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Reliability Society

NEWSLETTER

April 1996

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President's Report

As history repeats itself, "the reliability society is having its good times and its bad times". The good news is that we have a lot of energy and enthusiasm in all of our reliability society members, particularly our AdCom members, Chapter leaders, and Conference leaders. This enthusiasm spreads throughout our society membership and to all of our conference attendees. The bad news is that our membership has decreased over the past 3 to 4 years. We only have about 3000 members (not counting associate and student members). This is off approximately 1000 members from our high a few years back. We must correct this problem. It seems to be just our society, other societies and IEEE just keep growing.

I believe if members participate more, then they will be more knowledgeable in their field and this will encourage others to participate more. In this way our membership will grow as others see the benefits of our society. Some of the activities that each of you can participate in are: Attending Local Chapter programs, Viewing Educational Tutorials, and Attending Conferences. The conferences are enjoyable and are especially beneficial because of the tutorial programs available. These tutorials are in the vary latest fields of interest. This is in addition to the outstanding conference programs. So, start planning to attend one of the conferences now.

We continue to have outstanding participation by many of our members. To mention a few: Dave Erhart, our VP of Membership attended an IEEE membership in Philadelphia for two days (through Saturday night) and then flew overnight to attend our AdCom meeting in Las Vegas Sunday morning. Is this dedication or what? Our Awards Banquet was flawless thanks to our outstanding Master of Ceremonies, Tony Coppola. Our new Educational Chairman, Art Rowers attended a one day educational workshop in San Diego. These people are giving their time to help make the Reliability Society effective for you. We thank them all.

I am pleased to announce that the Division VI nominating committee has chosen me to run for Division VI Director in the national elections late this summer. You will receive a ballot about the first of September, so be sure to vote. There are 2 other candidates besides myself, so you will have a good slate to choose from.

The Chapters were back doing outstanding work last year and I would like to give special recognition to those Chapters that participated in the chapter competition. They are (Including two first place winners):

- 1st Place - DENVER/PIKES PEAK SEC. \$500
- 1st Place - DALLAS SECTION \$500
- 2nd Place - WASHINGTON SECTION \$300
- 3rd Place - CLEVELAND SECTION \$200
- Entered - BOSTON SECTION \$100
- Entered - SINGAPORE SECTION \$100
- Entered - TOKYO SECTION \$100
- Entered - PHILADELPHIA SECTION \$100
- Entered - BALTIMORE SECTION \$100
- Entered - LA COUNCIL \$100

All chapters should be planning some outstanding programs for this year and on into next year. Also, you should start thinking about submitting the paperwork for this years chapter awards. All entries receive \$100 and you might be selected as the top winner (\$500). The rules have been tailored to make it a level playing field. It does not favor size but does favor accomplishments and services to its members. For further information on this subject please contact the Chapters Coordinator, Bud Trapp (E-mail: otrapp@crl.com).

As you know, the Reliability Society is very serious about choosing a logo. We have started the design competition. Loretta Arellano is running it, so please see the special article for details. A society logo will be helpful to show other groups that our society is participating in many activities. The design will be selected from the designs being submitted (From You!). This is an open competition and a group of judges will select the final design. Please participate in this activity.

I would like to give special recognition to the people that have been supporting our Standards Activities, particularly the "IEEE P1332". The major IEEE participants are from our Reliability Society and include: Mike Cushing, Ken LaSala, Mike Pecht, Dennis Hoffman, and Loretta Arellano. Also, I would like to give special recognition to Mike Cushing for his outstanding leadership in representing our Society on the IEEE Standards Board.

Our Software Reliability Tutorial is selling very well. It is now at the breakeven point (in less than 7 months). It is an outstanding tutorial and is suggested for anyone interested or presently working in software reliability. We believe that this video tutorial will receive a wide distribution because of its importance and timely subject matter. The title is "Developing Reliable Software in the Shortest Cycle Time". This is an emerging technology and is extremely important for both commercial and military fields of interest. We rely on software to operate and control many of our advanced systems, surpassing hardware in importance in some equipment. I would like to thank Dr. Sam Keene (Past President of the Reliability Society) for his major effort in planning and marketing of this tutorial for our Society. Also a special thanks to him and his cospeakers, John Musa, and Ted Keller, who's presentations made the tutorial the success that it is. For those wanting to view the tutorial (for a fee) or share it with their company, they should contact Elizabeth Santos at IEEE Headquarters (esantos@tab.ieee.org) or see the advertisement in this newsletter.

We are presently considering a second tutorial in this series. We will continue to use speakers who are leaders in their fields of expertise and are working with leading edge technology. The area that we are considering for the next project will be "Concurrent Engineering".

