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An Invitation To:

The International Symposium on Product Quality & Integrity

Web: http://www.rams.org

OUR 47th YEAR

January 22 - 25, 2001
Philadelphia Marriott
1201 Market Street
Philadelphia, PA 19107 USA
1-215-625-2900
1-800-320-5744
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IMPROVING PRODUCTS AND PROCESSES THROUGH EDUCATION

Applications & Trends for Using Reliability & Maintainability Tools

FROM THE GENERAL CHAIRPERSON

In this rapidly changing world, the useful life of specific knowledge diminishes rapidly. At one time, it was sufficient for an individual or an organization to become *expert*, and then spend the rest of the future living off that expertise. This is no longer the case. While many techniques and methodologies remain constant, there is a continual influx of improved, new and different ways. For example, internet and e-business have already changed our business operations very drastically. These new and different ways shed new light on old techniques, give better, faster or more effective results, or are completely new concepts. Both the individual and the corporation have been thrust into a constant learning mode. In order to survive and grow, a commitment to learn new tools must be made. Thus, the theme for this year's Symposium is **Applications and Trends for Using Reliability and Maintainability Tools**. This Symposium is an outstanding opportunity for continued learning.

RAMS is an extremely effective and cost efficient way to educate yourself and your associates in reliability, maintainability and product integrity. The variety and depth of the program will satisfy the range of attendees from novice to seasoned expert. Tutorials present a unique "basic to advanced" forum, and qualify for CEU credits. Paper sessions complement the tutorials, with emphasis on demonstrating effective practical applications and theory. Panel sessions will feature company engineers and high level government, corporate and academic experts providing their insight and experience. The Exhibits program will feature sources of tools and expertise carefully selected to be consistent with the content of the technical program.

Plan now to join us at the 47th Annual RAMS. Meet with your peers. Earn CEU credits. Learn about how other organizations are successfully solving the problems and issues we all face. Visit with numerous product and tool exhibitors. Network with other professionals.

We look forward to greeting you in Philadelphia.

Way Kuo, 2001 RAMS General Chair
(email: way@tamu.edu)

SYMPOSIUM CONTENT AND FORMAT ADDRESS THE FOLLOWING ISSUES

TUTORIALS

- Basic Reliability Techniques
- Statistical Analysis of Reliability & Maintainability
- Practical Reliability Engineering & Management
- Maintenance Analysis for Computer Based Systems
- Others covering topics to include: Reliability Program Planning, Human Reliability, Stress Testing, Hardware & Software Reliability Design Techniques, Part Failure Mechanisms, Warranties, Thermodynamic Effects

PAPER SESSIONS

- Accelerated Life Testing
- Aging-Prevention & Effects
- Commercial Life Cycle Cost
- Fault Tree Analysis, FMEA
- Complex System Reliability
- R&M Optimization
- Advances in Maintenance & Degradation
- Quality & Product Design
- Reliability Prediction
- Safety & Risk Mgmt.
- Spacecraft & Aircraft R&M
- Modeling
- Software Tools
- Statistical Methods
- Lessons Learned

PANEL SESSIONS & WORKSHOPS

- Lessons Learned & Success Stories
- Certified Reliability Engr Review
- CAE Workshop
- Advisory Panel

2000 RAMS EXHIBITORS

A.L.D.
BQR Reliability Engineering, LTD
Design & Evaluation, Inc.
Fulton Findings™
GIDEP
Isograph, LTD
Item Software (USA), Inc.
QualMark® Corporation
Raytheon Systems Company
Relex Software Corporation
Reliability Analysis Center
ReliaSoft Corporation
The Omnicon Group, Inc.
Thermotron Industries

For exhibit information contact:
David F. Barber, Jr., Scien-Tech Associates, Inc., 1-828-898-6375 FAX 1-828-898-6379, email: dbarbsta@aol.com

Participate in our Tutorials, Panel Sessions, Paper Sessions, Automated Tools/Techniques (Computer) Workshop, and Exhibits and go home with the vision and tools to add value to your job performance and your company's product line.

