quality (design, process) } dt$$

It is time that we revisit reliability charter and redefine reliability organizations.

Sincerely,

Puran Luthra, CRE
Senior Member IEEE, ASQC, IES
Electronics & Space Corporation
MS 4210
8100 W. Florissant Ave,
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RELIABILITY SOCIETY MEMBER ON IEEE TELECAST

Dr. Samuel Keene, Jr. Past President of the IEEE Reliability Society will be one of three speakers at a telecast on "Product Engineering as a Process" on September 30, 1993. This will focus on process improvement as a means to improve the quality of our products while reducing our development cycles. This telecast will go to various locations throughout the Western hemisphere. These locations are typically businesses or univerisities. The programs are also taped and then sent around the world. You can contact the IEEE marketing dept to find out locations in your area or to see about how to go about getting the broad cast locally. Their number is (908) 981-8062.

Chapter Activities

Cleveland

The Cleveland Chapter had three meetings during this period:

1) Our 7th meeting was on the International Space University. This meeting was about the Aerospace Training Institute in Japan. Two experts: Hugh Arif and Irene Bibyk talked about three months of intensive training that was gven by the Institute: flight dynamics, mission analysis, microgravity, space experiments, living in space and a hands on virtual reality simulation were briefly discussed. It was an unusual opportunity long to be remembered. International partners improve thte total quality of our NASA/LeRC vision.

2) Our 8th meeting was on Chaos, Fractals, and Non-Linear Dynamics. This meeting was from the IEEE Learning Channel Video Conference Seminars. Robert Devaney and Matt Kaplan talked about:

- Chaos and the Transition to Chaos
- Fractals, Explosions an Julia Sets
- Mandelbrot Sets
- Questions and Answers

3) Our spring tour was at the BFI Recycling Center. The discussion of recycling, Oberlin facility tour, landfill, shredding area and compost activities was very informative. A warm thank you to the BFI Officials who made this tour possible.

We have been assigned to work on the Host Subcommittee for RAMS '94. Our task is to arrange for local society members to act as projectionists and ushers.

Our community outreach project has made additional progress. The final call for panels/tutorials/papers has been issued. We are talking about a poster session for graduate students; something new that may be a quality improvement.

All-in-all here in Cleveland we are having fun staying active as volunteers.

Vince Lalli, Chairperson
Cleveland Chapter

Philadelphia

The following activities were held:

19 Jan 93 - Managing New Product Developement by Tom Floyd

16 Mar 93 - Technologies Use in Vibration Analysis by C.B. Stabler

20 Apr 93 - Present with Success (Presentation skills for the Technical Expert) by Ms. Marjorie Brody & Quantitative Evaluation of Cardiac Function and Hemodynamics by Doppler Echocardiography by Dr. Jian-Fang Ren

18 May 93 - Improving Time to Market by Mr. Arnie Wolfman & The Unix Invasion by Ms. Susan L. Rosenbaum

A special congratulations are extended from the Philadelphia Chapter to Dr. W.Thomas Weir for being elected to IEEE Fellow.

Fulvio E. Oliveto
Chapter Chairperson

Switzerland

During 1992 the Swiss Chapter of the IEEE Reliability Society organized, in cooperation with the Reliability Laboratory of the ETH, five Meetings, one International Workshop and two courses. The cronology of the events was:

Jan. 20 - Meeting: Data Retention in large EPROMs (R. Leemann, ETH, 26 participants)

May 7-8 - Int. Workshop on SMT Reliability and Manufacturing Issues, Lugano-Agno (37 participants, see report in the July 1992 Issue of this Newsletter)

May 18 - Meeting: Symbolic Trasversal of FSMs and its Application to Verification, Testing, and Diagnosis (Professors P. Camurati and P. Prinetto, Politecnico di Torino, Italy, 22 participants)

July 6 - Meeting: Parametric Estimation for Incomplete Reliability Data (Dr. B. Gerlach, Humboldt-Univ., Berlin, Germany, 19 participants)

Aug. 31-Sept. 1 - Course: Failure Mechanisms and Failure Analysis (M. Ciappa, 17 participants)

Sept. 2-4 - Course: Reliability and Maintainability of Equipment and Systems (A. Birolini, 36 participants)

Sept. 2 - Meeting: Software Reliability Models (F. Popentiu, Rumania, 40 participants)

Sept. 3 - Meeting: Reliability Aspects in Electrical Contacts (Professor J.G. Zhang, Beijing Univ., China, 42 participants)

All meetings, workshops, and courses were of a high technical content and prompted extensive discussions. Highlight was the workshop.