To report on our AdCom group, we had our first meeting of the year on the 21st of January in Las Vegas, Nevada.. This meeting was in series with the RAMS Conference (Reliability and Maintainability Symposium). The AdCom meeting was very productive and we had an excellent attendance with 12 voting members present, which was 5 over a quorum. New agenda items included: 1.) That we should promote new membership were ever possible. Places with the most potential for new members include conferences, short courses, chapter meetings, and other chapter activities. These will be stressed in the near future. 2.) That the Reliability society and the Chapters can offer CEU's for short courses that they provide. However, individual chapters will be responsible for monitoring the courses and the CEU's issued. We intend to hold our AdCom meetings in locations where we have a Reliability Society Chapter. We will invite the local officers to our meeting and have a special function with them. Our July 20th meeting is scheduled for the San Jose area and our October 5th meeting is scheduled for the Boston area.

We can not control where the IRPS and RAMS conferences are held, but this year IRPS will be held in Dallas and we will involve our Dallas Chapter (April 28th).

A fast growth area in our society is the use of the Internet and Web pages. Conferences are considering posting the abstracts and indexes for their Proceedings and Tutorials on the Web. This will allow members and nonmembers to search on titles, authors, words, etc. from your computer and allow you to identify your areas of interest quickly. You can then order the appropriate articles or books from IEEE headquarters.

To report on the Technical Activities Board (TAB, 36 IEEE Society Presidents + more). We had our first meeting of the year on 14 - 17 February in Coronado, CA (about 15 miles from my home).

I continue to serve on three major committees of TAB. These are the Design and Manufacturing Engineering (DME) Committee, the Products Council and I chair the New Ventures Committee (NVC). The NVC has about 30 new projects in the pipeline, but if you have any special projects that you would like to promote for the benefit of all IEEE members, just let me know. Also, the Reliability Society has a close working relationship with the Regional Activity Board (RAB) and the Standards Board along with the Educational Activities Board and Headquarters staff. With this active participation, all society members are being well served.

As you can see, there are a lot of activities in the Reliability Society and these activities could use your support. Just chose an area of interest and contact either myself or any of the Vice Presidents. We are particularly looking for people to help with our technical activities committees and also with the standards activities. We look forward to anyone wanting to participate in our Society activities.

Richard L. Doyle (r.doyle@ieee.org)
President, Reliability Society

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Editor's Column

The World Wide Web (WWW) is more than just another curiosity piece on your PC. It is already the world's largest encyclopedia. The information is not just restricted to advertisements and computer programs. There is a lot of information of real use to our members. I'm presenting some interesting sites here, this month, as a place to start for information on Reliability and Quality Engineering.

<http://www.enre.umd.edu/reinfo.htm>

This site, called the National Information Center for Reliability Engineering, is supported in part by the Center for Reliability Engineering, University of Maryland at College Park, and the IEEE Reliability Society. It has an excellent overview of standards and handbooks on Safety, Reliability, Human Factors, and Maintainability. There are links to the major professional societies, reliability research and educational resources.

<http://rac.itri.org/>

The Reliability Analysis Center is an Information Analysis Center sponsored by DTIC, the Defense Technical Information Center. RAC's charter is to collect, analyze, and disseminate data and information to improve the reliability and maintainability of components and systems. RAC has a mandate from DTIC to use every means to freely disseminate information on the reliability, maintainability, testability, and quality disciplines. The RAC Journals going back to 1993 are online. You'll also find a number of requests for participation in R&M technique development areas.

<http://www.hq.nasa.gov/office/codeq/rmhome23.htm>

This is the NASA Reliability and Maintainability Steering Committee Home Page. You can get all of the NASA Reliability Preferred Practices from this page. The documents are in Portable Document Format (PDF) which will require you to load the free [Adobe Acrobat](#) software. Once you have software, you can view any of the documents (equations, images and all) right from your web browser.

<http://rel.semi.harris.com/>

The Harris Semiconductors Reliability Engineering Page provides access to many of the documents and publications written by the Reliability Engineering department and Harris Semiconductor. Their Reliability Reports gives test results for part types (e.g. CD4000 family) with test type, duration, sample size, and rejects and even lot histories. One of their white papers discusses the use of plastic-encapsulated microcircuits in military applications.

As you cruise around the web you'll probably find a number of sites maintained by individuals with links to interesting places that they have found. This seems to have become the modern day equivalent of book collecting. One of the more interesting sites is http://rome.iitri.com/~dnicholl/rac_urls.html maintained by Dave Nicholls. This is a great jumping off point for RM&QA surfing and you don't have to worry about the undertow!

Bruce Bream, Editor

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Newsletter Inputs

All Reliability Society Newsletter inputs should be sent to the editor at:

Bruce Bream
NASA Lewis Research Center
M.S. 501-4
21000 Brookpark Road
Cleveland, OH 44135
Tel: (216)433-6532
Fax: (216)433-5270
E-mail: bruce.bream@lerc.nasa.gov

Newsletter Input Due Dates

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

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Chapter Activities

Boston Chapter

January saw snow, snow, and more snow. A popular oasis among

all the shoveling proved to be Raytheon's Reliability Analysis Lab, which hosted a talk by Bill Tice on the Physical Failure of Plastic Parts, followed by a tour. The lab have quite extensive facilities and cross-functional know-how for determining the root cause of many failures, not just electrical. They also cater to outside clients. Primary failure modes seen with plastic encapsulated parts are corrosion due to material impurities in the encapsulant combined with moisture infusion, and lead separation due to different thermal expansion coefficients of the materials.

