Reliability Society Newsletter

Editor: Susan Eames
Vol. 30, No. 1, January 1984 (USPS 460-200)

LOOKING FOR

Kam L. Wong would like to buy a copy of the book, "Reliability Engineering for Electronic Systems," by Myers, Wong, and Gordy, published by John Wiley and Sons in 1964. If you have such a book and are interested in selling it, please contact me at:
Hughes Aircraft Company
P. O. Box 902
El Segundo, CA 90245

(213) 616-6305
Thanks a lot!!

Editor's Column

1984 is the Hundredth Anniversary of the IEEE. However, the Reliability Society has its history also. Here are the highlights on how we became the IEEE Reliability Society.

• In 1949 the IRE formed a Professional Group on Quality Control.
• In 1954 the name was changed to the Professional Group on Reliability and Quality Control.
• In 1963 we became the IEEE Professional Group on Reliability.
• In 1964, our name was changed to IEEE Reliability Group.
• In 1978, we became the IEEE Reliability Society, as we are known today.

RS Newsletter Inputs

All RS Newsletter Inputs should be sent to the Editor, Susan Eames, 2 Linda Street, Westborough, MA 01581 per the following schedule:

For January Newsletter: by October 15
For April Newsletter: by January 15
For July Newsletter: by April 15
For October Newsletter: by July 15

If you wish to present papers on Software Reliability, please submit to:
Ron Watts
10440 State Highway 83
Colorado Springs, CO 80908, 303-594-1329

May 24, 1984 - Ball Aerospace will host a half day Technical meeting.

Jim Kaiser

Send Form 3579 to IEEE, 445 Hoes Lane, Piscataway, N.J. 08854
Reliability Society Officers

**President**
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Suite 1111
Arlington, VA 22202

**VP Publications**
T. L. Fagan
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777 14th Street, N.W.
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Washington, DC 20005

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San Jose, CA 95037

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Minneapolis, MN 55440

**Washington/Northern Virginia**
Albert Kelly
1000 Broadview Drive
Annapolis, MD 21401

**Reliability Society Chapter Chairman**

**Junior Member**
George Notter
1627 3rd Street
Oakland, CA 94611

**Reliability Society Newsletter**


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**Chapter Reports**

Shown below are the officers for the '83-'84 FY and our schedule of meetings planned for the '83-'84 term.

**Chairman:**
Thomas L. Bartolomeo
Westinghouse Electric Corp.
ILS Div., Bldg. 21, MS 7374
Hunt Valley, MD 21030

**Vice Chairman:**
Thomas Reid
Westinghouse Electric Corp.
DESC MS 4730
Baltimore, MD 21203

**Secretary/Treasurer:**
Walter Wiling
Westinghouse Electric Corp.
ATD, MS 4556
Baltimore, MD 21203

**October 13, 1983**

**Topic:** VLSI Reliability and Test.

**Speaker:** Warren O'Reilly, Advisory Engineer with Westinghouse Defense Electronics Systems Center.

**December 5, 1983**

**Topic:** Implementation of Computer Reliability from the Japanese Viewpoint.

**Speaker:** Naomi McAfee, Manager, Design Assurance and Operations at the Westinghouse Defense Electronics Systems Center.

**February 28, 1984**

**Topic:** Chin River Breeder Reactor Program—Reliability Considerations.

**Speaker:** William Reese, Engineering Branch of Chin River Breeder Reactor Program.

**April 17, 1984**

**Topic:** Moisture Measurement and Effects on Circuit Reliability.

**Speaker:** Bernhard A. Bang, Fellow Engineer with the Westinghouse Advanced Technology Division.

**Chicag0**

The IEEE Reliability Society of Chicago presented a tutorial on the content and application of Military Handbook—217D, Reliability Prediction of Electronic Equipment. The meeting took place with full attendance on Saturday, October 15, 1983, from 8:30 a.m. to 3:00 p.m. It was held at the Community Center, 625 Busse Highway, Park Ridge, IL.

The Executive Committee members of Chicago’s Reliability Society were the instructors, namely: Hugh Edfors, Ray Schirmer, Warren Fox, Don Kopp, Rod Garcia and Arun Hindwall. The tutorial focused on introduction of Reliability Principles and Reliability Stress Analysis Methods for integrated circuits, discrete semiconductors, resistor and capacitor models. Also, other specifications, standards and data banks were discussed as they relate to the overall reliability prediction methodology. All the attendees highly praised the tutorial which concluded with a summary and a question/answer period.