As for future events, the organization of EOBT 93 is proceeding well. The program committee selected out of the many submissions 22 regular and 17 poster papers. Furthermore there will be 12 invited papers and one keynote speech. See the Conference Calendar for registration and more information.

In addition to the already announced courses (Sept. 8-9 - Failure Mechanisms and Failure Analysis of ICs, M. Ciappa; Oct. 19-21 - Reliability and Maintainability of Equipment and Systems, Professor A. Birolini) a course on "Impurities in Silicon Wafers: Causes, Effects on Functionality and Analysis" will be held on Sept. 14 and 15 in Zurich, Switzerland, by P. Jacob and other speakers. It will deal with the basic knowledge about heavy-metal impurities in silicon wafers and their effects on functionality and on analysis methods, expecially on the characterization of minority-carrier lifetime. Different methods of measurement and characterization will be practically demonstrated. For further informations on the above courses please call Ms. Karin Ambuehl Seehaamphai at +41 1 256-2743, fax +41 1 251-2172.

Alessandro Birolini
Chairman

Job Fairs Update

IEEE co-sponsored job fairs are planned in these locations for the remainder of 1993.

City	Job Fair Dates
San Jose, CA	July 12-13, September 13-14, November 15-16
Washington, DC	August 2-3, September 20-21, November 8-9
Detroit, MI	August 2-3, October 25-26
Boston, MA	August 16-17, October 18-19
Dallas, TX	October 18-19

Job fairs are open to all engineers. For more information concerning the job fairs please call (800) 562-2820; Virginia residents should call (800) 533-1827. In all cases, ask for the IEEE Career Fair Coordinator.

Ask*IEEE, Comprehensive New Document Delivery Service, Offers Researchers Speed and Economy

NEW YORK, Nov. 16 — The Institute of Electrical and Electronics Engineers, Inc. (IEEE) has announced its entry into the document delivery business with a new service that will enable researchers from around the world to obtain scientific and technical articles rapidly via phone, fax, e-mail and online requests.

Specializing in electrotechnology and computer science information, but offering ready access to information of any kind, the new service, known as Ask*IEEE, is the first such venture by a leading primary publisher into document delivery. Starting Jan. 1, 1993, Ask*IEEE will provide journals, magazines and conference proceedings from all publishers on an article-by-article basis.

To assure the fastest and most efficient service, the IEEE has joined forces with Dynamic Information Corp. of Burlingame, Cal., a pioneer in the document delivery business. The IEEE has established a toll-free telephone number, 1-800-949-IEEE (or 415-259-5040 for callers from outside the U.S. and Canada) which links customers directly with Ask*IEEE.

Due to the IEEE's immense core collection, Ask*IEEE will offer several key benefits, according to Phyllis Hall, IEEE Director of Publishing Services. "Compared to other document delivery services, we aim to be faster, less expensive and more comprehensive," she said. "Ask*IEEE will offer wider coverage than data base specific collections."

Hall noted that Ask*IEEE provides researchers with one-stop shopping. One invoice and a simple price will cover all fees, including copyrights. "All a customer has to do is pick up the telephone anywhere in the world — or contact us via the Internet or Dialog's DialOrder or other e-mail systems — and have his or her credit card handy." The IEEE accounts for an estimated one-quarter of the world's published literature in computing, electronics and electrical engineering. The Institute holds more than 300 technical conferences around the world each year, and with more than 320,000 members in approximately 150 countries, is the world's largest technical society.

Rates for articles from the IEEE collection are $10 for IEEE members, and $12 for others. Orders for IEEE items received by noon Pacific time are shipped the same day at no added cost. Articles from the non-IEEE collections will cost slightly more. Delivery will be made by any method a customer chooses: fax, e-mail via Ariel fax, overnight express, or U.S. Postal Service. Rush service is available for an extra charge.

The Institute of Electrical and Electronics Engineers, Inc.
IEEE Headquarters
345 East 47th Street
New York, N.Y 1001 7-2394 USA
Contact: Jeff Yacker
(212) 705-8289

President's Report

Continued from front page

The committee recommended that the entire Reliability Society vote on the Ad Com Members and that the Ad Com Members continue to elect the officers. The committee's recommendation was unanimously supported by those present at the March Ad Com Meeting.