In blustery February, Mike Malcos of Polaroid Medical Imaging Systems discussed the reliability processes used throughout the development of the Polaroid Helios Laser Imager. This refrigerator-sized modular system melds laser imaging technology with a new dry carbon-based film that reacts to laser energy providing "digital grayscale". Much of the system was developed from scratch with demanding reliability requirements because doctors rely on such medical imagery every day in life-and-death situations. Statistical methods were extensively utilized in designing reliability studies, optimizing product performance, and to analyze and present reliability data. The challenges Mike has faced with this program during a time of corporate downsizing made for a lively talk.

Along the theme begun by November's meeting discussing the connection between Reliability and ISO 9001, the March meeting hosted Jerry Christen, Executive Director of the Massachusetts Council for Quality. This organization awards the Massachusetts Quality Award, named after Armand Feigenbaum, to deserving organizations each year. Modeled on the Malcolm Baldrige National Quality Award, the Massachusetts Quality Award is awarded on the basis of non-competitive self and examiner assessments. Jerry's talk focused on how Reliability (Quality over Time) fits into the assessment and award processes.

While April brings showers, it also brings the 34th Annual Spring Reliability Symposium to town on the 18th. To be kicked off by Ron Sege, Vice President and General Manager of 3Com Corporation's Integrated Systems and Star-Tek Divisions, this day of events should be packed full with eight presented papers and an Expert Panel Discussion about the Future of the Reliability Profession, moderated by Avery Hevesh. Proceedings of the event should be available shortly thereafter for a nominal fee.

The Technology Development group has also been busy. In January it reviewed the materials it has made available to interested engineers for the past several years, focusing on whether these materials should be updated and what new materials can be "productized" for distribution. For a description of these materials, follow the Technology Development Packets link on our Web page (address noted below). In March, the group held a lively roundtable discussion on the processes, tools, methods, and effort involved in performing reliability functions like MTBF predictions, FMEAs, and FRACAs.

For up-to-date information about our chapter activities, point your Web browser to <http://www.channel1.com/users/jeclark/ieee.html>.

Don Markuson, Chairman
d.markuson@ieee.org

Cleveland Chapter

The Cleveland Chapter had 2 meetings during this reporting period:

1. Our November tour was to the Mr. Coffee factory on Miles Avenue. Yes, the Mr. Coffee that Joe DiMaggio made famous. The plant manager, Larry Stevens, was glad to show off his operation to us. Four assembly lines were in progress with hand assembly by the teams; very little automation. For the standard coffee makers, around 5,000

units are being assembled in one shift. The place was really humming. Good to see modern TQM methods helping us to compete.

2. Our November dinner meeting with director Don Campbell was a welcoming back from furlough and a pre-Thanksgiving party. Those who were able to attend despite the blowing, snowy weather seemed to enjoy the festivities. The Director gave all indications that Lewis is alive and well. The Center's outreach programs have had a positive impact in the Cleveland community, perhaps to the extent that the Cleveland Plain Dealer may have some upbeat things to report about Lewis. Look for it! Of course, a downside is that the Center is undergoing a zero-base reduction in resources which will continue until the year 2000. Mr. Campbell is certain that the Center will make the necessary adjustments and be creative in "doing more with less and do it better."
3. The annual mid-year social was held at NASA LeRC, Guerin House. Old friends and new members got together for an evening of relaxation, and a cold buffet. No speaker was used. Pool, ping pong and dancing were enjoyed by many.

We helped RAMS '96 by putting together a tutorial on Software Design Improvements and served as chairperson for a Software Design papers session.

We are working again this year with the JETC '97 to organize a symposium for the presentation of technical studies. The combination of NASA Spinoffs with manufacturing methods and know how in Ohio is a big boost to our area. The symposium will again be held at Cleveland State University. All -in-all here in Cleveland we are having fun staying active and trying to serve our members.

Sincerely,
Vince Lalli, Chair

Dallas Chapter

The Dallas Reliability Chapter is continuing with its slate of diverse meeting subjects being presented by outstanding speakers. In December we hosted John Conte of DSC Communications, who spoke on "Reliability Reports -- Product, Customer and Process" , which summarized DSC practices regarding tracking and prioritizing field failures using statistical techniques. Dr. Kishor S. Trivedi, Professor of Electrical Engineering and Computer Science at Duke University and author of books and articles on reliability modeling provided an outstanding presentation on "Reliability Modeling: Techniques, Tools and Applications" at a joint IEEE Reliability Society-Association of Software Engineering Excellence (ASEE) meeting. "Design for Disassembly" was presented by Craig Boswell of HOB International, Inc. Dr. Gregg Hobbs of Hobbs Engineering, who expanded the technology of testing by developing Highly Accelerated Life Testing and Stress Screening (HALT and HASS, respectively), gave a very interesting lecture on HALT/HASS, providing a wealth of insights and experiences from his past 20 years in consulting.