The next chapter meeting was held on November 15, 1983, 5:30 p.m., at the Holiday Inn in Oak Brook, IL. Our guest speaker, Mr. Larry O'Neill, a Static Analyst of JM presented a seminar entitled “Electrostatic Discharge Awareness.” Presentations of device susceptibility, recommended practices, and other related information including demonstrations, were given.

**Arun K. Hindwall**

**Denver**

The Denver Chapter of the IEEE Reliability Society began its 1983-84 year with a dinner meeting featuring Naomi J. McAfee, the President of the National Administration Committee for IEEE Reliability. Naomi spoke of the future of reliability engineering in the fields of software accuracy and software security.

An awards ceremony was held during which Sam Keene received an award for his exceptional efforts in founding our Chapter and making it a continuing success. John Adams also presented the Chapter with the Chapter of the Year Award he received last summer from the IEEE Reliability Society.

Finally, a business meeting was held to discuss and formulate our 1983-84 meeting schedule and topics. The results follow:

**November 17, 1973** - Dale Vander Linden of Ball Aerospace talked on “Effective Preventive Measures.”

**January 19, 1984** - Joint meeting with IEEE Aerospace Chapter—Subject to be announced.

**February 17, 1984** - Dr. Randal Fleming of Systems Control Technology will talk on “Specification of Fault—Tolerant System Design.”

**March 13, 1984** - Joint meeting with ASQG Reliability Chapter—Subject to be announced.

**January 1984**
April 27, 1984 - Annual Ford-Aerospace Software Reliability Seminar.

Cleveland
The Cleveland Chapter planned 5 meetings for the coming service year:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>10/4</td>
<td>CECON '83 Radioaspect Program</td>
<td>Conference</td>
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<tr>
<td>11/17-18</td>
<td>Radiographic Inspection Lunch Meeting</td>
<td>Social</td>
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<tr>
<td>02/16-18</td>
<td>Dinner/Dance</td>
<td>Diner Meeting</td>
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<tr>
<td>03/24/84</td>
<td>Computer Data Acquisition</td>
<td>Poster</td>
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<tr>
<td>04/19/84</td>
<td>Manned Space Program Joint CES</td>
<td>A. L. Kelley</td>
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<tr>
<td>05/17/84</td>
<td>Student Papers</td>
<td>Chairman</td>
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CECON '83 had 20 technical papers, 7 workshops and 20 exhibitors. Attendance was down on Tuesday but improved considerably on Wednesday. The Conference Record caused some excitement but worked out okay. All in all it was a nice service for our membership in the Cleveland area.

We are making some progress on the Home Study Course. The draft copy was mailed to 16 AECOM members for constructive review and comments within 30 days. We may get permission to go ahead with the mats by 1/1/84. One member called and asked to be signed up for the course the next time it is offered. We will not offer the course again until the Home Study Text has been completed—hopefully by 9/1/84.

Vince Lalli,
Chairman

Los Angeles Council
A seminar on "Test, Repair and Fault Diagnosis of Computer Systems" will be held March 3, 1984 at the TRW Forum, Space Park, El Segundo, CA (L.A. airport area). Authorities in the areas of failure analysis, ATE, BIT/Diagnostic programming and repair will present papers. For information, contact Sam Lehr, P. O. Box 1285, Pacific Palisades, CA 90272. Telephone: 213-335-2905. This seminar is jointly sponsored by the Los Angeles area IEEE Reliability and Computer Societies.

Cesar F. Chavez

Washington DC/Northern Virginia
The current Chapter officers of the Washington DC/Northern Virginia Chapter are as follows:

Chairman: A. L. Kelley
Vitro Corporation
4832 Ten Oaks Rd.
Dayton, OH 45430

Executive Vice Chairman: Ruth G. Smith
4832 Ten Oaks Rd.
Dayton, MD 21036

Program Vice Chairman: W. L. (Larry) Shapleigh
3723 Randolph St.
Fairfax, VA 22030

Secretary: Dr. Robert E. Waterman
Vitro Corporation
1300 Georgia Ave.
Silver Spring, MD 20910

A. L. Kelley
Chairman

Color TV Technology Featured
In New IEEE Press Volume

The publication of Color Television, a Book of Selected Reprints, has been announced by the IEEE PRESS. This volume, sponsored by the IEEE Consumer Electronics Society, was edited by Ted Rzezewske of Bell Laboratories, with the assistance of Anthony Troiano of the RCA David Sarnoff Research Center.

