IEEE

Reliability Society Newsletter

Editors: Gary Kushner and Mark Snyder
Vol. 33, No. 4, October 1987 (USPS 460-200)

Chapter News

Chicago Chapter

1987–1988 Chapter Officers

The election of officers and executive committee members for the Chicago Chapter of the IEEE Reliability Society was held on May 21, 1987 at the Annual Awards Banquet and Election of Officers. The meeting was at the Midway Motor Lodge, Elk Grove Village, Illinois.

		Area Code (312)
Chairman	Michael I.O. Ero	Bus: 979-1712
Past Chairman	Paul E. Evans	Bus: 673-8300
Vice-Chairman	Daniel J. Glab	Bus: 291-2758
Secretary	Warren R. Foxwell	Bus: 953-1300 X280
Treasurer	Hugh C. Edfors	Bus: 369-8038
Program Chairman	Paul E. Evans	Bus: 673-8300
Membership Chairman	James C. Klouda	Bus: 495-9770
Public Relations Chairman	Rod J. Garcia	Bus: 259-0740 X308

CONGRATULATIONS! and best wishes for the coming year.

The Chicago Chapter is planning an ambitious program for the year. Volunteers are needed. Your assistance will ensure its success. Contact any officer for further information.

Central New England Council

The New England Chapter IEEE Reliability Chapter started its year in August with an Executive Committee Meeting during which the upcoming years calendar of activities was discussed. It looks like it will be a busy year with our schedule of Monthly Meetings, Fall Lecture Series, and Spring Seminar.

We welcome two new members of the Committee: Joe Bradely from Dynamics Research, and Don Markuson from Prime Computer. The organization is continually looking for "New Blood" from diverse companies and we welcome interested professionals to become active in the organization.

Our first Monthly Meeting was held on Sept 16, 1987 at the Hanscom AFB Officers Club. The speaker was Mr. John Muretore from GTE Sylvania who gave an excellent talk on MBI implications to Reliability and Logistics. A capacity audience asked a number of interesting questions.

The Chapter's Fall lecture Series started in October. The Lecturer is Mr. Gene Carrubba, Director of Reliability, for Codex Corporation in Canton, MA. The topic this year is Product Assurance Principles. The series of four Lectures is being attended by fifty five engineers.

RS Newsletter Inputs

All RS Newsletter inputs should be sent to one of the associate editors, **Gary Kushner,** 499 Brigham St., Marlboro, MA 01752, or **Mark Snyder,** Digital Equipment Corporation, 24 Porter Road (LJ01/C2), Littleton, MA 01460, per the following schedule:

For October Newsletter:	by July 15
For January Newsletter:	by Oct. 15
For April Newsletter:	by Jan. 15
For July Newsletter:	by Apr. 15

Associate Editors: Gary Kushner
499 Brigham St.
Marlboro, MA 01752

Mark Snyder
Digital Equipment Corporation
24 Porter Road (LJ01/C2)
Littleton, MA 01460

Reliability Society Officers

PRESIDENT
T. L. Fagan
Gould, Inc.
Defense Systems Business Section
Suite 900
1755 Jefferson Davis Highway
Arlington, VA 22202

JR. PAST PRESIDENT
Alan O. Plait
ManTech Support Technology, Inc.
2320 Mill Road
Alexandria, VA 22314

VP MEMBERSHIP
S. Keene
IBM
Dept. 521
Bldg. 025-1
P.O. Box 1900
Boulder, CO 80320

VP MEETINGS
A. Constantinides
AC Sciences Ltd.
11525 Chapel Road
Clifton, VA 22024

VP TECH OPERATIONS
B. A. Bang
Westinghouse Electric Corp.
P. O. Box 1521
MS-3856
Baltimore, MD 21203

VP PUBLICATIONS
A. Coppola
Rome Air Dev. Ctr.
RADC/RBET
Griffiss AFB, NY 13441

SECRETARY
A. L. Tamburino
RADC/RBRP
Griffiss AFB, NY 13441

TREASURER
W. T. Weir
Evaluation Associates, Inc.
GSB Building
1 Belmont Avenue
Bala Cynwyd, PA 19004

IEEE Reliability Society Newsletter is published by the Reliability Society of the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 345 East 47th Street, New York, NY 10017-2394. Sent automatically and without additional cost to each member of the Reliability Society. Printed in U.S.A. Second class postage paid at New York, NY and at additional mailing offices. **Postmaster:** Send changes to *IEEE Reliability Society Newsletter,* IEEE 445 Hoes Lane, P. O. Box 1331, Piscataway, NJ 08854-1331.