The 1995-96 session will be rounded out with Mario Villacourt of SEMATECH's Equipment Reliability Group, who will speak on reliability programs for semiconductor manufacturing tools development and Julie England, Vice President for Quality of Texas Instruments Semiconductor Group, who will provide insights into how quality and reliability help to advance the state of the art in the design and development process.

The Chapter officers and area reliability directors are looking forward to meeting the members of the national AdCom who attend the upcoming International Reliability Physics Symposium (IRPS), which will take place in Dallas in the April.

Joe Childs, P.E.
Chairperson
Dallas Chapter

Denver Chapter

The Denver chapter held its annual social in December. We go out to a dinner playhouse with our spouses and guests. This year we went to Heritage Square which features melodramas. Great time! Our monthly meetings were: January; Sue-Sutton Jones, VP of Teletronics talk on the reliability program and concerns for medical electronics. Particular emphasis on the J-lead problems with pace makers. In February we held a round table to discuss reliability prediction techniques with an emphasis on "worst case analysis" techniques.

The Denver chapter held a round table in February to discuss reliability prediction techniques, with an emphasis on Worst Case Analysis.

The March meeting is scheduled from 4:30 to 6:00, on Thursday, March 14th, at Seagate Peripherals in Longmont, Colorado. The speaker will be Mr. Kirk Grey from AccelerRel Engineering, and the topic will be "Accelerated Testing Techniques". Please contact Mr. Ron Watts if you would like to attend. His number is (303) 702-1119.

Sam Keene
Denver Chapter Chairperson

Los Angeles Chapter

In February, Ken Hill of Hughes Aircraft informed us about current advances in the use of Plastic Encapsulated Microcircuits, PEMs, in Military / High Reliability Applications. He presented the interim results of experiments to determine the most effective screening and qualification testing needed to assure adequate reliability. Currently he is implementing a tailored set of automotive industry standards because they are more severe than the proposed Military standards and necessary to screen out observed fault mechanisms. Another consideration discussed was the shorter life cycle of plastic parts due to more frequent die shrinks and process changes. He also warned that current parts may be suitable for use over the required system operating temperature range as an up selection of a 0o to 70o C part, but manufacturers cautioned him that their goal was to produce parts that just made that range and the next "improvement" may make the part unsuitable for use.

In March we heard Quent Casen, Manager of the Wireless Communications Division of Rockwell International discuss the future of wireless personal communications. He reviewed the tremendous growth in the cellular and paging communications industry over the past several years. The presentation focused on Personal Communications Services, a series of emerging technologies that are sure to impact our lives in the coming years. Also presented were the impact of continually declining costs, recent spectrum actions, new technologies and challenges facing the industry.

Our bulletin board continues to be very active and can be reached at 818-768-7644 (300 -9600 baud). Most presentations are recorded video, copies are available to members and affiliates through our Video Exchange Program. A full listing of available titles be downloaded from the bulletin board, for information on obtaining copies contact the LA chapter chairman.

David Franklin
E-mail: FranklinDL@aol.com

Swiss Chapter

During 1995 the Swiss Reliability Chapter organized, in cooperation with the Reliability Laboratory (RL) of the Swiss Federal Institute of Technology (ETH) Zurich, one Conference, one Seminar, one Course, and 8 Meetings. The conference was on In-Process Quality and Reliability Optimization for Electronic Microsystems and Assemblies, the seminar on Focused Ion-Beam Technology. Prof. A. Birolini gave his course on Quality and Reliability of Equipment and Systems. The meetings were: Reliability Analysis of Complex Systems by the Method of Fault Trees (Prof. W. Schneeweiss, Fern-Univ. Hagen, Germany); Reliability and Availability of Telecommunication Equipment and Systems (Dr. B. Stamenkovic, Ascom Ericsson Transmission (AET), Berne); Approximate Solutions to Complex Reliability Structures (Dr. D. Kumar, Indian Inst. of Tech., Bombay); Experimental Mechanics, a Tool for Quality and Reliability Improvement of Mechanical Systems (Prof. A. Freddi, Univ. Bologna, Italy); Good Data in - Garbage out (Dr. H. Ascher, Potomac (MD), USA); Reliability Models for Repairable Equipment with Preventive Maintenance (Dr. J. Endrenyi, Ontario Hydro Tech., Toronto, Canada); Statistical Tests by Concurrent Failure Causes (Dr. B. Gerlach, Humboldt-Univ., Berlin, Germany); Development of Cable and Wireless Telephony in Germany with Special Attention to Reliability (P. Jacob, ETH Zurich).

For 1995, two Courses, one Conference, one Seminar, and five meetings are planned.