Over the past decade, color television signal processing has rapidly become more sophisticated with the introduction of new developments in tuning systems, IF and composite video detection, and post-detection processing. This reprint book is designed to provide a state-of-the-art survey of these important advances, approaching the subject from a television receiver perspective.

First, introductory material on the theory of color television is presented to give the reader the background necessary to appreciate the more receiver-oriented parts which follow. The 35 papers reprinted in this volume are organized into four parts, as follows: Background, Tuning, IF and Composite Video Detection, Post-Detection Processing.

The papers discuss important trends in signal processing, including the development of remote control, use of synchronous detection of the composite video, and progress in integrated circuit technology. After each part there is a bibliography which provides a rich source of additional information. Color Television is priced at $44.95. IEEE members may buy this book for $26.95, a 40% discount. This 400-page volume may be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854.

Reliability Society Newsletter

1984 Conference and Course Calendar

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<thead>
<tr>
<th>Date</th>
<th>Conference or Course</th>
<th>Location</th>
<th>More Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 23-25</td>
<td>OFC '84</td>
<td>Hyatt Regency</td>
<td>Optical Society of America (202) 223-6130</td>
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<td></td>
<td>New Orleans, LA</td>
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<tr>
<td>Jan. 24-26</td>
<td>1984 Reliability &amp; Maintainability Symposium</td>
<td>St. Francis Hotel</td>
<td>408-256-1242</td>
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<td></td>
<td>San Francisco, CA</td>
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<tr>
<td>Mar. 19-21</td>
<td>Phoenix Conference on Computers and Communications</td>
<td>Phoenix, AZ</td>
<td>Susan C. Brewer Honeywell, LCPO, MS-222 (408) 464-2788</td>
</tr>
<tr>
<td>Apr. 3-5</td>
<td>1984 International Reliability Physics Symposium</td>
<td>Canusa's Palace</td>
<td>George Ebel (203) 784-6556</td>
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<td></td>
<td>11th Inter-AM</td>
<td>Las Vegas, NV</td>
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<tr>
<td>Apr. 4-6</td>
<td>1984 International Reliability Physics Symposium</td>
<td>Riviera Hotel &amp; Conv. Center</td>
<td>Mr. D. Rabeja Technology Magna, Inc. (501) 789-8963</td>
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<tr>
<td></td>
<td>11th Inter-AM</td>
<td>Las Vegas, NV</td>
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<tr>
<td>Apr. 18-20</td>
<td>Spring '84</td>
<td>Monterey Conf. Ctr.</td>
<td>Optical Society of America (202) 223-6130</td>
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<td>Monterey, CA</td>
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<tr>
<td>Apr. 24-26</td>
<td>Seventh Topical Meeting on Integrated and Guided Wave Optics</td>
<td>Orlando Hyatt Hotel New Orleans, LA (504) 521-1616</td>
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<tr>
<td>Apr. 24-26</td>
<td>1984 IEEE National Symposium on Electromagnetic Compatibility</td>
<td>Hyatt Regency Hotel</td>
<td>William McGinnis (512) 544-5151</td>
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<td>20th Annual Spring</td>
<td>San Antonio, TX</td>
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<td></td>
<td>Reliability Seminar</td>
<td>Boston, MA</td>
<td>Gene Bridges (617) 763-530 X2286</td>
</tr>
<tr>
<td>May 7-10</td>
<td>1984 IEEE International Symposium on Circuits and Systems</td>
<td>Queen Elizabeth Hotel</td>
<td>Dr. R. Schumann (512) 527-9443</td>
</tr>
<tr>
<td>May 14-16</td>
<td>34th Electronic Components Conference</td>
<td>Hyatt Regency Hotel</td>
<td>Leo Feinstein Sprague Electric Co. (415) 773-2263</td>
</tr>
<tr>
<td>May 21-23</td>
<td>Custom IC Conference</td>
<td>Rochester, NY</td>
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<tr>
<td>May/June 1</td>
<td>1984 IEEE MMTC-9 International Microwave Symposium</td>
<td>San Francisco, CA</td>
<td>Dr. Sivas Chambers (510) 883-1213 X3331</td>
</tr>
<tr>
<td>Jun. 18-21</td>
<td>IQEC</td>
<td>Annapolis, MD</td>
<td>Donald Chambers (410) 857-2938</td>
</tr>
<tr>
<td>Jun. 18-24</td>
<td>Fifteenth Power Electronics Specialists Conference</td>
<td>Gaithersburg, MD</td>
<td>Opt. Soc. of America (202) 223-6130</td>
</tr>
<tr>
<td>Jun. 19-22</td>
<td>CLEO '84</td>
<td>Annapolis, MD</td>
<td>Opt. Soc. of America (202) 223-6130</td>
</tr>
<tr>
<td>Oct. 22-24</td>
<td>1984 International Symposium on Noise and Clutter Rejection in Radars and Imaging Sensors</td>
<td>Tokyo, Japan</td>
<td>Prof. Hisanori Ogura (075) 791-3211 X620</td>
</tr>
</tbody>
</table>