The necessary changes to the By-laws are being drafted and will be distributed to the voting members of Ad Com at least twenty days before the September meeting as required by Article IX Section 2 of the IEEE Reliability Society constitution.

The new election process will cost the society several thousand dollars per year. (Primarily postage and handling).

The purpose of the changes are to make it easier for the general membership to nominate potential Ad Com members by reducing the number of signatures required from 25 to 12 and to provide the general membership with the vote so that they may select their Administrative Committee.

A vote on the new election process will be taken at the September Ad Com meeting and, if successful, a vote will be taken on the modifications to the By-laws. The modified By-laws will be published in the Society Transactions or Newsletter and mailed to the IEEE Technical Activity Board (TAB) Secretary.

I would appreciate any comments you may have on the proposed change in the election process. I will present your views to the Ad Com before taking the vote. Your participation is encouraged.

W. Tom Weir
President, IEEE Reliability Society

Department of Defense Specifications and Standards

Source from IEEE CONTINUITY
by Marc Nachman

The following information was extracted from a brochure that can be obtained by ordering GUIDE-1.

To Place Ad Hoc Requests on TeleSpecs

By telephone: (215) 697-1187 (8am to 8pm, Mon-Fri EST)

TeleSpecs is an automated system that connects to the Navy Publishing on Demand System (NPODS), eliminating mail delays. To use TeleSpecs you need your customer number (shown on a previous shipping invoice) and a touch tone phone.

If you have not been assigned a customer number, call the Special Assistance Desk (215) 697-2667/2179. TeleSpecs also allows you to receive status or follow-up information on previous orders, as well as immediate status if a document is not available. You may request a maximum of 5 documents per order.

By mail: Mail to DODSSP, Standardization Document Order Desk; 700 Robbins Ave, Bldg 4D; Philadelphia, PA 19111-5094

By FAX: (215) 697-2978. (It is recommended to use TeleSpecs rather than FAX as it is faster and more accurate). Requests for documents should be on DoD Order Form DD1425 or on company letterhead. All requests should include:

1. Assigned Customer Number or CAGE number.
2. Complete mailing address
3. List each specification or standard number and title
4. Indicate quantity desired—maximum 5.

Documents requested by mail or FAX are shipped within 1 week, but allow 1 to 2 weeks for shipping.

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A subscription service is available to private industry of new and/or revised unrestricted and unclassified documents. Upon payment of the subscription fee, you will receive one copy of each new or revised document for a one year period. For more information, write DODSSP, Subscription Services Desk; 700 Robbins Ave, Bldg 4D, Philadelphia, PA 19111-5094, Phone (215) 697-2569.

SPECIAL ASSISTANCE DESK (SAD)

A special assistance desk is available Monday through Friday, 7:30am to 4:30pm EST to assist you with inquiries about services, status of previous orders, establishing a customer account number, sources for documents not at the DODSSP, special requests. The SAD is also interested in comments about their services and any suggestions. Phone: (215) 697-2667/2179.

DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS

The DODISS is a reference publication made available to private industry in microfiche or printed book formats. The DODISS is a 4-part catalog of:

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A subscription of the printed DODISS is available on a yearly subscription basis from Superintendent of Documents, Government Printing Office, Washington DC 20402-9371. The DODISS Part III is a separate subscription. DODISS Part IV is available as a single sales item and current prices may be obtained from Superintendent of Documents, Customer Service (202) 783-3238.

MICROFICHE EDITION — Subscription to the microfiche edition of the DODISS is available from MPPSO, Philadelphia. The microfiche edition is imaged on 105mm film at a 48X reduction rate.

MAGNETIC MEDIA — The DODISS Master File is available on 1/2' magnetic tape.

MIL-HDBK-217 Status

A new set of models for passive components and surface mount components has been developed and will be sent out for review this July. These changes are expected to be released as Notice 2 to MIL-HDBK-217F in the Spring of 94. Anyone interested in contributing to the review of these new component models should contact Seymour Morris at:
Rome Labs/ERSR
525 Broooks Road
Griffiss AFB, NY 13441-4505
Tel: (315)330-2951
Email: morriss@lonex.rl.af.mil

FREE PROCEEDINGS

Your Reliability Society has the following surplus proceedings on hand:

- 1991 RAMS, 40 copies
- 1992 RAMS, 100 copies
- 1992 IRPS, 560 copies
- 1993 RAMS, 480 copies

Reliability Society members who did not get a copy of any of these and want one, may request a copy by writing the following address. Request should identify the proceedings desired and confirm that the requester is a member of the Reliability Society. Requests will be filled only so long as supplies last. Send to: Anthony Coppola, 18 Melrose Ave., Utica, NY 13502

Multiple copies of proceedings may be requested for educational purposes by Academic Institutions. Such requests will be honored so long as supplies last, and after individual Reliability Society member requests are filled.