Conferences

Oct. 17 - Conference on Reliability Engineering in Year 2000, ETH Room ETF E1, 9:30 AM - 5:00 PM.

Seminars

Sept. 26 - Atomic Force Microscopy: Applications in Semiconductor Failure Analysis, ETH Room ETZ E6, 9:30 AM - 5:00 PM (P. Jacob).

Courses

April 23-25 and May 21-23 - Failure Mechanisms and Failure Analysis of Semiconductor Devices, ETH (M. Ciappa).
Sept. 18-20 - Quality and Reliability of Equipment and Systems, ETH room ETZ E6, 9:30 AM - 5:00 PM (Prof. A. Birolini).

Meetings

April 15 - Choice and Application of Reliability Analysis Techniques to Auxiliary Equipment for Gas Turbines (Dr. H. Roennebeck, ABB Power Generation, Baden)

June 24 - URMEL: A Finite-Element Program for the Prediction of the Reliability of Solder Joints (Dr. K. Heiduschke, ETH Zurich)

Oct. 28 - Modelling of Complex Systems Using Boolean Functions (Dr. B. Gerlach, Humboldt-Univ., Berlin, Germany)

Nov. 11 - Combined Performance and Reliability Analysis of Fault-Tolerant Systems (Dr. A. Brenner, ETH Zurich)

One meeting has already taken place: on Jan. 29 Dr. J. Reiner, Philips Semiconductors, Zurich, spoke on Latent Gate-Oxyde Damage due to Electrostatic Discharge of Integrated Circuits (CDM discharges).

The meetings take place at 5:15 pm at the ETH Zurich, room ETF C1. For further information please call Ms. Sybill Steffen at +41 1 632-2743, fax: +41 1 632-1258, E-mail: birolini@zuv.ee.ethz.ch.

Professor Alessandro Birolini
Chairman
E-mail: birolini@zuv.ee.ethz.ch

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AdCom Meeting Agenda

IEEE RELIABILITY SOCIETY ADCOM MEETING WYNDHAM ANATOLE HOTEL DALLAS, TEXAS

April 28, 1996, Sunday Morning:

Function: GENERAL ADCOM MEETING

10:00 am - 10:20 am - Call to Order

Agree to Agenda D. Doyle

Minutes Approval L. Phaller

Treasurers Report D. Kowalski

10:20 am - 11:30 am - Vice Presidents' Reports

Meetings D. Hoffman

Membership D. Erhart

Publications P. Gottfried

Technical Operations L. Arellano

11:30 am - 11:45 am - Junior Past President's Report - T. Weir

Long Range Planning Rept.

Medal and Service Awards Rept.

Nominations Comm. Rept.

11:45 am - 12:00 pm - Senior Past President's Report - S. Keene

Video Program Status

Software Tutorial

New Video Program (for 1996)

Noon to 1:00 pm Group Lunch

1:00 pm - 1:30 pm Report on Standards Activities - M. Cushing

1:30 pm - 1:45 pm Report on Chapter Activities - B. Trapp

Report on Sections Congress 96

1:45 pm - 2:00 pm Report PACE Activities - B. Gauger

2:00 pm - 2:45 pm Report EDUCATIONAL Activities - A. Rawers

2:45 pm - 3:00 pm - Report on Transactions Activities - M. Pecht

3:00 pm - 3:30 pm - Report on Technical Activities - D. Doyle

3:30 pm - 4:30 pm - Old Business - All

IRP Foundation D. Erhart

Aries Project D. Hoffman

Dues Structure change B. Bang

Technology 96 T. Coppola

Other

4:30 pm - 4:45 pm - Dallas Chapter Overview Report - All

4:45 pm - 5:00 pm - New Business - All

5:00 pm - Adjourn

Sunday Evening:

Function: ADCOM & GUESTS, AWARDS BANQUET

6:00 pm - 6:30 pm RECEPTION

6:30 pm - 7:30 pm Dinner

7:30 pm - 8:30 pm Technical program by the Dallas Chapter

"The TI Digital Micromirror Device (DMD)"

8:30 pm - 9:00 pm Chapter Awards Presentation

Other AdCom Meetings schedule for the next 12 months:

July 19th and 20th, San Jose, CA. The Friday and Saturday schedule for San Jose could change to Saturday only 12 noon to 9 PM

October 4th and 5th, Boston, MA (2 full days of meetings including Tech Ops meeting)

January 26, 1997 RAMS, Philadelphia, Pennsylvania (Sunday)

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AdCom Meeting Minutes

AdCom Meeting Minutes, 21 January 1996

Thanks for the outstanding attendance at our AdCom meeting. The following is what I recorded during the meeting. This is a draft copy and is being sent to meeting Attendees and others. If only minimal comments, I will correct and send to our Secretary (with the attachments collected at the meeting) for full distribution.

ITEM 1: 9:10 AM - Meeting was called to order, introductions (listing favorite IEEE memory), and an Agenda was agreed too.