"In contrast to the short half-life of recent initiatives and slogans du jour.... Reliability and Maintainability engineering continue to be the underpinnings in everything we do to better serve our customers..... and what better place and time to enhance one's skills and networking than the Reliability and Maintainability Symposium. A concentration of both Best Practices and People for all..... novice to expert." **— G. A. Vassiliades, VP, Business Reengineering Division, IBM Corp.**

"Global competition is placing intense pressure on industries and companies to cut costs and dramatically shorten development times. It is essential for R&M professionals to stay on the technical leading edge and, as Steven Covey says, to "sharpen the saw". There is no better way to do this than to attend the world's best R&M symposium." **— C.S. Carlson, Manager, Reliability Engineering, Mid-Size Car Division, General Motors Corp.**

Program Highlights

Tutorials — This year we present an exciting array of tutorials, ranging from introductory topics in reliability engineering to intermediate topics for further study to special topics for an introduction of innovative technologies. Several of the tutorial sessions are directly linked to paper sessions, and provide a lead-in to understanding the latest developments in the assurance technologies. The tutorials are presented by leading researchers and practitioners in the field, and are accompanied by an extensive set of tutorial notes and references for further study.

Panel/Paper Sessions — Sessions have been linked to the tutorials to bridge the gap between theory and experience. Panels are structured to provide an open exchange of information between technology experts, corporate executives, and the audience. Paper sessions provide the technical details of how principles are applied and subsequently provide access to the author for further discussion.

Exhibits Program — The seventeenth annual RAMS Exposition will feature exhibits in key technical areas such as Supportability, CAD/CAM/CAE/CAT, Failure Analysis, R&M Software, ESS, and Logistics. Come visit and "test drive" the exciting products. For information on exhibiting, write Scien-Tech Associates, Inc., P.O. Box 2097, Banner Elk, NC 28604-2097 USA or call 1-828-898-6375. FAX: 1-828-898-6379. Email: dbarbsta@aol.com

Computer Aided Engineering Capabilities and Solutions — See advanced CAE capabilities being developed by industry, government, and university research centers. Additionally, our RAMS exhibitors will highlight their latest CAE capabilities through exhibits and demonstrations.

Advisory Board Panel — Leaders from Industry will discuss a topic of interest to those in the reliability and maintainability profession. Audience participation will be encouraged during the session and questions will be welcomed.

Certified Reliability Engineer Examination — Special arrangements have been made with the American Society for Quality (ASQ) for attendees who so desire to take the ASQ CRE examination while at the Symposium. A reduced rate will be offered for paid RAMS attendees. A Tutorial session will be devoted to a refresher of the material covered, and the examination will be held on Thursday morning. Registrations will be accepted up through and including the Symposium. Refer to the RAMS WEB site after October 1, 2000 for specific registration details.

The P.K. McElroy Award and Alan O. Plait Awards — The P.K. McElroy Award for the best paper of the 2000 Symposium and the Alan O. Plait award for Best Tutorial of the 2000 Symposium will be presented at the banquet.

Spouses' Hospitality — The Spouses' Hospitality is an informal gathering. A complimentary package will be available providing brochures regarding tour information, shopping, dining, and places of interest. The suite affords the opportunity for spouses to get together to plan their day. Please stop by; meet old friends and make some new ones. Philadelphia is a city rich in attractions and things to do. Join us as we discover Philadelphia.

Job Posting Board — This year RAMS is sponsoring a job posting board to list openings in the assurance sciences. ANY business interested in describing its employment opportunities to the world's premier gathering of assurance professionals is asked to contact Ray Sears at 1-603-863-2832. The bulletin board will be made available to all RAMS attendees. It is an extraordinary opportunity to get your employment message out!