Reliability Society Chapter Chairmen

CHAIRMAN, CHAPTER ACTIVITIES
Bernhard A. Bang
Westinghouse Electric Corp.
P.O. Box 1521
MS 3856
Baltimore, MD 21203

BALTIMORE
Neil Hall
113 Newburg Ave.
Catonsville, MD 21228

CENTRAL NEW ENGLAND COUNCIL
A. G. Bajakian
Raytheon Sudbury
Box 210
528 Boston Post Rd.
Sudbury, MA 10776

CHICAGO
Paul Evans
Northrop Defense Systems Div.
500 Hicks Road
Rolling Meadows, IL 60008

CLEVELAND
V. R. Lalli
21000 Brookpark Rd.
MS 500 211
Cleveland, OH 44135

DENVER
Samuel Keene
IBM
Dept. 515/Bldg. 025-1
P.O. Box 1900
Boulder, CO 80320

FLORIDA WEST COAST
James N. Rutledge
E-Systems
P.O. Box 12248, MS-19
1501 72nd St. North
St. Petersburg, FL 33733-2248

LOS ANGELES COUNCIL
Donald Segal
650 Jacob Way
Pacific Palisades, CA 90272

MOHAWK VALLEY
Jack Bart
RADC/Att. RB
Griffiss AFB, NY 13441-5700

MONTREAL
Mr. Francis Dupuis
Hydro Quebec
75 West Dorchester, #801-S
Montreal, Quebec
Canada H2Z 1A4

ONTARIO
Rejean Arseneau
Nat'l Res. Council of Canada
Division of Electrical Engineering
Montreal Rd., Bldg. M-50
Ottawa, Ontario
Canada K1A 0R8

NEW YORK/LONG ISLAND
Esam Khadr
Public Service Electric & Gas
MS-T14 A
80 Park Plaza
P.O. Box 570
Newark, NJ 07101

NORTHERN NEW JERSEY
Raymond W. Sears Jr.
13 Garabrandt St.
Mendham, NJ 07945

PHILADELPHIA
Fulvio E. Oliveto
920 Snyder Ave.
Philadelphia, PA 19148

SANTA CLARA VALLEY/SAN FRANCISCO/OAKLAND/EAST BAY
David Burgess
Hewlett-Packard Co.
1681 Page Mill Rd.
Bldg. 28B
Palo Alto, CA 94304

TOKYO
Prof. Mas. Sasaki
Dept. of Electrical Engineering
The National Defense Academy
Yokosuka 239
Japan

TRI CITIES
Alan O. Backus
1141 Oakleaf Dr.
Kingsport, TN 37663

WASHINGTON/NORTHERN VIRGINIA
Larry Shapleigh
Code 004
Naval Sea Systems Command
Washington, DC 20363

IEEE Symposium on Nuclear Power Systems

San Francisco, California - October 21-23, 1987

The Institute of Electrical and Electronics Engineers is holding the Symposium on Nuclear Power Systems in conjunction with the Nuclear Science Symposium at the Sheraton-Palace Hotel in San Francisco on October 21-23, 1987. The general scope is timely engineering concerns related to the modernization and present activity within electrical, control and instrumentation systems at nuclear generating stations. This Symposium program is probably the largest and most pertinent to nuclear plant operations in today's environment.

There will be a complete and special session on major reactor safety issues covering source term, risk assessment, human cognitive reliability and related papers and it is organized by the Electric Power Research Institute. The Symposium will also emphasize operations-maintenance with papers covering configuration management, safety parameter display systems, expert systems, and related subjects, all of which are of current major interest.

Also of particular importance is a session that will present a complete update of nuclear standards work in progress by a special panel from the Nuclear Power Engineering Committee of the Power Engineering Society. The panel will also discuss more generic issues including plant life extensions, recent computer applications and software, station blackout resolution, and more.

Registration also permits access to all activities of the Nuclear Science Symposium, the technical exhibits of nuclear instrumentation equipment and also provides an invaluable opportunity to associate informally with the R&D oriented group working on advanced projects that will be in attendance at the Symposium.