BOOK NOTES

ROME LABORATORY RELIABILITY ENGINEER'S TOOLKIT, APRIL 1993
An Application Oriented Guide for the Practicing Reliability Engineer
Rome Laboratory
Systems Reliabilty Division
Air Force Material Command (AFMC)

The newly released Rome Labs Reliability Engineer's Toolkit lives up to it's name by being a very practical manual of reliability methods. The Toolkit is a collection of working summaries on various R&M topics including the major reliability handbooks and standards (i.e., MIL-HDBK/STD -217, -251, -781, -785, etc.). Useful checklists and tables have been prepared on these and other subjects. The book focuses on specific approaches without giving the broad view of all possible analysis methods but this is understandable since the book is a really good "how-to" guide. To dealve further, the toolbook does provides a good set of references to the MIL standards, DIDs, and Rome Labs publications. The toolkit is well worth the cost given the amount of reference data it contains. Copies are available from Reliability Analysis Center, P.O. Box 4700, Rome, NY 13442-4700, Tel:(800)526-4802.

B. Bream, RSNL Editor

RELIABILITY, AVAILABILITY, MAINTAINABILITY AND SAFETY ASSESSMENT
Volume 1 - Methods and Techniques
Volume 2 - Assessment, Hardware, Software and Human Factors
Alain Villemeur
John Wiley & Sons, 1992

This book came across my desk in a reference search for textbooks related to probabilistic risk assessment (PRA). It gives a broad overview of reliability techniques for qualitative and quantitative analysis including PHA, FMEA, PHA success diagrams, cause consequence, state-space, common-cause failures, case studies, etc. It covers a lot of ground, hence it has been presented in two volumes. With the book being a translation from French there are some terminology differences. But you'll find that this doesn't get in the way since the explanations of the techniques are very good with ample examples and even historical background. It is always refreshing to see R&M assessment from another viewpoint. References are fairly well mixed between U.S. and European sources. The book serves as a good source of instruction for the newcomer to R&M as well as a good reference for the experienced analyst.

B. Bream, RSNL Editor

Electronic Bulletin Boards

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

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

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Latest information on many standard military electronic part drawings under the control of DESC
DESC-RBBS: (513)296-6046, 300-2400 baud, 8N1
(513)296-8875, 9600 baud, 8N1, V.32/V.42
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JPL/NASA Radiation Effects Data Bank
Test data on Single Event Effects and total-dose for electronic parts
BBS: (818)393-4156, 1200 baud, 8N1
(818)306-6920, 1200 baud, 8N1
Sysop: Keith Martin, (818)354-0319
After logon hit return and type RADATA in response username, no password required.

DOD Field Failure Return Program (FFRP) Reliability Bulletin Board
This Bulletin Board provides information concerning the DOD FFRP program as well as providing a vehicle for both commercial and government users to exchange ideas and information on component and system problems.
1200 baud or less
8 Data bits, no parity, 1 stop bit
(315)339-7120, Access
(315)339-7043, Questions

IEEE RELIABILITY SPEAKERS LIST

Five individuals have been added to our Speakers List. If you are seeking a qualified speaker please contact them or the original six speakers presented in the July 1992 Newletter (page 7). If you would like to be considered for inclusion on this list, please contact me.

Richard L. Doyle
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DR. SAM KEENE
3081 Fifteenth Street
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Work:(303)924-7711
Home:(303)447-3697

Dr. Keene is a past president of the IEEE Reliability Society (1992). He has published 50 papers in the reliability field.

Topics:

- Software Reliability
- Concurrent Engineering

MR. TONY COPPOLA
ITRI
201 Mill St.
Rome, NY 13440-8200
Work:(315)339-7075
Home:(315)732-7608

He has been a guest instructor for the Air Force Institute of Technology, the Air Force Academy, and George Washington University. He is a Fellow of the IEEE, recipient of the Air Force award for Meritorious Civilian Service, and of the IEEE Centennial medal.