ITEM 2: Attendance was taken and the following 12 voting members were present (A minimum of 7 make a quorum):

Arellano, Loretta ljarellano@CCGATE.HAC.COM
Cushing, Michael cushing@arl.army.mil
Doyle, Richard r.doyle@ieee.org
Erhart, Dave wrr30@email.sps.mot.com
Gottfried, Paul
Hoffman, Dennis mimi@magic.itg.ti.com
Keene, Samuel cc000468@interramp.com
Kowalski, Richard dkowalsk@arinc.com
LaSala, Ken klasala@eng.umd.edu
*Phaller, Larry J Phaller.lwec@dialcom.tymnet.com
Rawers, Art artr@iit.com
Regulinski, Thad regulinski@ece.arizona.edu
Roush, Marvin roush@eng.umd.edu

Non Voting Members Present - NONE

Coppola, Tony acoppola@mail.iitri.com
*Evans, Ralph A. rae@cs.duke.edu
Gauger, Bob r.gauger@ieee.org
Hartt, Henry hhartt@vitro.hq.nasa.gov
*Lalli, Vince rlalli@lims02.lerc.nasa.gov
Malec, Hank 406-587-5735 (Voice)
Lane, Chris lanec@lfs.loral.com
Fagan, Tom 703-790-6328
Jaquess, Bob 303-972-9081
Schlantz, Bob 612-733-0390
Knight, Ray RayKni@aol.com
Ushakov, Igor 301-258-0110

Note: * - Members at conference but not in attendance at AdCom meeting.

ITEM 3: Motion was made, seconded and passed to: Accept the previous AdCom Meeting Minutes as they were mailed out.

ITEM 4: Motion was made, seconded and passed to: Approve the Financial Report as presented.

ITEM 5: Ken LaSalla will provide information on ISO 14,000 (Environmental Regulations and Recycling) at our next AdCom in Dallas.

ITEM 6: Motion was made, seconded and passed to: Support a second video tutorial program in the September timeframe. This is a \$20,000 commitment. A subject will be chosen at the next AdCom meeting. Top choices are as follows: 1.) 2nd software reliability, 2.) Probability Risk Assessment, 3.) Network Reliability, 4.) Microcircuit Reliability, and 5.) Telecommunications Reliability.

ITEM 7: Motion was made, seconded and passed that: To accept the CEU Criteria as developed by Thad Regulinski. The administration of the CEUs was referred to a committee of Thad Regulinski, Bud Trapp, Art Rawers, and Dave Erhart. No chairperson was appointed.

ITEM 8: Motion was made, seconded and passed at 3:45 pm that: The meeting be adjourned.

Recorded By,
Dick Doyle

- [PHOTOS from AdCom Meeting and Banquet at RAMS '96](#)

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Request for AdCom Nominations

It is time to consider nominations from the Reliability Society Administrative Committee Members who will serve the Society from 1997 through 1999. There are two ways for a candidate to be placed on the ballot:

1. A nominating petition signed by ten or more Reliability Society Members in good standing (excluding student members),
2. Selection by the Reliability Society's Nominating Committee.

Last year ten candidates were placed on the ballot, which does not distinguish between type 1 and type 2 candidates. Four were nominated by petition and six were placed on the ballot by the nominating committee.

The sponsor of a nominee should secure the candidate's willingness to serve (The AdCom meets four times per year. Expenses for attending the meetings are not borne by the Reliability Society).

A Nominating Petition signed by at least ten members of the Reliability Society (excluding student members) and a biographical sketch should be included in the submittal.

For uniformity, the biographical sketch should be typed (Courier 12) and include four sections:

1. Education: Degrees, Universities, Subjects
2. Work Experience
3. IEEE Experience
4. Other

The biographical sketch should be limited to one side of one 8.5" x 11" sheet of paper. The nominating material: 1) Agreement to serve if elected (signed), 2) Biographical sketch, and 3) Nominating petition, should be sent before June 1, 1996 to:

Dr. W. Thomas Weir
Public Service Electric & Gas Company
Nuclear Business Unit - MC N20
P.O. Box 236
Hancocks Bridge, NJ 08038

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BOOK REVIEW

TITLE: Design for Excellence
AUTHORS: James G. Bralla
PUBLISHER: McGraw-Hill, Inc.
ISBN: 0-07-007-138-1

"Design for Excellence" is a book that was derived from the predominantly manufacturing experience of its author. It expands the knowledge-based Design for Manufacturing (DFM) approach into Design for Excellence (DFX), where "product excellence" includes all important product attributes. The book is intended to compliment an earlier DFM volume by the author.

The heavy orientation of the book toward manufacturing makes manufacturing engineers the principal beneficiaries of its information. For an engineer whose experience has been primarily in manufacturing, the text is an excellent introduction to the many other attributes that determine a product. These other

attributes are discussed in an introductory manner. Most other engineers will find the book rather basic but will find the included DFM information very helpful. The book can be used as an introductory text in Industrial Engineering, Mechanical Engineering, and Engineering Management curricula. It may be used in other engineering curricula where the attention to manufacturing is desired. As a desk-top reference, the book contains useful information on DFM but limited reference material with respect to other topics.