The General Chairman may be reached for more details or a request to be placed on the mailing list for advance programs to be distributed in the late summer:

J. Forster
Quadrex Corporation
1700 Dell Avenue
Campbell, CA 95008

Telephone: (408) 370-4202
(408) 268-2320

Conference Calendar

DATE	CONFERENCE	PLACE	CONTACT
1987			
Oct. 5-7	8th SRE-Symposium	Helsingor, Denmark	Kurt E. Petersen RISO National Laboratory DK-4000 Roskilde 02 37 12 12 ext. 5533
Oct. 6-7	Product Assurance Forum '87	Dover, NJ	Sid Markowitz Registration Chairman U.S. Army Picatinny Arsenal Bldg. 62 Dover, NJ 07801-5001 (202) 724-2378
Oct. 13-16	IV International Conference on Reliability and Exploitation of Computer Systems Relcomex '87	Wroctaw, Poland	Prof. Wojciech Zamojski Relcomex '87 Wroctaw Technical University Institute of Engineering Cybernetics Janiszewskiego Str 11/17 50-372 Wroctaw, Poland Tel. 21-26-77/
Oct. 19-21	International Symposium on Physical and Failure Analysis of Integrated Circuits	Singapore	Daniel S. H. Chan Electrical Engineering Dept. National University of Singapore Kent Ridge, Singapore 0511 Republic of Singapore Telex: RS33943 UNISPO
Oct. 21-23	IEEE Symposium on Nuclear Power Systems	San Francisco, CA	J. Forster Quadrex Corporation 1700 Dell Avenue Campbell, CA 95008 (408) 370-4202
Nov. 3-5	AUTOTESTCON '87	San Francisco, CA	Mr. Ted Parker, Chairman AUTOTESTCON Power-One Switching Products 833 Flynn Road Camarillo, CA 93010-8702 (805) 482-0757
1988			
Jan. 26-28	Annual Reliability and Maintainability Symposium	Los Angeles, CA	Al Plait Mantech Support Technology, Inc. 2320 Mill Road Alexandria, VA 22314
Mar. 7-9	National Conference and Workshop on Reliability Growth	Cambridge, MA	Dr. Larry Crow Technical Program Chr. AT&T Bell Laboratories Whippany Road Whippany, NJ 07981 (201) 386-4682
Apr. 12-14	1988 International Reliability Physics Symposium	Monterey, CA	H. C. Jones Westinghouse Corp. Baltimore, MD (301) 765-7387
Jun. 14-17	INTER-RAM	Portland, OR	John Sporysz-EMQ-2 Quality Assurance/Reliability Bonneville Power Admin. P.O. Box 3621 Portland, OR. 97208

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

INCORPORATED

1988 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

April 12-14, 1988 • Hyatt Regency • Monterey, California

CALL FOR PAPERS

The 26th Annual Symposium, co-sponsored by the IEEE Reliability and Electron Devices Societies, has as its major theme building-in and validating reliability for present and developing VLSI technologies.

YOUR PAPERS ARE SOLICITED on the following subjects:

- Relationship Between System and Device Reliability
- Building-In Reliability: Design and Process Control for Si and GaAs
  - Designing circuits, multi-chip assemblies, and subsystems
  - Materials selection and control
  - Process design and control; computer-integrated manufacturing
  - Packaging (bonding, die attachment, coating, encapsulation)
- Analysis for Reliability
  - Failure analysis techniques (new, advanced, simplified)
  - Failure mechanisms and models, for example:
    - electrostatic discharge
    - hot electrons
    - electromigration
    - oxide breakdown
    - contact degradation and corrosion
    - surface mount
    - packages
    - mechanical and thermal stress
- Test Methodologies
  - Wafer-level
  - Accelerated stress
  - Test combinations
  - Screening
  - Correlations with field results
  - Burn-in

NEW SYMPOSIUM FEATURES

- Starting with the 1988 Symposium, the Proceedings will be available at the beginning of the conference. To allow for a smooth transition in 1988, a preliminary edition of the Proceedings will be distributed at the Symposium; it will include all papers submitted by February 29 and summaries of the remaining papers. The final edition of the Proceedings, which includes all the papers presented, will be mailed to attendees after the Symposium.
- The symposium papers will be submitted for publication review and , if accepted, will appear in a new and special Reliability Section of the IEEE Transactions on Electron Devices.
- A panel discussion will be held to define and to understand the perceived gap between the "top-down" reliability of systems and the "bottom-up" reliability of devices, and to recommend actions that will ensure built-in reliability of the system.
- Hands-on, one-on-one, analytical equipment demonstrations.

CONTINUING FEATURES

Plenary sessions, tutorials, workshops, authors corners and attendees lounge for discussions, and awards presentation.

PAPER SUBMISSION DEADLINE: OCTOBER 9, 1987

Submit a one-page, 50-word abstract and a two-page, single-spaced camera-ready summary of your previously unpublished work suitable for a 20-minute presentation. The submission must state clearly: (1) the purpose of the work, (2) why it is important, and (3) the specific results of the investigation.

The two-page summary may contain figures but no photographs. Include title of the paper, name and affiliation of author(s), complete return address, and telephone number at the top of the abstract and the first summary page. Also, include name and affiliation of authors on the top of the second summary page. Use 8-1/2 by 11 inch paper.

