

RockIEEE Overlook

May 1991

Newsletter of



**The Institute of Electrical and Electronics Engineers
Denver Section**

Denver Section Golf Outing and Awards Banquet

Everyone is invited to Hyland Hills Golf Course in Westminster on Thursday, May 23, 1991 for a great time!
Tee times are available from 12:00 - 1:00 p.m., and dinner is at 6:00 p.m.

Golf is optional. The cost for 18 holes of golf is \$36 which includes a golf cart and a \$6 gift certificate to the pro shop. Refreshments on the course will be provided by Power Equipment Specialists. Dinner cost is still to be determined. Door prizes will be awarded !

Please call Anita at 220-8042 for more information and reservations for both golf and dinner.

Come join us for to recognize some outstanding achievements and have a great time!

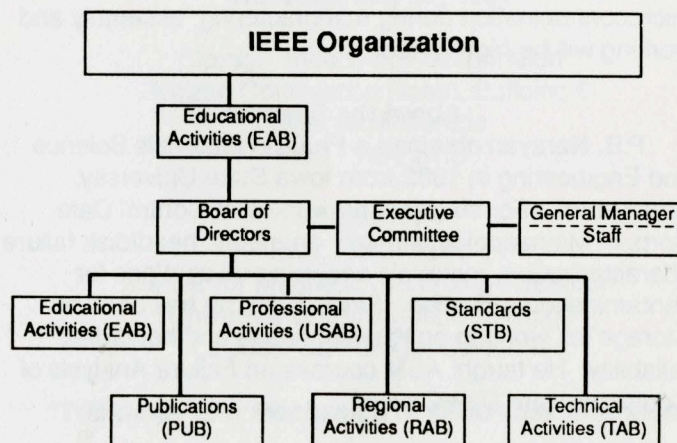
Chairman's Message

by Gary Petersen

"A Closer Look at the IEEE Organization"

Last month the Chairman's Message gave a quick overview of IEEE as an international organization with more than 300,000 members. The IEEE organization chart in simple form looks like this: ➡➡➡

Leadership of this organization is provided by thousands of volunteers assigned by a relatively small professional staff. The IEEE's governing body -- the Board of Directors -- is comprised of 32 volunteer directors and officers plus the Executive Director. Twenty-four of the Board members are elected directly by the eligible IEEE membership. These 24 elected directors are selected from the 10 IEEE geographic regions (Denver is in Region 5 and John Martin is presently Region 5 Director), the 10 technical Divisions



plus the IEEE President, Executive Vice President, President-Elect and Past President.

A 12-member Executive Committee of the Board of Directors implements Board policies and operates IEEE with the assistance of the professional staff.

continued on page 4

Society Chapter Meetings and Information

Joint CS/IT

Computer Society/Information Theory Society

Thursday, May 16, 1991

StorageTek
2270 S. 88th St.
Louisville, Colorado
6:45 p.m.

(Meet at StorageTek visitor center. Take Hwy 36 to Superior Exit. Follow signs to StorageTek. Enter grounds; visitor center is on left. Meet at 6:45 p.m. to sign in.)

Speaker/Tour Hosts

Dr. P.B. Narayan
StorageTek

"Head/Disk Interface Reliability - A Materials Perspective"

The head/disk interface is the main source of disk drive frailty, and so the most productive way to enhance the reliability of a drive is to optimize this interface.

In high performance disk drives, the read/write head flies 0.1 micrometers above the disk. As a result, any microscopic head or disk defect will interfere with the head flight. Also, microcontamination in the assembly and the drive environment could pose serious problems.

After a brief introduction to heads and disks (and their manufacturing), the two main modes of drive failures will be discussed. Efforts to minimize the generation of microcontamination during manufacturing, assembly and working will be highlighted.

About the Speaker

P.B. Narayan obtained a Ph.D. in Materials Science and Engineering in 1982 from Iowa State University, Ames, Iowa. For six years he worked at Control Data Corp. in Minneapolis, primarily on media, head/disk failure characterization, materials analysis and coatings for contamination reduction. Since 1989, he has been at StorageTek working on thin film heads and head/disk reliability. He taught ASM courses on Failure Analysis of Computer Hard Disk Drives.

