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**Reliability Society
NEWSLETTER**

January 1997

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Newsletter Inputs

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

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Newsletter Input Due Dates

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

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President's Report

AdCom Election Results. The election results are in. You, the Reliability Society membership, have elected your Administrative Committee (AdCom) members. They will serve you from 1995 to 1997. This is the first AdCom class to be elected by vote of the entire membership.

- Loretta Arellano
- Richard A. Kowalski
- David A. Baglee
- Dev G. Raheja
- David L. Erhart
- Orlin D. Trapp

Twenty percent of the membership cast their ballots in the election. While this is a smaller percentage than we had hoped for, it is clearly large enough to support our action of enfranchising the membership. Reliability Society Audit The draft report of the IEEE Technical Activities Board (TAB) review of the Reliability Society has arrived (November 2). TAB reviews the 37 IEEE Societies in a five year period and then begins again. The review was generally favorable and is summarized:

A. Mission

The review team found our mission and field of interest to be

well described and current. They also found our positioning in Division VI to be appropriate.

B. Governance

The review team found nothing unusual in this area. They liked our procedure of developing written job descriptions for our officers. Each officer updates the job description and passes it on to his successor. The review team recommended that other societies emulate this procedure. The review team did not like the geographic (no AdCom members in regions seven to nine and ten of the 18 elected AdCom members from region 2) or occupational (14 - industry, three - academia, and one government) of our AdCom. They liked the fact that we have no term limit for our treasurer. Our chapter program was not viewed as a problem however, the review team indicated that there is room for growth.

C. Technical Operations

The review team indicated that we have a very strong technical committee structure with exceptional visibility of the technical committees at the AdCom level.

D. Finances

The review team indicated that the Society's finances are in surprisingly good shape, but cautioned that this could reverse dramatically and quickly. They recommended that we establish long term financial management strategy.

E. Membership

The review team indicated that membership is declining and a potentially serious problem. They recommend that we solicit new members at conferences held by other IEEE societies. They noted that the Reliability Society has a higher number of IEEE Fellows than average and a declining student membership.

F. Meetings

The review team suggested that we consider additional workshops in addition to the major conferences and workshops we currently hold each year.

G. Publications

The review team indicated that our members receive an exceptional publication value for their dues. They particularly like the idea of including the Proceedings from a Society sponsored conference as part of the membership package and recommend that other societies consider doing it. They believe our publication delay is unacceptable - a disservice to authors and members alike. Conclusion "The picture of the Reliability Society that emerged from our review was of a society which is well managed, aware of their problems and (very considerable) opportunities and with a clear picture of what the future will be like in their technical field. However, the review committee feels that there is a serious lack of concrete planning to realize the vision and, in common with much of the IEEE, a lack of the kind of risk-taking dynamic leadership required to make the most of opportunities. With such leadership, reliability, as a discipline, could be positioned as a core capability across the entire spectrum of IEEE activities." Recommendations:

- Define and implement a five year strategic plan
- Formalize a process to achieve a broader geographic and institutional mix of AdCom members
- Become a matrix organization in support of other societies
- Conduct more topical workshops

The audit has been worthwhile. It forced us to take a close look at ourselves. We learned quite a bit from this self examination. We also obtained insight into the activities of other societies, and we have the benefit of the TAB Review Committee comments which represent an outsider's look at our performance. All of this puts in an excellent position to make substantial improvement to an already excellent society next year. We will welcome the help of the entire membership in this effort.

W. Thomas Weir
President, IEEE Reliability Society

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Editor's Column

The exact answer is not always the right answer. We spend innumerable hours calculating MTBFs, reliabilities and probabilities of failure. We use Mil-Hdbks, databases, computer codes, math coprocessors and sometimes even calculators. We use an array of models and mathematical function to hone in on the exact answer. But what do we really know about the answer? What assumptions were made along the way? What errors outside our structured lists are part of the answer? It may be comforting to some, once the calculation is complete, that a single number pops out of the machine. What's really needed is how good is that exact answer. A decision maker should be asking for more than just one number yet many are satisfied with only meeting an arbitrary goal. A financial analyst would not overlook the notes at the end of an annual report, nor a nutritionist overlook the details of product labeling, nor a car buyer the fine print in a lease agreement. In all of these instances, the users of the information are extending their understanding of an "exact" number by including information about underlying sources of uncertainty. In our field there are many ways to present these potential sources of error and variance. It can range from a simple list of ground rules and assumptions to a probabilistic assessment of the range of the variables being estimated. Obviously, how "exact" must fit the need. But, without some fine print to back up a number, the user can be left out in the cold.

Bruce Bream
Editor, Reliability Society Newsletter

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Chapter Activities

Chicago Chapter

There were two joint meetings held by the Chicago chapter and other IEEE society chapters:

- November 1994 - Reliability of Personal Communications Services (PCS) - Speaker: Mr. David Hume of Motorola - Using the next generation of cellular technology is expected to be less costly and to provide higher quality of service with lighter handsets than current cellular systems.
- July 94 - Reliability of Repairable Mechanical Systems - Mr. Hubert Esser of Deere and Co. - Development of highly reliable systems under time pressure.