Topics:

- Advanced Reliability Techniques
- Total Quality Management

MR. KEN LASALA
703 Cannon Road
Silver Springs, MD 20904
Work:(301)495-8429
Home:(301)384-7853

Mr. LaSala has published several papers on R&M and other engineering topics. He coauthored a chapter on man-machine reliability in the McGraw-Hill Handbook of Reliability Engineering and Management. He also taught graduate level basic reliability engineering in the University of Maryland graduate R&M program.

- Human Performance Reliability

MR. RICHARD L. DOYLE
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Home:(619)454-3454

He has taught Mechanical Stress Analysis (Mechanical Reliability) to graduate engineers working for the U.S. Navy (Civil Service). This course was taught as a 3 day seminar and has been presented at many different locations including Washington DC, Louisville KY, Craine IN, and Port Hueneme CA. He developed the text and has taught the course over 25 times in the past 6 years.

Topics:

- Mechanical Reliability
- Thermal Analysis of Electronics

DR. RALPH EVANS
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Work:(919)688-2860
Home:(919)688-6707

He has taught many short courses on quality and reliability. He is a Fellow of the IEEE and in Managing Editor of the IEEE Transactions on Reliability.

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IEEE HOTLINE

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1-800-678-IEEE

QUALITY INITIATIVES PROGRESS REPORT

Dr. Tom Weir has asked me to serve as Chairman of a process action team on a quality initiative. The committee has five members: B.A. Bang, A. Coppola, R.L. Doyle, V.R. Lalli, and H. Malec. The question being studied is should total quality be included in the Reliability Society (RS)? We want your feelings on this process action. Please write us a brief letter. Answer five questions in your letter:

1. Should total quality be included in the RS?
2. Any positive inputs for the process?
3. Any negative inputs for the process?
4. Should RS be renamed?
5. What name should we use?

Please send your response to:

Mr. Vince Lalli, PE
NASA Lewis Research Center, MS 501-4
21000 Brookpark Road
Cleveland, OH 44135

Thank you for helping us learn how to serve you better.

Regards,
Sam Keene, Chairman
Quality Initiative Committee

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Electron Device Society and Reliability Society sponsoring

the 1993 *International*

INTEGRATED RELIABILITY WORKSHOP

(Formerly the WAFER LEVEL RELIABILITY WORKSHOP)

October 24-27, 1993
Stanford Sierra Lodge, Lake Tahoe, CA

CALL FOR PAPERS

The name of the Workshop has been changed to reflect the necessity for an integrated approach to reliability in the semiconductor products of today and tomorrow. The name change also makes explicit the expanded scope of the Workshop. At the 1992 Workshop a new emphasis was placed on the Building-In Reliability Approach along with exploration of key reliability topics pertaining to packaging and to designing circuits and systems. These changes have occurred while the Workshop has continued to focus on key topics in Wafer Level Reliability. This year we continue to explore these topics and will address the issue of Known Good Die, which pertains to the quality and reliability of die for assembly in multichip modules or packages. Known Good Die reliability, which represents an important emerging area, requires an integrated approach to reliability that unites the disciplines of circuit design, wafer manufacturing, package assembly, test, and reliability engineering.

1993 SUBJECTS:

BUILDING-IN RELIABILITY (BIR):

Session Chair: Warren K. Gladden, Advanced Micro Devices

- General BIR Implementation Strategies or Implementation Roadmaps
- BIR Success Stories or Learning Experiences
- Reliability-Driven Efforts in the Areas of: Circuit Design, Selection of Materials for Wafer Processes and for IC Packages, and Manufacturing Process Control

WAFER LEVEL RELIABILITY (WLR):

Session Chair: Kenneth C. Boyko, AT&T

- Practical Testing Methodologies and Guidelines for Use in Production
- Production Implementation Case Studies of WLR Testing
- Novel Test Methods for New Mechanisms or Refinements to Existing Test Methods

KNOWN GOOD DIE (KGD):

Session Chair: Barbara Vasquez, Motorola Inc.

- KGD as a Tool for Reliability Learning (BIR)*
  *Primary focus of KGD session
- KGD Strategies or Implementation
- KGD Technologies (Contact, Fixturing, Test, and Design)

Please submit before **July 30, 1993** your 1-2 page proposal for a presentation at the Workshop. Your submission should state clearly and concisely the results of your work and why they are significant. Representative data and figures that support your proposal are encouraged.