Reservations are required. Please call Rory Laiho at 924-7534 or Bryce Chapman at 673-4762.

Joint AP/MTT/GRS

Antennas and Propagation, Microwave Theory and Techniques, Geoscience and Remote Sensing

Thursday, May 16, 1991

National Institute of Standards and Technology
325 Broadway, Boulder, Room 1103
4:00 - 5:00 p.m.

Speaker


Harold Leinbach
Space Environments Laboratory
National Oceanic and Atmospheric Administration
Boulder, Colorado

"Interplanetary Scintillations Using Extragalactic Radio Waves to Probe the Solar Wind" - Cambridge Style -

Professor Tony Hewish and his colleagues at Cambridge, England, showed long ago that solar wind disturbances can be detected by the amplitude scintillation they cause in the radio signals from small diameter extragalactic radio sources. Using a very large antenna array (36,000 square meters) at 82 MHz, they can monitor about 2000 radio sources per day distributed over the sky visible from Cambridge. In this talk, Mr. Leinbach will give a brief summary of the techniques which are used, and present some preliminary results from our investigations of whether such observations have a practical value as a forecasting tool for the arrival of solar wind disturbances at Earth.

We will have an election of new officers at the beginning of the meeting as this is the last meeting of the year.

No reservations are required. Please call Katie MacReynolds at 497-3471 if you have any questions.



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Joint PES/IAS

Power Engineering/Industry Applications

Thursday, May 16, 1991

Elati Substation
Southeast corner of 13th Ave. & Elati St.
Denver, Colorado
(I-25 to Speer, Speer south to 14th, L (east) on 14th to Elati.) 299-5266

6:30 p.m. Tours Begin
(No dinner)

Speakers

John Richards, Supervisor of Technical Support
Substation Engineering
and
Roy LaPanse, Project Leader
Project Administrative Service
Public Service Company of Colorado

"Tour of the Elati 230-13.8 kV Gas-Insulated Substation"

Located in downtown Denver, the Elati Substation is Public Service Company of Colorado's first 230 kV gas insulated substation. The substation includes indoor 230 kV GIS equipment, outdoor 230-13.8 kV, 56 MVA power transformers and indoor 13.8 kV vacuum metal clad switchgear, all located within a decorative exterior wall.

There is some parking available on the street which is free after 6:00 p.m., and several nearby hourly parking lots which are not free, so bring some coins and one-dollar bills just in case.

Please contact Barbara at Peterson Company, 388-6322, by Monday, May 13, 1991.

VTS/COMSOC

*** Notice ***

Nominations for the positions of Chairman, Vice Chairman, and Treasurer of VTS/COMSOC for 1991-1992 may be submitted to John Hardizinski at 977-2224 (W) or 693-2198 (H).

Aerospace and Electronics Society

Tuesday, May 21, 1991

Ball Aerospace
Colorado Engineering Center
10 Longs Peak Drive
Broomfield, Colorado
(U.S. 36 to Wadsworth exit, S. to Hwy. 128, R (west) on 128 to first left (Longs Peak). Large office complex on SE corner of 128.)

7:00 p.m.
(Arrive early as this is a secure facility and escorts and passes have to be obtained.)

Speaker
Dr. Robert Mohling

"Cryogenic Hardware Systems in Space"

The program will consist of an overview of current space programs at Ball Aerospace, a presentation of Ball Aerospace Cryogenic programs and a demonstration of the effects of liquid nitrogen on materials.

Call Ray Jukkola, 988-2751 for more information.

Magnetics Society

Thursday, May 23, 1991

Storage Technology Corporation
Kaizen Conference Room, Building 6
Louisville, Colorado
6:00 - 7:00 p.m.

Speaker
Prof. Frank Talke
Center for Magnetic Recording Research
University of California, San Diego
La Jolla, San Diego, California

"Tribology and Mechanics of Head-Disk Interface"

This talk will briefly review the mechanism of head/disk interface and its importance to magnetic recording technology.