Publications of Previous Symposia Available — Copies of proceedings and tutorial notes from previous RAMS are available from: Annual Reliability & Maintainability Symposium, c/o Evans Associates, 804 Vickers Avenue, Durham, North Carolina 27701 USA. For pricing and availability information, please call Ralph Evans at 1-919-688-2860 or e-mail: r.evans@ieee.org or order via our Web site at *www.rams.org*.

Special Travel Rates — Special discounted airfares for the 2001 Reliability & Maintainability Symposium in Philadelphia, PA on January 22-25, 2001 have been negotiated with Continental and United Airlines. Continental Airlines is offering a 13% discount off the lowest available super-saver fares and coach fares. United Airlines is offering a 12% discount off the lowest available super-saver and coach fares. Where super-saver fares or Saturday night stays are not applicable, both Continental and United are also offering zone fares. Discounted airfares are also available on other airline carriers. Please call IEEE Travel Services for availability. Some restrictions apply and airfares are guaranteed to be the lowest available at the time of ticketing. Special rates have also been negotiated with Avis rental car company. Travel arrangements using the designated air carriers, or the carrier of your choice can be made through IEEE Travel Services by calling 1-800-TRY-IEEE, (1-800-879-4333) within the US and Canada. Outside the US, call 1-732-562-5387 between the hours of 8:30AM and 5:30PM EST Monday through Friday. Or, you may visit the new on-line IEEE travel service web site at *www.ieee.org/travelonline*. This secure site offers simple and convenient service through which you can search, reserve, and ticket your travel anytime, anywhere. You may also fax requirements to IEEE Travel Service at 1-732-562-8815. When faxing or e-mailing, please be sure to include your travel dates, departure time, phone, and fax numbers. A Travel Counselor will contact you promptly.

TUTORIALS

An exciting collection of tutorials, from introductory to special topics, are included in the program. Introductory tutorials cover basic topics in reliability engineering; intermediate tutorials present the latest approaches and special topics tutorials introduce new and innovative technologies. Several tutorial sessions are directly linked to technical paper sessions, providing a lead-in to understanding the latest developments in the assurance technologies. The tutorials are presented by leading researchers and practitioners in the field, and are accompanied by an extensive set of tutorial notes and references for further study. For more information on the tutorial program, contact: ***Dr. John Bowles,*** *University of South Carolina,* bowles@engr.sc.edu, 1-803-777-2689.

FAULT TREE ANALYSIS OF COMPUTER BASED SYSTEMS — INTERMEDIATE

Dr. Joanne Bechta Dugan, *University of Virginia*

Fault tree analysis has long been a staple of the reliability and safety assessment processes. This tutorial reviews recent advances in fault tree analysis, including coverage models and sequence dependences, that extend its applicability to computer-based systems.

INTRODUCTION TO RELIABILITY THEORY & PRACTICE — INTRODUCTORY

Dr. John B. Bowles, *University of South Carolina*

This tutorial serves as an introduction to the main concepts in reliability. It describes how reliability is measured, modeled, analyzed, and managed, and illustrates system models and design techniques.

MODELING OF REALISTIC SYSTEMS USING THE MONTE CARLO METHOD — SPECIAL TOPIC

Dr. Arie Dubi, *Ben Gurion University of the Negev*

Modern computers and recent developments in Monte Carlo methods permit the use of realistic system models that provide trustworthy estimates of reliability, availability, life-cycle costs, and other performance measures.

HUMAN RELIABILITY: AN OVERVIEW — INTERMEDIATE

Dr. Kenneth P. LaSala, *KPL Systems*

The human element exerts a strong influence on the design and ultimate reliability of all human-machine systems; it cannot be segregated from other system functions and must not be ignored.

THE CAPABILITY MATURITY MODEL: MOVING SOFTWARE DEVELOPMENT FROM ART TO ENGINEERING — SPECIAL TOPIC

Mark Servello, *ChangeBridge, Inc.*

The Capability Maturity Model® identifies the underlying causes of successful software projects and provides guidelines for developing a corporate infrastructure to support well-managed software efforts.