Send ***Proposals*** by Mail or FAX to:

David L. Erhart, Technical Program Chair
Motorola Inc.
1300 N. Alma School Road, CH240
Chandler, AZ 85224 USA

Phone: 602-814-4256
FAX: 602-814-4167
email: DAVID_ERHART@EMAIL.SPS.MOT.COM

ADVANCE REGISTRATION

Advance Registration should be made now to insure you space at the Workshop.
(THE WORKSHOP HAS LIMITED SPACE AND YOU ARE ENCOURAGED TO REGISTER EARLY).

The Registration fee is US$875 for IEEE Members and US$925 for Non-IEEE Members. The fee includes: food, lodging, and refreshments at the Stanford Sierra Lodge; Presentation ViewGraphs (provided at the Meeting); and the 1993 IRW Final Report (published after the Meeting). To get a registration form write to: IRW Workshop; P.O. Box 308; Westmoreland, NY 13490 or call 315-339-3971(..336-9134 fax or email: irw@sar.R1212east.sai.com).

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incorporated

1994 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

April 11-14, 1994 ■ Fairmont Hotel ■ San Jose, California

CALL FOR PAPERS

Building-in Reliability continues to be the cornerstone of the Symposium's Program. Papers are solicited that illustrate the incorporation of reliability physics, reliability engineering, design for maximum performance margin, fabrication, assembly, and manufacturing process control to improve system reliability. The identification of new microelectronic failure mechanisms, improved insights into existing failure mechanisms, and new or innovative analytical techniques continue to be the mainstay of the 1994 Symposium. Papers dealing with the reliability of advanced packaging techniques for multichip modules are also requested.

YOUR PAPERS ARE SOLICITED ON:

■ BUILDING-IN RELIABILITY FOR Si, GaAs, AND OPTOELECTRONIC DEVICES, especially:
- Integration of reliability engineering with all elements of design
- Establishing effects of input parameters on product reliability & control
- Physical basis for design rules & concepts for minimizing jeopardy with experimental validation
- Particulate control and its effects on reliability
- Improved manufacturing techniques for wafer fabrication through assembly

■ TESTING METHODOLOGIES FOR RELIABILITY, including:
- In-process wafer fabrication control and assembly, monitors, and sensors
- Novel test structures and materials
- Evaluation at wafer level or after partial processing
- Reliability modeling & field failure rate prediction

■ ANALYZING FOR RELIABILITY:
- VLSI failure mechanisms and models applied to:
  - dielectric integrity – electromigration – hot-carriers
  - low power/low voltage issues – corrosion – latchup/ESD/EOS
- Optoelectronic failure mechanisms and models applied to:
  - LED/laser degradation – lithographic wave guide – burn-in/aging/wearout
  - passive element degradation – optical fiber issues – ESD/EOS
- Assembly related failure mechanisms and models applied to:
  - bonding – surface mount issues – multichip packages
  - package integrity – thermomechanical stress – die overcoats
- SYSTEM related failure mechanisms, including:
  - automotive – consumer – military & aerospace
- Failure analysis techniques: new, advanced, & simplified
- Analytical instruments & techniques
- Computer-Aided Reliability (CAR) applications & simulation with experimental validation

SUBMISSION DEADLINE: Received no later than October 1, 1993

Please submit fifteen copies of both a one page 50-word abstract, and a two-page summary that states clearly and concisely the specific results of your previously unpublished work, why the results are important, and how the results relate to prior work. The fifteen copies of the abstract and summary must either be on 8-½ by 11-inch or A4 paper and include the title of the paper, and the name, affiliation, complete return address, telephone and telefax numbers, and **e-mail address, if available**, for each author. Line drawings, key references, and coarse halftones may be included, but please no continuous-tone photographs. **Submissions should be by post or express mail** rather than by telefax, because telefax is not necessarily legible for review after subsequent duplication.

Mail to: Paul J. Boudreaux, Technical Program Chairman, 1994 IRPS
Laboratory for Physical Sciences
8050 Greenmead Drive
College Park, MD 20740 USA
Tel. 301-935-6547
FAX 301-935-6723
e-mail: boudreau@eng.umd.edu

Second IASTED International Conference
Reliability, Quality Control, and Risk Assessment

October 13-15, 1993

Cambridge, MA USA

SPONSORS
The International Association of Science and Technology for Development (IASTED)
With the cooperation of the IEEE Reliability Society

LOCATION
Hyatt Regency, Cambridge, Overlooking Boston, 575 Memorial Drive, Cambridge, MA 02139 USA
Tel: (617)492-1234 Fax: (617)491-6906