Hugh Edfors
Chicago Chapter

Cleveland Chapter

The Cleveland Chapter has had 2 meetings during this reporting period. Our October meeting was the 30th Annual High Technology Symposium. We tried to capture the hot topics for this year in our four technical sessions. The poster session was done by the local colleges. The exhibit area had an excellent display of hardware, software, tools, literature and services. The symposium had a full house. Some will be sent a copy of the proceedings.

Our November meeting was a "Current Events at NASA". Donald Campbell, NASA Lewis Research Center (LeRC) Director, took some time out of his busy schedule to bring us up to date on current events at LeRC and to interact with the community. LeRC's number one priority is to develop an engine for the supersonic transport that will be acceptable to the people. Total quality efforts are being implemented. Many other changes are being made. Progress is being made on our Journey to Excellence. A timely, well received topic that was well supported.

We have put together a Local Publicity Committee for RAMS '95. Three tasks are being worked: 1) get the RAMS '95 invitations distributed, 2) invite the local colleges to participate, 3) get the sponsoring societies to present their awards at RAMS. We can use more people on this committee. If you are interested in helping with these tasks, contact Vince Lalli at (216)433-2354.

Several other meetings are being discussed: IEEE Video Conference, Winter Tour and Social. All in all here in Cleveland we are having fun staying active and trying to serve our membership.

*Vincent Lalli
Cleveland Chapter Chair*

Dallas Chapter

The Dallas IEEE Reliability Society has had two outstanding reliability presentations this year at its monthly meetings in September and October. The first presentation was entitled "Focused Ion Beam Milling" and was given by Scott Wills of Beam It Inc. The second presentation was entitled "From Concept to Customer" and was given by Norm Frigon of Quality Associates. The program for the remainder of this year and next year includes topics on 1) Cycles of Learning Key to Reliability Growth, 2) Software Reliability, 3) Atomic Force Microscopy, 4) Total Quality Management, and 5) Reliability Considerations in Sub-Micron Process Development. The wide variety of topics has continued to generate a lot of interest on the part of the attendees and has allowed the society to grow.

*Bill Grimes
Chairman, Dallas IEEE Reliability Society*

Swiss Chapter

During 1994 the Swiss Reliability Chapter organized, in cooperation with the Reliability Laboratory (RL) of the Swiss Federal Institute of Technology (ETH) Zurich, nine Meetings, one International Seminar, and three Courses. The total number of attendees was more than 300. More than half of the speakers came from abroad (three from the US). A highlight was the Int'l. Seminar on Surface Mount Technology (SMT) with Pitch Down to 0.5 mm. Also because of the investigations at the RL in close cooperation with industry since the early 90's, fully developed design and manufacturing rules for producing high quality SMT with pitch 0.5 were presented. As a second focal point, new approaches based on damage cumulation for investigating crack propagation in SMT solder joints were discussed by Werner Engelmaier (USA), Thomas Ahrens (CEM, Germany), and Ludger Weber (RL). Investigations are continuing for pitch 0.3 mm with the aim of finding out suitable models. Some of the

topics discussed in this seminar can be found in the book by A. Birolini "Quality and Reliability of Technical Systems", published by Springer-Verlag 1994.

For 1995, seven Meetings, three Courses, and one Int'l. Seminar (Quality and Reliability Optimization in Fine Pitch SMT) are planned. In the first meeting on January 23, Professor W. Schneeweiss (Fern-Universitat Hagen, Germany) will speak on Fault Trees and their application in reliability. On February 20, Dr. B. Stamenkovic (Ascom, Berne) will speak on the reliability and availability of complex repairable systems. A detailed program of further activities will be given in the April issue of this Newsletter. 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*

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FMEA/FMECA Project

The Society of Automotive Engineers G-11 subcommittee on RMS Standards has recently formed a project to develop a new standard for Failure Mode and Effects Analysis (FMEA) and Failure Mode Effects and Criticality Analysis (FMECA). The new standard will replace Mil-Std-1629A and update commercial standards and practices. This is a pilot project of the Partnership in Standards, a joint professional society initiative to replace current military standards (which are no longer being supported) with commercial standards reflecting current "best practices" and management know-how. Anyone interested in participating in this effort or desiring further information should contact:

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Revision to IEEE Reliability Society Constitution

Changes were made to the Reliability Society Constitution in Article III, Section 1 & 2, which incorporate an updating and clarification of our "field of interest". Most IEEE societies have made similar changes this year. These changes have already been approved by TAB and are being published in the newsletter for review by the membership. These changes take effect after publication unless there is objection by at least 10% of the membership (see Article IX, Section 1).

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Free Proceedings

The Reliability Society has surplus copies of the 1992 and 1994 IRPS Proceedings and of the 1993 and 1994 RAMS Proceedings. Free copies will be sent on request, so long as supplies last, to:

- Reliability Society members
- Instructors in reliability (The society will be happy to supply a copy for every member of a class on reliability.)
- Technical Libraries

Those interested should indicate how many copies are desired and which proceedings are wanted. We have only those listed above.

Send requests to Anthony Coppola, IITRI, 201 Mill St., Rome NY 13340. Tel: (315) 339-7075 (prefer fax or e-mail). Fax: (315) 337-9932. E-mail: acoppola@mail.iitri.com

IEEE Reliability Society Newsletter

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