INTRODUCTION TO SOFTWARE RELIABILITY WITH SPACE SHUTTLE EXAMPLES — INTERMEDIATE

Dr. Norman F. Schneidewind, *Naval Postgraduate School*

Software reliability assessment methodologies must address the characteristics of distributed systems—including client-server systems. This step-by-step approach, illustrated with NASA Space Shuttle examples, leads to an effective program.

UNDERSTANDING ACCELERATED LIFE-TESTING ANALYSIS — SPECIAL TOPIC

Pantelis Vassiliou and Adamantios Mettas, *ReliaSoft Corp.*

Correct analysis of data gathered from testing products under high-stress conditions provides important information for predicting and improving their life under use-stress conditions.

APPLYING PROBABILISTIC METHODS TO COMPONENT DESIGN — SPECIAL TOPIC

Ronald H. Salzman, *Ford Motor Company;* **Dr. Mohammad R. Khalessi,** *Unipass Technologies;* and **James A. McLinn,** *Rel-Tech Company*

Probabilistic design methods consider the variability of component properties and the stochastic nature of real-world loads and environments to give optimum designs.

ARCHITECTURE-BASED SOFTWARE RELIABILITY — INTERMEDIATE

Dr. Katerina Goševa-Popstojanova and **Dr. Kishor S. Trivedi,** *Duke University*

An architecture-based approach provides important benefits for estimating the reliability of a system developed as a hetrogeneous mixture of newly developed, reused, and off-the-shelf components.

ENHANCED FAILURE MODES AND EFFECTS ANALYSIS — INTERMEDIATE

Dr. Gary S. Wasserman, *Wayne State University*

FMEA is more than filling out a form! It is a process, fully integrated and linked with the product and process design processes. This tutorial shows how to make it more effective.

MAINTENANCE ANALYSIS FOR COMPUTER-BASED SYSTEMS — INTERMEDIATE

Dr. Joanne Bechta Dugan and **Dr. Leila Meshkat,** *University of Virginia*

Maintenance is the totality of all the operations conducted on a system to keep it in good condition. This includes periodic upgrades of computer-based systems. The maintenance plan must consider all these factors in order to obtain an accurate system maintenance model.

THE DESIGN OF PETRI NETS — SPECIAL TOPIC

Dr. Winfrid G. Schneeweiss, *Fern University*

Petri nets provide a graphical tool that is exceptionally well suited for investigating and modeling the dynamics of system dependability and reliability.

SYSTEM RELIABILITY ASSESSMENT WITH PRISM **INTERMEDIATE**

Norman B. Fuqua, *Reliability Analysis Center*

PRISM provides a tool for including the effects of design deficiencies, manufacturing defects, inadequate requirements, induced failures, and other causes of failure not included in traditional, component-based, reliability prediction tools.

THERMODYNAMIC RELIABILITY ENGINEERING **SPECIAL TOPIC**

Dr. Alec A. Feinberg, *M/A COM Incorporated*

This tutorial illustrates key aspects linking the laws of thermodynamics and reliability theory into a true science of thermodynamic reliability engineering.

WARRANTY AND RELIABILITY **SPECIAL TOPIC**

Dr. Wallace R. Blischke, *University of Southern California* and **Dr. D. N. P. Murthy,** *The University of Queensland*

The cost of a warranty is inversely related to the reliability of the product, which also has an appreciable cost. Trade-offs between these costs are an essential aspect of effective warranty management.

ROBUST ENGINEERING **SPECIAL TOPIC**

Mary Fortier, *General Motors*

This tutorial reviews historical, current, and future methods for creating designs that are insensitive to the effects of variation; empirical, experimental and stochastic methodologies are included.