The book is organized into four parts: Background and Basic Concepts, Managing for DFM/DFX, The Dimensions of DFX, and DFX at Work. The first part discusses DFM, the need for DFX, the DFM/DFX approaches, and the basic principles of DFM/DFX. The emphasis appears to be on identifying important guidelines for one to consider. For example, two of the DFM/DFX rules are "Minimize the Number of Parts," and "Fit the Design to the Manufacturing Process." The second part discusses considerations in managing DFX/DFM. Some of the topics in this part are: The Product Realization Process, Concurrent Engineering, Cultural Change, Training and Indoctrination, and Evaluating Design Proposals. Some of the topics in the third part are design guidelines and basic discussions for improving parts and assemblies, designing for quality, reliability, serviceability, maintainability, safety, the environment, user-friendliness, time-to-market. The fourth part includes some success stories and a look at the future which emphasizes the integration with computer-aided design.

The book is well organized and easy to read. It contains many helpful guidelines. However, with the exception of manufacturing, it should not be considered a primary reference for many of the specialty engineering disciplines, such as reliability and maintainability. It is recommended at least for general reading.

Review by Kenneth P. LaSala, Ph.D.

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New International Electrotechnical Commission (IEC) Dependability Standards

by Kenneth P. LaSala, Ph.D.

The IEC TC56 U.S. Technical Advisory Group recently circulated a large group of proposed standards for approval/disapproval by its members. The IEC documents are well-written and informative. However, they are a standardization of existing material, which may be found in other sources. No reason for their disapproval was detected. The circulated standards are described below. ASQC or ANSI should be contacted if copies of the standard are desired.

IEC 1123 Reliability testing, Compliance test plans for success ratio

This standard describes statistical test plans for reliability (probability of success). The test plans are based on the binomial distribution. The standard addresses decision criteria, truncated sequential test plans, and fixed trial/failure terminated test plans

IEC 1070 Compliance test procedures for steady state availability

This standard addresses the conditions for availability testing, data collection, time distributions, compliance test planning, compliance test plans (four in number), and test reports. The four test plans address the following test strategies: fixed number of failures, fixed time longer than 15 mean up times, fixed time less than a certain value, and sequential.

IEC 1078 Analysis techniques for dependability

Reliability block diagram method. This standard addresses system fault definitions and reliability requirements, elementary models, more complex models, and the extension of reliability

block diagram methods to availability calculations.

IEC 300-3-1 Dependability management - Part 3: Application guide.

Section 1: Analysis techniques for dependability; Guide on methodology. This standard addresses a basic approach to system dependability analysis and characteristics of various dependability methods. Methods that are included are FMEA, FMECA, fault tree analysis, reliability block diagram, Markov, parts count, cause/consequence, event simulation, system reduction, event tree, and truth table.

IEC 1165 Application of Markov techniques.

This standard addresses definition and symbols, assumptions, development of Markov diagrams, evaluation of state-transition diagrams, simplifications and approximations, collapsed state-transition diagrams, reliability and availability expressions for system configurations, and the presentation of results.

IEC 1025 Fault tree analysis (FTA).

This standard describes general considerations, principles, and procedures for FTAs.

IEC 1014 Programmes for reliability growth.

This standard addresses basic concepts, management aspects, planning of reliability growth programs, classification of failures, process of reliability improvement, mathematical modelling, and reporting and documentation.

IEC 300-3-2 Dependability management

Part 3: Application guide - Section 2: Collection of dependability data from the field. This standard addresses the objectives of data collection, the sources and method of data collection, the data required, the analysis of collected data, and the presentation of results.

IEC 1164 Reliability growth

Statistical test and estimation methods. This standard focuses on the power law (Duane) growth model, the use of the model in planning reliability improvement programs, and statistical test and estimation procedures.

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Nominations for Division VI Director (1997-1998)

The results of the nominating committee's vote have been reported by Vice President Eisenstein. The chosen three are (in alphabetic order):

- Dick Doyle
- Irv Engelson
- Bob Sullivan

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IEEE Reliability Society Logo Contest

Winning Logo: \$500

Have your design used as the masthead and logo on electronic and hard copy versions of all Reliability Society publications including the Transactions and Newsletter!