SCOPE
The following areas are covered:
- Reliability
- Software and Algorithms
- Modeling
- Methodologies for Quality Control
- Fault Tolerance
- Risk Assessment and Analysis
- Quality Assurance
- Safety-Critical Systems
- Simulation
- Identifying and Controlling Risks
- Testing
- Probabilistic Models for Safety Assessment
- Quality Costs
- Optimization
- Maintainability & Availability
- Design & Manufacturing
- Human Factors and Reliability
- Applications in all fields
- Survey papers and case studies on any of the above subjects are also welcome

INFORMATION
Dr. Hoang Pham
Idaho National Engineering Lab
P.O. Box 1625
M/S 2408
Idaho Falls, ID 83415 USA
Tel: (208)526-9274
Fax: (208)526-2930
Email: hgp@inel.gov

INTERNATIONAL PROGRAM COMMITTEE
Kishor S. Trivedi, General Chairman
Hoang Pham, Program Chairman
Nasser S. Fard, Local Arrangements Chairman

Conference Calendar

DATE & PLACE — **CONFERENCE**

CALL FOR PAPERS

1993

24-27 Oct.
Stanford Sierra Lodge,
Lake Tahoe, CA

1993 International INTEGRATED RELIABILITY WORKSHOP (Formerly the WAFER LEVEL RELIABILITY WORKSHOP)

See the ad for this conference on page 9.

For info contact: Harry A. Schafft, NIST, Bldg. 225 Rm. B360, Gaithersburg, MD 20899, Tel:(301)975-2234, Fax:(301)948-4081, Email: schafft@sed.eel.nist.gov

1994

16-18 March
Seattle, Washington
USA

International Society of Science and Applied Technologies (ISSAT) Conference on Reliability and Quality in Design

The ISSAT Conference is an international forum for presentation of new results, research development, and applications in reliability and quality in design. Papers may address any aspect of reliability and quality in design. Papers dealing with case studies, experimental results, or applications of new or well known theory to the solution of actual reliability and quality problems in engineering design are of particular interest. Suggested topics are:

- Modeling, Analysis and Simulation
- Fault Tolerance
- Software Reliability and Testing
- Quality Cost
- Maintainability and Availability
- Data Collection and Analysis
- Human Factors and Reliability
- Concurrent Engineering and Design
- Experimental Design for Quality Control
- Software Algorithms
- Safety-Critical Systems
- Risk Assessment Modeling
- Network Reliability
- Design Issues in Manufacturing
- Process Control and Management
- Quality Planning and Measurement
- Quality Engineering
- Total Quality Management Techniques

Submission of Papers: Four copies of the papers (maximum 15 double-spaced pages) should be submitted by 1 October 1993, to Program Chairman: Dr. Hoang Pham, Dept. of Industrial Engineering, Rutgers University, P.O. Box 909, Piscataway, NJ 08855 USA, Tel: (908)932-5471, Fax: (908) 932-5467, Email: hopham@princess.rutgers.edu

22-24 March
Catamaran
Resort Hotel
San Diego, CA

IEEE INTERNATIONAL CONFERENCE ON MICROELECTRONICS TEST STRUCTURES

The conference, sponsored by the IEEE Electron Devices Society, will bring together designers and users of test structurs to discuss recent developmetn and future directions. The conference will be proceeded by a one-day Tutorial Short Course on Microelectronic Test Structures on 21 March. There will be an equipment exhibition relating to test structure measurements. Original papers presenting new developments in both silicon and gallium arsenide microelectronic test structure research, implementation, and application are solicited. A Best Paper Aware will be presented by the Technical Program Committee. Suggested topics include:

- Test Structures for Material & Process Characteristics
- Dimensional & Electrical Integrity of Replicated Features
- Test Structures for Device & Circuit Modeling
- Product Failure Analysis from Test Structure Data
- Test Structures for Reliability Analysis
- Wafer Fabrication Process Control Test Structures
- Test Structure Measurement Utilization Strategy

Paper Submission: Authors are asked to submit for review 36 copies of a 500- to 1000-word summary, a title page, major figureas, and data. These should reach the technical chairman by Friday, August 13, 1993. The title page must include a fivve-line abstract, the full address and FAX number of the lead author, and author preference for oral or poster session presentation. The selection process will be based on technical merit and will be highly weighted in favor of ppers that include measurement data and their analysis. Notice of papers acceptance, with instruction for manuscript preparation, will be sent to authors of papers selected for presentation by Friday, October 29, 1993.