All IEEE members and their guests are welcome.

Please call Dr. Subrata Dey, 673-6494 for further information.

Ninth Annual Software Reliability Symposium

May 1-2, 1991
Loral Command and Control
Systems
Colorado Springs, Colorado

for more information call:
Richard Karcich, Conference Chair
(303) 673-6223

Conference Registration Information

\$55	Member
\$65	Non Member
\$15	Students

Chairman continued . . .

IEEE activities are overseen by various volunteer boards and committees, including: Awards, Educational Activities, Publications, Regional Activities, Standards, Technical Activities and United States Activities. The full-time IEEE staff works to maintain and supplement volunteer efforts.

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	One Time	Multiple
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1/8 page	\$ 60.00/mo.	\$ 50.00/mo.
1/4 page	\$ 150.00/mo.	\$ 130.00/mo.
1/2 page	\$ 250.00/mo.	\$ 225.00/mo.
Full Page	\$ 400.00/mo.	\$ 360.00/mo.
Insert 8-1/2 x 11	\$ 200.00/mo.	

Business card ads must be actual business cards. All other ads should be provided in camera-ready format or additional set-up charges may apply. Inserts must be provided (quantity approx. 4225) and delivered to the printer.

Deadlines for 1991-1992

September 1991 Newsletter - August 5, 1991	
October 1991 Newsletter - September 2, 1991	February 1992 Newsletter - January 3, 1992
November 1991 Newsletter - October 4, 1991	March 1992 Newsletter - February 3, 1992
(There will be no December 1991 issue)	April 1992 Newsletter - March 2, 1992
January 1992 Newsletter - December 2, 1991	May 1992 Newsletter - April 1, 1992

Please make checks payable to Denver Section IEEE. Send business card or ad copy and check to:
Anita Wanberg, AMW, P.O. Box 4056, Englewood CO 80155-4056, (303) 220-8042.

Pre-Registration Form



Rocky Mountain
Electronics
Expo '91 EIA

EXPO '91: The Source for Engineering Solutions

Wednesday, May 22 9am - 6pm
Thursday, May 23 9am - 5pm
Denver Mart Pavilion and Expo Buildings
I-25 & 58th Avenue (Exit 215)

Mail Pre-Registration Form by May 10, 1991 to receive your registration packet by mail. After May 10, 1991, fill out this form and bring it to the Registration Desk to save the \$5.00 Admission Fee. Save Time and Money by Pre-Registering TODAY!

Free Admission to Exhibits and Technical Sessions

Please Check all Applicable Selections:

Company/Organization Classification

- A ☐ Aerospace
B ☐ Business Equipment
C ☐ Communications
D ☐ Computers: Peripheral/Storage
E ☐ Computers: PC Workstations
F ☐ Consumer/Entertainment
G ☐ Education/Consulting
H ☐ Electronic Components/Devices
I ☐ Government/Military
J ☐ Medical
K ☐ Test Equipment
L ☐ Other _____

Job Function

- A ☐ Administration/Management
B ☐ Design: Circuit/System
C ☐ Engineering Management
D ☐ Marketing/Sales
E ☐ Packaging
F ☐ Production/Manufacturing
G ☐ Purchasing
H ☐ Research/Development
I ☐ Test/QC/QA
J ☐ Other _____

Interest

- A ☐ CAD/CAM/CAE
B ☐ Computer Peripherals/Software
C ☐ Consulting/Fabrication Services
D ☐ Electro-Mechanical Components
E ☐ Electronic Packaging
F ☐ Instrumentation/Test Equipment
G ☐ Measurement Systems
H ☐ Production Equipment
I ☐ Production Materials
J ☐ RF and Microwave Products
K ☐ Test/Inspection Equipment
L ☐ Other _____

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6535 South Dayton Street, Suite 2000
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(303) 799-0650
FAX (303) 799-0678

One Registrant per form. You may photocopy this form if additional copies are needed. **Technical sessions are at no charge and will be filled on a first come basis.**

Paid Events

Keynote Breakfast - Topic: "U.S. Electronics: A New Decade of Opportunity"

Peter F. McCloskey
President, Electronics Industries Association (EIA)
Washington, DC

Wednesday, May 22, 1991

7:30 - 9:00am

Tickets: \$10.00

Denver Mart - Terrace Gardens (EXPO Building Entrance)

RockCon '91 - Regional Test Conference (ASTE)

Conference Registration Fee: \$125.00 ASTE Members
\$175.00 Non-Members (This includes a 1-year membership fee)

Fee includes one copy of the Proceedings, all conference sessions on May 22 and 23.