IMPLEMENTING RELIABILITY CENTERED MAINTENANCE (RCM) IN A MATURE MAINTENANCE PROGRAM **SPECIAL TOPIC**

William A Mercier, *American Management Systems Inc.*

Classic RCM methodologies are extended using a Backfit process that yields the required system and equipment reliability at the lowest maintenance cost.

RELIABILITY PREDICTION **INTRODUCTORY**

Dr. John D. Healy, Dr. Jay M. Bennett, *Telcordia Technologies,* and **Dr. Aridaman K. Jain,** *Lucent Technologies Bell Laboratories*

This tutorial provides an introduction to both hardware and software reliability prediction. Industry trends and issues such as plastic versus hermetic devices, the effects of device complexity, and the use of auxiliary data in making predictions are discussed.

PRODUCT RELIABILITY THROUGH ACCELERATED STRESS TESTING **INTERMEDIATE**

Dr. H. Anthony Chan, *AT&T Laboratories,* and **T. Paul Parker,** *Lucent Technologies*

Stress testing is used to achieve product robustness, even when products must be developed with new technologies and short development cycles. This tutorial emphasizes the practical aspects of stress testing and shows how to achieve product robustness with minimal costs.

UNDERSTANDING ELECTRONIC PARTS FAILURE MECHANISMS **INTERMEDIATE**

John W. Knepley, *Northrop Grumman*

This tutorial describes the component failure mechanisms commonly encountered in the operation and testing of electronic systems, and the ways in which their occurrence can be minimized to achieve system reliability goals.

PRACTICAL RELIABILITY ENGINEERING AND MANAGEMENT **INTRODUCTORY**

Dr. Ralph A. Evans, *Evans Associates*

This practical tutorial explains what a reliability program is really all about and the kinds of things that reliability engineers and managers must do to institute a successful program. No mathematics. No statistics. ... Plenty of insight and things to think about.

SIMULATION MODELING FOR RELIABILITY ANALYSIS **SPECIAL TOPIC**

Dr. Edward F. Mykytka, *University of Dayton* and **Ken Murphy,** *United States Air Force*

Modern simulation packages provide powerful tools that should be in every engineer's toolkit. This tutorial covers basic discrete event simulation concepts along with illustrative examples using RAPTOR. The intent is to make the audience savvy users of such tools.

RELIABILITY PROGRAM PLANNING IN A COMMERCIAL ENVIRONMENT **INTRODUCTORY**

James A. Hough and **Sandi Haggett,** *Pitney Bowes*

This tutorial describes the development of a reliability program plan for commercial product lines. It focuses on the benefits and cost issues of using government or military handbooks and standards to define the tasks for assessing and improving product reliability.

STATISTICAL ANALYSIS OF RELIABILITY, MAINTAINABILITY, AND SUPPORTABILITY DATA **INTRODUCTORY**

Dr. Caroline Smith, *James Madison University*

This tutorial gives an introduction to the key concepts and techniques used in statistical analyses of reliability, maintainability, and supportability data. The presentation includes the mechanics of the analysis, interpretation of the results, and pitfalls to avoid.

MECHANICAL RELIABILITY **INTRODUCTORY**

Richard Pugh, *Pratt & Whitney*

Six fundamental tools, ranging from FMEAs to laboratory analyses are used to improve the reliability of mechanical systems. The early detection of mechanical failure modes is necessary for introducing reliability into product designs and fixes into production systems.

PAPER SESSIONS

Over 80 technical papers will be presented in 15 Paper Sessions. These papers were selected from a much larger number received in response to the Call For Papers. Selection is based on quality of the paper and relevance to the Symposium.

SUCCESSFUL APPROACHES TO DIFFICULT ACCELERATED LIFE TESTING

ALT is one of the most powerful tools to be employed when estimating the reliability of a product. Tools, techniques and applications that advance these techniques bring value to the practical reliability engineer. This session presents tools, applications, examples and case studies in this vital area of reliability.

AGING: ITS PREVENTION AND EFFECTS

The ultimate life of many components and products is often limited by degradation and wear mechanisms. A study of these degradation models is essential to understanding how and why components and systems may fail.