Please send summaries, with abstracts, to: Robert A. Ashton, AT&T Bell Laboratories, 9333 S. John Young Parkway, Orlando, FL 32819 USA, Tel: (407)345-7531, Fax: (407)345-6904, Email: raa@aluxpo.att.com

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11-14 April
Fairmont Hotel
San Jose, CA

International Reliability Physics Symposium

See the advertisement for this conference on page 10.

CONFERENCES 1993

1-3 Sept.
Zurich
Switzerland

EOBT'93, 4th European Conference on Electron and Optical Beam Testing of Electronic Devices

Swiss Federal Institute of Technology (ETH)

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.

Address for information: 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@nimbus.ethz.ch

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27-29 Sept.
Cairns,
North Queensland
Australia
Palm Cove

ETFA '93
2nd IEEE Interantional Workshop on Emerging Technologies for Factory Automation Design and Operation of Intelligent Factories

Sponsored by: IEEE Industrial Electronics Society

This is the second in a series of workshops that focus on applications of emerging areas of technology to factory automation. Prospective authors are invited to submit papers which address the issues of applications of new technologies to the design and operation of "intelligent factories". Some of the technologies os special interest will be:

- Knowledge Acquisition & Learning Processes
- Expert Systems
- Petri Nets and other modelling techniques
- Neural Networks
- Temporal & Logic Reasoning
- Fuzzy Systems
- Genetic Algorithms
- Micro-machines, robots, sensors, actuators and their design and fabrication.
- Intelligent Systems: hardwar-software integration, human-machine interfaces, machining systems, sensor integration and fusion.

The workshop will centre around approximately 20 invited and contributed long papers, and panel discussions, complemented by around 30 short papers presented in poster form. The workshop is meant to provide ample opportunities for discussions and ideas exchange among the participants. Long papers will be presented in talks of 40 minutes duration. There will be only one poster session per day and the posters will remain on display for the whole day. All accepted papers will be published in the Conference Proceedings. Selected papers will appear in a book published by the IEEE Press.

General Chairman: Richard Zurawski, Laboratory for Concurrent Computing Systems, Department of Electrical & Computer Engineering, Swinburne University of Technology, John Street, Melbourne 3122, Australia, Phone +61 3 728 71 61, FAX +61 3 728 71 83, E-mail: rzz@stan.xx.swin.oz.au

General Vice-Chairman: Hiroyuki Fujita, Institute of Industrial Science, The University of Tokyo, 7-22-1, Roppongi, Minato-ku, Tokyo 106, Japan, Phone +81 3 3408 1493, Fax +81 3 3402 5078, E-mail: fujita@fujita3.iis.u-tokyo.ac.jp

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13-15 Oct.
Cambridge, MA
USA

Second IASTED International Conference Reliability, Quality Control and Risk Assessment

See the advertisement for this conference on page 11.

17-21 Oct.
Kansas City
Missouri

1993 International Joint Power Generation Conference

The Reliability and Availability (R&A) Committee of the American Society of Mechanical Engineers (ASME) Power Division is sponsoring the 1993 International Joint Power Generation Conference (IJPGC). Topics for the conference are:

- Availability of repowered older power plant units
- Operating availability of cogeneration and waste-to-energy plants
- Plant betterment program impacts
- Practical appications 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 avaialability at unit or component level
- Practical application of statistical methods for decision making

For information, contact: 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

1-5 Nov.
Singapore

4th International Symposium on the Physical & Failure Analysis of Integrated Circuits

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

24-27 Jan.
Anaheim Marriott
Hotel
Anaheim, CA USA

Annual Reliability and Maintainability Symposium

The theme for next year is "How You Can Make It Happen" - Share your knowledge and expertise with your colleagues at the world's premier forum for the assurance technologies. Plan to attend.

1994

20-24 March
San Diego
California

PSAM-II International Conference Devoted to the Advancement of System-based Methods for the Design and Operation of Technical Systems and Processes

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
- Exper 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

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

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- ❑ Parts Count Reliability ★ MIL-HDBK-217/E1
- ❑ Maintainability Prediction ★ MIL-HDBK-472
- ❑ FMECA ★ MIL-STD-1629A ★ FMD-91 ★ MIL-STD-2165 ★ AMC-P 750-2
- ❑ System Reliability ★ MIL-STD-756B ★ MIL-HDBK-338
- ❑ Industrial Reliability ★ Bellcore TR-NWT-000332
- ❑ Mechanical Reliability ★ MIL-HDBK- 472

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