Individual ASTE Session Fee: \$25.00 (no Proceedings)

ASTE Individual Sessions

Check Sessions you are Registering for:

Wednesday, May 22

- () AA () AE
() AB () AF
() AC () AG
() AD () AH

Thursday, May 23

- () BA () BE
() BB () BF
() BC () BG
() BD () BH

ENCLOSED IS PAYMENT FOR THE FOLLOWING:

Keynote Tickets @ \$10.00	\$ _____
ASTE Conference Fee	\$ _____
() \$125.00 Member	
() \$175.00 Non-Member	
Sessions @ \$25.00 each	\$ _____
Total Enclosed:	\$ _____

Make checks payable to: ERA Educational Corporation. Mail to: EXPO '91, 6535 South Dayton Street, Suite 2000, Englewood, CO 80111. **Registration for PAID Events must be received by May 10.**

Employment Assistance Workshop/ Job Fair

The Denver Section is considering co-hosting an employment assistance workshop and job fair with the Pikes Peak Section in August, 1991. The workshop will include such topics as:

- * A Sales Approach to the Job Search Process
- * Resumes That Work
- * Networking Your Way to a Better Job
- * Effectively Dealing with Recruiters
- * How To Get Better Results When Answering Ads
- * Writing Away for a Better Job
- * How To Win in the Interview

The cost of the workshop will be nominal (Approximately \$25 for IEEE members). The job fair would probably be 2 days and would emphasize local employers.

We need your input on whether this type of workshop and job fair is of interest to you. Please call Darrell Sabatka, PACE Chairman at 329-1547 or Gary Petersen at 329-1506 by May 15 if you would like to see this type of program put on by the Denver Section.

42nd IEEE Vehicular Technology Conference

Frontiers of Technology: From Pioneers to the 21st Century
Hyatt Regency Hotel, May 11-13, 1992, Denver, Colorado

The VTC (Vehicular Technology Conference) for 1992 will be held May 11-13, 1992 at the Hyatt Regency Hotel in Downtown Denver. It is an international conference devoted to mobile communications, vehicular electronics and transportation systems. It is attended by a world-wide engineering and scientific audience from countries such as the U.S.A., Japan, Europe, Canada, and India. Approximately 500 people attend and about 150 technical papers are presented.

Papers presented are related to the topics of:

Research and Development
System Design
Hardware Software Design
Engineering Test Results
Applications Engineering

If you are interested in participating as a committee member or attending this conference, please contact:

Don Cottrell
University of Denver
(303) 871-3752

Roger Salters
University of Denver
(303) 871-3729

John Tary
Tri-State Generation
(303) 452-6111

Call for Volunteers - ICC'91

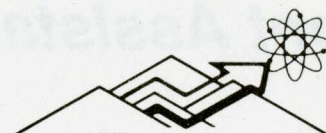
The International Conference on Communications, ICC'91, needs engineers from industry and university students as volunteers for June 23-26, 1991. The volunteers will act as Technical Session Monitors, Committee Meeting Assistants, & Operations Room Assistants.

ICC'91 could use 50-100 volunteers. They will be given free admission to the conference and lunches.

It is anticipated there will be about 1200 technical types from all over the world at the conference, so this is a good opportunity for interaction. Please contact:

Don Cottrell
Local Arrangements Chairman
(303) 871-3752

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Electrical Systems at the National Western Stock Show

by Mary Gizzie

Gordon, Gumeson and Associates, Inc.