Contest Rules:

Your entry should be no wider than 500 pixels, no larger than 50 k bytes, and must reproduce well on a 256 color display. Send entries on a 3.5" diskette (Macintosh or DOS) in GIF or JPEG format, along with your name, address, phone/fax/e-mail, by the deadline date. All members are eligible. All entries are due by

June 1, 1996. Send to:

IEEE Reliability Society
10940 Olinda Street
Sun Valley, CA 91352
Tel: (310)334-4248
ljarellano@ccgate.hac.com

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RS Fellows

The following 4 Reliability Society Members have been honored by IEEE by being elected to the Fellow Grade. These four individuals were so recognized by their extraordinary achievements in their technical field. Each was recognized as follows:

- Mr. Joseph R. Fragola (New York, NY) -- For contributions to the theory and practice of reliability and risk analysis. The nomination was granted through the help of our own Reliability society.
- Mr. Myron F. Wilson (Cedar Rapids, IA) -- For leadership in total quality management techniques. The nomination was granted through the help of our own Reliability society.
- Prof. Max Schaldach (Erlangen, Germany) -- For contributions to the development of biomedical implantable devices. The nomination was granted through the help of the EMB (Engineering in Medicine and Biology) Society.
- Prof. Eldon K. Stanek (Rolla, MO) -- For contributions to electrical safety in mining operations and to engineering education. The nomination was granted through the help of the IA (Industry Applications) Society.

All of these people deserve the very best congratulations that we can offer. They have distinguished themselves among us and are a major benefit to the Reliability Society, IEEE, their companies or universities and to all of the World. I am sure that their past and present work will reflect this contribution for years to come.

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National Information Infrastructure (NII)

"Maintaining an Affordable NII Application Environment"

To maintain an affordable NII application environment requires, at least, competitive network utilization prices, minimal data/information costs, and the understanding of current and projected user requirements.

The costs of using NII capabilities 1) are changing to a fee-for-service mode, 2) will likely increase in the near future for new, expanded, and additional services, 3) are unpredictable at this time, even with the approval of the Telecommunications Act of 1996, and 4) introduce major uncertainties for planning activities and establishing a competitive stance. Data and information, formerly available at no cost from e.g. the government, is now sold, at least, at the incremental cost of preparation for the requestor's query. In addition, user requirements for an NII network and application environment are uncertain. User communities are still learning how best to apply current NII and application capabilities in their activities and have difficulty determining how they will use unknown future services and products for it will change the way they work.

These issues, i.e. NII costs, data costs and user requirements, impact the beneficial NII use by a wide variety of IEEE members, e.g. the research, education and development functions of government, academia, education, and research communities. It influences how we perform research, design and develop

products, and educate our students. Hence, I urge the establishment of a mechanism that will help to define the need, the standards, the tools and the methodology to address these costs and requirement issues. The mechanism created should establish a continuing dialogue among the NII stakeholders, and cause creation and maintenance of the databases, analytical tools and infrastructure for relating user requirements, product/service costs and current and future user services.

There are two major cost areas to consider: 1) Technology costs which enable NII use, e.g. access ramps, local network infrastructure, network accessible data storage, and network resource utilization, and 2) Administrative costs, e.g. monthly costs to maintain an inexpensive route to the NII, costs for proprietary data, and costs for controlling the forwarding of proprietary data. These cost impacts must be assessed, modeled and managed.

Satisfaction of user requirements is more than providing adequate bandwidth, guaranteeing access and assuring no loss of data. It must enable the principle of user productivity enhancements at an affordable cost. Since user needs vary with user community activities, understanding what is required by users now and what will be required in the future is essential to match providers' products and services with user markets in the most efficient mode possible.

For an NII application environment that is affordable, continually benefits users and helps providers compete, the Author recommends creation of an Affordable NII Task Force that will:

1. campaign for an environment in which provider competition in local, national and global marketplaces is sustained,
2. establish a moderated database of user requirements that will capture, at least, known federal project requirements and schedule(s),
3. identify known future federal and non-federal user requirements by community segment, where requirements include, e.g. network bandwidth, file traffic frequency, transmitted file sizes, resource features, and multiple choices of providers,
4. establish an understanding of user requirements in terms of common interests, shared requirements, incompatible needs and recommended technology introduction.
5. identify mechanisms to offset network congestion such as creating commercial data centers dedicated to specific communities which can protect high performance networks from the demands of neophyte users.
6. establish a forum for users and providers to openly dialogue periodically about issues of importance to each community as well as alert both sides of imminent changes to their environments.
7. establish a mentored mechanism for soliciting user requirements and formulating those requirements into meaningful design and development data.

This effort, when completed, could result in a major tool for improving the U.S. competitive stance, sharpening competition among providers and enhancing user capabilities at affordable prices.

Hank Wolf, IRM Associates

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**Reliability Society
NEWSLETTER**

April 1996

AdCom Meeting and Banquet at RAMS '96



Dick Doyle (President) congratulates our new Education Chairman, Art Rawers.



Dr. Sam Keene and his wife Karen after he received the "Outstanding Engineer of the Year" award for his contribution to our society and furthering work in Reliability.



Naomi McAfee (past president) and her husband George.



Dr. David Erhart (VP Membership) briefed the AdCom at the Membership Workshop.



Judy and Dennis Hoffman along with Richard Sackett enjoying the banquet.



Elected members of the AdCom, Dennis Hoffman (VP Meetings), Paul Gottfried (VP Publications), Loretta Arellano (VP Tech Ops),

and Dick Doyle (President), at the awards banquet.

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