TECHNIQUES AND APPLICATIONS FOR USE OF FTA, FMEA, FMECA

FTA, FMEA and FMECA modeling techniques and applications are shown for software and hardware.

ADVANCES IN MAINTENANCE AND DEGRADATION: TOOLS, TECHNIQUES, AND MODELS

Authors present new ideas and developments in understanding and improving maintenance and degradation management.

SOLUTIONS TO LARGE-SCALE, COMPLEX SYSTEMS RELIABILITY

Learn about what techniques and lessons reliability modelers have applied toward improving large-scale and complex systems.

IMPROVING SOFTWARE AND COMPUTER SYSTEMS RELIABILITY

Authors in this session present methods for applying reliability models and tools to improve software and computer systems.

QUALITY, PRODUCT DESIGN AND PRODUCT ASSURANCE

Enhance the design tools, to ensure system level and up-front R&M considerations.

R&M IN SPACE AND AIRCRAFT APPLICATIONS

The intent of this session is to present space and aircraft industry R&M applications, in particular in Maintenance Cost Optimization, by use of Reliability Centered Maintenance (RCM) and Life-Cycle Cost (LCC) modeling.

LIFE-CYCLE-COST AND LOGISTIC SUPPORT IN COMMERCIAL AND INDUSTRIAL ENVIRONMENTS

Maintenance and logistics costs become critical drivers for decision makers. Issues such as failure rate definitions, and R&M Training for Designers, are addressed as fundamentals for Integrated Logistic Support (ILS) and Life-Cycle Cost (LCC) applications.

RELIABILITY AND MAINTENANCE OPTIMIZATION

Optimization methods are applied to various R&M problems including reliability allocation, equipment replacement and maintenance planning.

RELIABILITY PREDICTION

Descriptions, applications, and results of reliability prediction methods and various reliability models and methods.

SAFETY AND RISK MANAGEMENT

The application of safety assessment and risk management techniques to industries ranging from railroads to NASA.

APPLICATION OF SOFTWARE TOOLS TO R&M ANALYSIS

Available and emerging software technologies offer opportunities for more effective management of R&M engineering resources under pressure from compressed development schedules, technology change, and cost consciousness. These tools permit the rapid analysis of R&M data, concurrent modeling and engineering of complex systems, and integration of engineering disciplines.

STATISTICAL METHODS FOR R&M ANALYSIS

Effective R&M analysis depends upon the proper application of statistical tools by the engineer. As new methods evolve, tools can improve the ability to draw conclusions from tests.

LESSONS LEARNED AND SUCCESS STORIES

The engineering and operation of complex systems is inevitably prone to error. Identification of lesson learned will aid in ensuring that mistakes are not repeated on future programs and that critical success factors demonstrated earlier are retained.

PANEL SESSIONS

LESSONS LEARNED AND SUCCESS STORIES

The panel will discuss effective strategies for assuring that critical success factors, often learned at high cost, are documented and applied to future programs. Emphasis will be placed on similar problems-or “common threads”— that recur across “high tech” and “low tech” industries.

QRE REVIEW AND EXAM

A short review session will be conducted. Later in the week, attendees will have the opportunity to sit for the QRE exam (small fee required).

RELIABILITY AND MAINTAINABILITY COMPUTER AIDED ENGINEERING (CAE) WORKSHOP

RAMS Exhibitors will highlight their latest capabilities through presentations and demonstrations.

ADVISORY BOARD PANEL

Leaders from Industry will discuss a topic of interest to those in the reliability and maintainability profession. Audience participation will be encouraged during the session and questions will be welcomed.