For years, the National Western Stock Show has operated the annual stock show event in buildings which contained inadequate electrical systems. Prior to the 1991 show, their facilities consisted of an arena built in the early 1990's and a two story exhibition structure built in the early 1970's. Over the years, the stock show has grown, bringing more and more spectators along with increased life safety requirements, and increased requirements for electrical power.

In recent years, concern for life safety during the show event prompted city and fire department officials to mandate changes to enhance safety. They required that the National Western Stock Show upgrade fire sprinkler systems and power distribution systems within the existing buildings. In 1989, a major bond election appropriated the money to expand the existing facilities to accommodate the space needs of the National Western Stock Show as well as to make the overall facility flexible enough for all types of events.

The main event each year, however, is the stock show held in January. Stockmen from all parts of the country exhibit their animals and compete in the National Western Rodeo. But the concept of providing space for preparing animals for show or competition is complex. Various animals place different requirements on the electrical systems. Horses, for example require a warm stall with ample ventilation to protect them from airborne disease organisms. Cattlemen, on the other hand, prefer to keep their animals as cool as possible to promote the hair growth necessary to present a soft and contoured appearance. It is not uncommon for a cattleman to have a pair of one quarter horsepower fans for each animal to keep the animal cool along with one or two industrial strength hair dryers to style the animal's hair. When multiplied by the number of animals housed at any one time, the power distribution system becomes immense. Exhibits of ranch equipment and special booth lighting requirements place additional load on electrical systems.

To meet the owner's needs, a flexible system of removable pendants to provide power for animal stalls and exhibit booths was designed. Each pendant contains two dedicated duplex receptacles to ensure sufficient power for fans, hair dryers, trimmers, and special equipment. In all, over 1500 dedicated duplex receptacles were provided throughout the facility.

Lighting of over 250,000 square feet of new building

area provided the next challenge. Providing the proper illumination for the exhibit spaces as well as providing good color rendition to make animals and exhibits show well was as important as keeping the overall cost down. An inexpensive industrial fluorescent fixture was selected with 3500 degree Kelvin color temperature fluorescent lamps to enhance color rendition. The resultant lighting provides uniform coverage with excellent overall visual comfort.

Selecting a service entrance scenario required consideration of the special needs of the National Western Stock Show. Only one event per year, the stock show, requires the use of the entire facility along with the maximum electrical power demand that results. Since this event lasts only two weeks and demand for the rest of the year is comparatively low, a demand ratchet would be very expensive. At the same time, the owner's limited maintenance staff precluded the concept of primary metering since medium voltage distribution would require special skills and training to operate. The solution was to provide multiple low voltage service entrances, each with external padmounted transformer and a power operated main disconnect which could be remotely tripped from the building command center. In all, five service entrances were provided. During the 1991 stock show, demand on each of the five services entrances did not exceed 500 kilowatts, the Public Service Company minimum for invoking ratchet billings.

Life safety systems for the building presented several problems. Since the overall size of the building is large, (over 500,000 square feet), the Denver Building Department requested that the building be designed with systems be designed with systems similar to those found in a high rise building. A fire command center was provided with an addressable fire alarm and detection system and a two-way fire fighters communication system. In addition, the fire alarm and detection system specified included a computer to provide the necessary logic and control input and output points to operate a mechanical smoke removal system. A 350 kilowatt diesel engine driven emergency generator system was provided with transfer switches at each of the service entrance points to provide emergency power for the total facility.

The completed facility was opened to the public for the highly successful 1991 National Western Stock Show.

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P.O. Box 5888, Denver, CO, 80217

Publication Coordinator - **Anita Wanberg**, AMW, 220-8042
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The Institute of Electrical and Electronics Engineers



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The Month at a Glance

April 28 - May 2, 1991

PES Substation Committee Meeting

May 1 - 2, 1991

Ninth Annual Software Reliability Symp.

May 16, 1991

CS/IT Meeting

APP/MTT/GRS Meeting

PES/IAS Meeting

May 21, 1991

Aerospace Society Meeting

May 23, 1991

Section Golf Outing & Awards Banquet
Magnetics Society Meeting

RockIEEE Overlook
Official Publication of the
IEEE Denver Section