January 1984
NSF should develop a plan to expand its role in the engineering sciences and to initiate, in parallel, a study of the full scope and status of engineering research.

2) Computational capabilities. NSF should promote computer use in all phases of engineering education and research; should study availability of software and hardware; should establish standards for computers; and should provide computer engineering and other areas fundamental to computer design and implementation.

3) Engineering processes, materials processing, and manufacturing. The engineering design and analysis, materials processing, risk analysis, manufacturing engineering, testing, and quality control have not had an academic focus adequate to provide leading-edge concepts and trained engineers to anticipate the nation's future engineering needs . . .

4) NSF was asked to take a renewed interest in upgrading the national activities of the Faculty and Research Facilities.

"The Foundation should not support the 'clinical' practice of engineering; the development of specific products and solutions of commercial problems should be left to the private sector," the NSF statement said. "However, the linkage between the applications of engineering principles in industry and the teaching of engineering schools should be close and mutually supportive. NSF policies should encourage this linkage."

The board report also had some recommendations for activity not supported by the engineering communities.

USAB's Patent Task Force has told a Senate Subcommittee that legislative efforts to prevent chip piracy are laudable but there are technical pitfalls in the bills now before Congress. The Senate bill under study is S. 1201, sponsored by Sens. Mac Mathias (R., Md.) and Gary Hart (D., Colo.). Both Francis and Mathias contend that the problem of chip protection "is real" and that "present law is insufficient to deal with the problem." He offered the subcommittee the talents of the Patent Task Force in trying to get a better handle on the problem—talents that include two dozen professionals drawn from the technical arts, business, and the field of intellectual property law. "Legislation is clearly needed," Francis concluded, "and it should have a strong basis in legal theory. Of greatest importance, it should protect the innovative ability of industry that the bill does not contain the question of the approach," Francis continued.

Tough Job to Draft Right Law for Computer Chip Protection

"Toughly speaking, the difficulty of drafting copyright law to computer protection follows:

Copyright law applies to some aspects of this problem but not to others. Generic expressions are not protected, and manufacturers could not protect generic portions of chip layouts using copyright registration. To the extent that this allows original design to flourish unhampered by unavoidable similarities, it is a virtual virtue of copyright. To the extent that it allows outright appropriation of mask design, as commonly practiced in semiconductor piracy, it represents a significant failure of protection. Is it copyright law that has failed, rather, it is the fit of copyright law to semiconductors.

At the Senate hearings, a Federal appeals court in Philadelphia ruled that all computer programs can be copyrighted, even if they are an integral part of the com-
the computer’s circuitry. In a decision handed down September 2, the three-judge court ruled unanimously in favor of Apple Computer. The court rejected the contention of the defendant, Franklin Computer Corp., that an unfair program encoded in computer hardware is part of the machine and not a literary work covered by copyright law.

"It is not hard to agree with the court’s decision, a Washington Post editorial (Sept. 6) said; “If it is important to provide an economic incentive for innovators to produce even more capable software, there is no reason to discriminate against types of software on the basis of where they make their permanent homes.” However, the editorial observed that lawyers and judges will be busy for years to come in puzzling out “whether a particular computer program embodied in a machine is an original form of expression or a legitimate variation or enhancement.”

Principal authors of the testimony presented to Sen. Mathias’s subcommittee are Olin Laney of the West Coast Patent Subcommittee of USAB, and Richard Stern and Peter Rony of the IEEE Computer Society.

**Portable Pension Legislation to Be Introduced Soon**

IEEE won a stunning victory in 1981 when Congress passed a law allowing engineers and other “mobile” employees to invest in IRA despite being covered by employer pension plans. IEEE has been involved for ten years or so in pressing for this reform—the Limited Employee Retirement Account legislation. Now, however, some legislators see the possibility of passage of a true portable pension law.