Hotel Registration Form - 2001 RAMS — January 22 - 25, 2001

Mail or FAX completed Hotel Registration form to:

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Business Phone _____ Normal check-in time 3:00 PM

Normal check-out time 12:00 Noon

Credit Card Type _____ Deposit Amount _____

Credit Card Number _____ Expiration Date _____

Signature _____

All reservations must be received by January 5, 2001 and accompanied by a one-night room deposit in the form of a personal check, money order, or an American Express, Visa, or Master Card credit card authorization. **Ask for the special RAMS rate**. One registration form per room please.

Return this form directly to the Hotel — DO NOT INCLUDE WITH RAMS REGISTRATION

2001 RAMS Advance Registration

F

(valid through January 5, 2001 - No Registrations Accepted 1/6/2001 through 1/21/2001)

I have **INCLUDED** payment to register as: (Check One)	I have **INCLUDED** payment by: (Check One)	First Time Attendee?
❑ $650 NON-MEMBER * ❑ $550 MEMBER * ❑ $60 FULL-TIME STUDENT † ❑ $200 PRESENTING AUTHOR	❑ Credit Card ❑ Check ❑ Special	❑ Yes ❑ No

I am a member of: (check all that apply) Membership Number _____	Spouse Attending?
❑ AIAA ❑ ASQ/E&CD ❑ ASQ/RD ❑ IEEE ❑ IEST ❑ IIE ❑ SAE ❑ SOLE ❑ SRE ❑ SSS	❑ Yes ❑ No

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Dr. Raymond W. Sears, Jr.
23 Fairway Drive
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Grantham, NH 03753-1407 USA

FAX/Phone 1-603-863-2832
(8 AM - 10 PM Eastern Standard Time)

e-mail: r.w.sears@ieee.org
(For information only)

* Includes banquet, proceedings, tutorial notes, and all paper, panel and tutorial sessions. † Includes proceedings, tutorial notes, and all paper, panel and tutorial sessions.

Payment IN FULL MUST accompany this completed form. Checks in US Dollars displaying US banking system transit number, made payable to RAMS 2001 will be accepted. We also accept VISA, MasterCard, or AMEX. Credit Cards will be charged the full amount upon receipt. Please call to make special payment arrangements. Acknowledgments will be mailed beginning November 26, 2000. Advanced registrations **MUST** be in our hands by January 5, 2001. No registrations will be accepted January 6 through 21, 2001. There are no limitations on number of attendees wishing to register at the door, but fees are $80 additional except for students. Advance registrations are **NON-REFUNDABLE** after January 5, 2001.

An Invitation To:

RAMS

The International Symposium on Product Quality & Integrity

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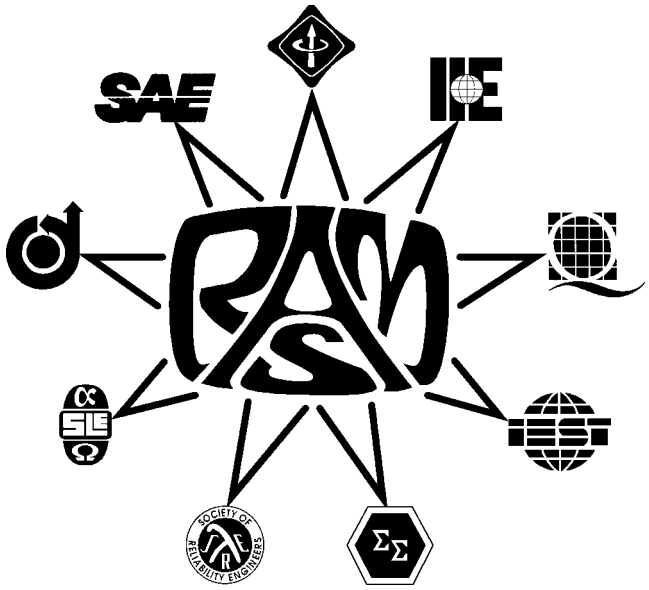
OUR 47th YEAR



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IMPROVING PRODUCTS AND PROCESSES THROUGH EDUCATION

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23 Fairway Drive
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Annual Reliability AND
Maintainability Symposium

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