Submissions may be used for publicity purposes and portions may be quoted in magazine articles publicizing the Symposium. Please contact the Publicity Chairman, Harry A. Schafft (tel. (301) 975-2234; Telex No. 197674 NBSUT), if this is not acceptable.

Mail abstract and summary to:

Walter H. Schroen, Technical Program Chairman
1988 International Reliability Physics Symposium
Texas Instruments Incorporated
P.O. Box 655012, MS/3613
Dallas, Texas 75265
Tel. (214) 995-3183

LATE PAPERS: A limited number of late papers reflecting important, last-minute developments will be considered on a space-available basis. Deadline for these submissions is March 7, 1988.

SUBMISSION OF SLIDES AND MANUSCRIPTS:

Authors of accepted papers will be required to submit their slides and a draft manuscript for review to insure quality before February 29, 1988.

Final camera-ready manuscripts must be submitted by February 29, 1988, in order that they be included in the Proceedings available at the Symposium. Those authors who do not submit their manuscripts by February 29 will have their summary appear instead and the consideration of their papers for publication in the special Reliability Section of the IEEE Transactions on Electron Devices will be delayed.

For general conference information contact:

Robert W. Thomas
General Chairman
RADC/RBRE
Griffiss AFB NY
13441-5700
U.S.A.
Tel. 315 330-3730

Asia
Dr. Eiji Takeda
Publicity Committee
Hitachi Ltd.
P.O. Box 2
Kokubunji, Tokyo 185
Japan
Tel. 0423-23-1111

Europe
Dr. Wolfgang Gerling
Publicity Committee
Siemens AG
Balanstr, 73
D-8000 Munich 80
Federal Republic of Germany
Tel. 089 4144-2825

What's Happening?
A Review of Assurance Developments for the Future

With all the activities in the Assurance Technologies in recent times, a look at where the community stands and where it is headed, is in order. The commercial world of communications, power, computer graphics, and others is aware of clients who do not stand still for field failures or call backs. The military (and government, in general) has been aware of such problems and has developed a variety of initiatives (such as R&M 2000) to help solve them. We still need Assurance and especially its basics designed into products up front. So, what's happening "out there?"

1988 ANNUAL RELIABILITY AND MAINTAINABILITY SYMPOSIUM

to be held at the

BILTMORE HOTEL **LOS ANGELES, CA USA** **1988 JANUARY 26-28**

TECHNOLOGY

- CAD/CAM/CAT/CALS
- Robotics
- Design to Life Cycle Cost
- Design for Supportability
- Modeling/Simulation/Methods
- Software R&M
- Test/Demonstration
- Reliability Growth
- Screening
- Failure Analysis
- Built In Test
- Hazard Analysis
- Fault Trees
- Self Repair
- Error Correction Code

MANAGEMENT

- System Effectiveness
- CAD/CAM/CAT/CALS
- Robotics
- R&M Contracting & Management
- R&M Requirements
- Risk Management
- Data Base Management
- R&M Cost Benefit Tradeoffs
- Design to Life Cycle Cost
- Testing Effectiveness
- Warranties
- Logistics Support
- International Programs

INDUSTRY APPLICATIONS AND LESSONS LEARNED

- Aerospace & Defense
- Power & Other Utilities
- Oil and Other Resource Suppliers
- Mechanical Structures
- Transportation
- Microelectronics
- Computers/Peripherals
- Microprocessors/Mini-Computers
- Robotics
- Software
- Consumer Products
- Medical Systems
- Communications

SPONSORED BY:

ASME ASQC IIE IEEE SOLE IES AIAA SSS SRE

RAMCAD™

has made SEA the leading source of predictive analysis software for the CAE/CAD industry.

Major vendors, including:

- Apollo Computer, Inc.
- Autodesk, Inc.
- Automated Images, Inc.
- CASE Technology, Inc.
- Daisy Systems Corp.
- Data I/O FutureNet Corporation
- Digital Equipment Corporation
- GE Calma
- IBM
- Viewlogic Systems, Inc.

have cooperated with SEA in putting reliability analysis within reach of every design engineer.

If you want to improve your products
by making reliability analysis part of your design process,
contact SEA at 617-762-9252.

SYSTEMS EFFECTIVENESS ASSOCIATES, INC.
20 Vernon Street · Norwood, MA 02062 · (617) 762-9252

COMPUTER-AIDED LOGISTICS ANALYSIS using SPAR-1

Monte Carlo Analysis versus deterministic methods

The important Difference: Monte Carlo methods allow for the multi-dimensional complexities of the logistics problem.