Current discussions on pension reform are focused on three fundamental problems in the present system. First, most workers covered by pension plans must work ten years for the same employer just to qualify for a pension. Second, those who qualify often find that their pension is worth far less than they expected because the law allows plans to take social security payments into account in calculating private pension benefits. Third, the system makes it difficult to transfer credits from one plan to another—from one employer to another. The engineer, of course, is affected.

These three basic problems—vesting, integration, and portability—will be addressed in legislation expected to be introduced soon by Sen. Ted Kennedy and Rep. Geraldine Ferraro.

Under drafts being considered, employees would be able to vest in a pension after five years of service. According to the Bureau of Labor Statistics, 88% of full-time employees in large and medium-size firms are covered by plans with ten-year vesting rules. Fewer than one of five women and one of three men have been in their current jobs that long.
Highlights from the September 23, 1983 AdCom Meeting

1. **Vice President—Membership: Maurice Shumaker**
   - Membership as of August 31, 1983 stands at 3842 for the Reliability Society.
   - The new Ottawa Chapter (Canada) headed by Dr. Ed So is now in operation. They will be granted a charter as soon as all Chapter Officers become fully paid Reliability Society members.
   - The slightly updated Reliability Society brochures have been printed. A supply will be provided to each Society Chapter as soon as they are returned from the printers.
   - The Chapter Awards Program for 1982-1983 was rescheduled to coincide with the AdCom meetings. The response from the chapters was good this year, 9 out of 16 responded with completed questionnaires. The chapters which responded were:
     - Denver
     - Central New England
     - Washington/Northern Virginia
     - Los Angeles
     - Montreal
     - Santa Clara Valley/San Francisco/Oakland-East Bay
     - Cleveland
     - Chicago
     - Baltimore
   The goals for the next award year are:
   1. Increase the chapter participation.
   2. Expand the committee membership.
   3. Review the rules to determine if any refinements are needed.
   4. Publish a summary of the chapter awards history. For the 1983-1984 year, it is anticipated that the awards schedule will remain the same as this year’s.

2. **Vice President—Technical Operations: Irwin Feigenbaum**
   - Human Performance Reliability: Arthur Siegel. Correspondence has been initiated to ensure that human performance reliability is adequately represented in the new edition of “The Handbook of Reliability Engineering and Management” to be edited by W. Ireson and C. Coombs, Jr., and to be published by the McGraw-Hill Book Company. This is being done to attempt to extend the current human engineering oriented coverage to include a greater emphasis on human performance reliability. Currently, it appears that the proposal will be accepted by the editors. If it is accepted, a suitable chapter will be produced, authored by A. Siegel and K. LaSala.
   - Standards and Definitions: Gus Constantinides. The following documents have been reviewed in 1983 by the committee:
   - Nuclear Systems Reliability and Safety: Jerry Fussell. Plans are being formulated to establish a working group whose charge will be to produce a document describing methods for performing dependent failure analysis as a part of nuclear power plant probabilistic risk assessments. The dependent failure analysis document will describe concepts of systems interactions analysis and common cause failure analyses that integrate these analyses in a manner that makes dependent failure analysis of probabilistic risk assessment accident sequences a tractable problem.
   - International Reliability: Marion Smith. In a recent development the Swedish National Committee has agreed to undertake the sponsorship of the secretariat for IEC TC#56. This should provide good continuing international support needed for the operation of this international activity. The sponsorship of the secretariat had remained open since the U.S. relinquished this position at the beginning of 1983.
   - Energy: Henry Wolf. A proposal to form a subcommittee on Energy Technologies Assessment was accepted by the Energy Committee with H. Wolf appointed as chairman. This subcommittee is being organized, its scope defined, and a position statement being drafted. Volunteers from the Reliability Society interested in participating in these efforts are urged to contact the chairman.
   - Mechanical Reliability: Henry Hegner. The primary objective of the IEEE Mechanical Reliability Committee for 1983 was to aid communications between those involved with the reduction of mechanical failures through Mechanisms of Failure; Detection, Diagnosis and Prognosis; Materials Durability Evaluation; and Design. The symposiums held during 1983 made progress toward this objective by means of symposiums in the areas of material durability evaluation and design. There were two symposiums held during 1983 and a Spring Symposium is scheduled for 1984.