SPAR calculates system availability based on spare parts policy. SPAR combines the sophistication of Monte Carrlo analysis with simplicity of use.

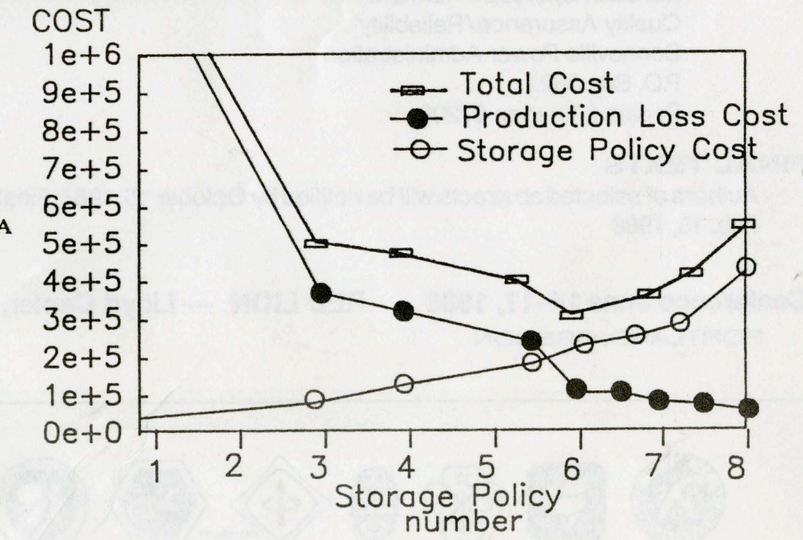
Factors such as off-site repair, repair teams, local storage, spares, production loss over multi-time periods are all used to develop an optimal storage strategy and cut potential production loss.

COMP. TYPE	FAILED PER HISTORY	UNAVAILABILITY SENSITVITY	SUBSYST FAILURES UPON EACH TYPE	FAILURE SENSITIVITY
1	.33	2.72280E-01	66	2.93333E-01
2	.20	1.78801E-01	40	1.77778E-01
3	7.02	2.04263E-01	35	1.55556E-01
4	19.02	7.60658E-01	13	5.77778E-01
5	44.74	1.53292E-01	40	1.15556E-01
6				
7				

COMPONENT TYPE NUMBER	PROBABILITY OF SPARE PART SHORTAGE IN LIFE HISTORY	AVAILABILITY OF THE SPARE PARTS	AVERAGE WAITING TIME
1	.0000000E+00	1.000000E+00	.000000E+00
2	.0000000E+00	1.000000E+00	.000000E+00
3	3.100000E+00	9.494709E-01	5.554551E-03
4	1.277778E-01	9.856321E-01	4.374635E-03
5	1.915745E-01	9.974538E-01	1.155456E-03
6	3.000000E-01	9.400000E-01	4.723548E-03
7	2.500000E-02	9.958643E-01	1.0361639E-03

We Just Raised the Performance Level for Logistics Analysis

Management Sciences Inc.
6022 Constitution, N.E.
Albuquerque, N.M. 87110 USA
Phone (505)255-8611



CALL FOR PAPERS

15th Inter-ram

INTERNATIONAL • RELIABILITY • AVAILABILITY • MAINTAINABILITY
Conference for the Electric Power Industry

HOST

Bonneville Power Administration, Portland, Oregon

THEME

RAM for Utility & Component Supplier OPTIMIZATION

PURPOSE

To further the development of reliability, availability, and maintainability programs for components and systems of the electric power industry.

TOPICS

We welcome submission of papers concerning any aspect of electric generation, transmission and distribution activities.

Suggested subjects include:

RAM PROGRAMS:	Development, integration and economic worth
RAM ANALYSIS:	Optimizing, equivalent availability
DATA:	Collection, estimation, evaluation & analysis
RISK:	Probabilistic evaluation of safety & economic issues
RELIABILITY AND MAINTAINABILITY	Generation, transmission, distribution lines, components, systems, prediction models, outage data
RAM CONTRACTING:	Transmission Systems, HVDC, controls, microwave, substation equipments, generation

We encourage papers which discuss actual applications or case histories

ABSTRACTS

Detailed abstracts 200-500 words, should be submitted no later than August 25, 1987 to:

Mr. John Sporysz — EMQ-2
Quality Assurance/Reliability
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

FINAL TEXTS

Authors of selected abstracts will be notified by October 15, 1987. Final manuscripts are due Feb. 15, 1988

Conference June 14-17, 1988 **RED LION — Lloyd Center, Portland**
PORTLAND, OREGON