



News bits

Northeast Chapter honors two

The Northeast Chapter of the ESD Association has presented its Founders Award to Walter Gately, Ex-Tech Plastics, and Jerry R Guiliano, Julie Industries. The awards were presented in recognition of Walter's and Jerry's contributions to the founding and early development of the Northeast Chapter.

Northeast Chapter election results

The Northeast Chapter of the ESD Association has named officers and board members for the year. The officers are Ted Dangelmayer, Lucent Technologies, president; Jerry Giuliano, Julie Industries, senior vice president and treasurer; Joe Spitz, Liberty Packaging, vice president; and Ryne Allen, ESD Systems.com, secretary. Board members are Rick Asmar, Telco Systems, Yogi Anand, Tyco-M/A-Com, Inc.; Ernie Tousignant, T.E.A.M. Enterprises, and Ken Morman, FLIR Systems Boston.

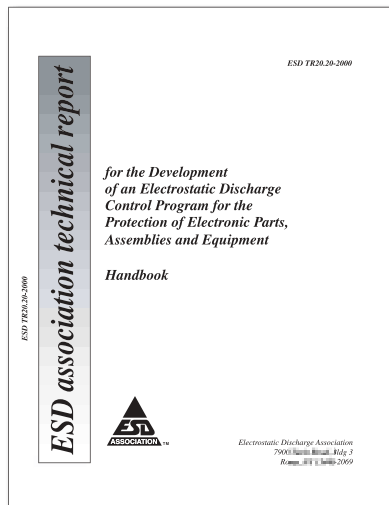
In this issue

New handbook published	1
Research grant awards	1
From the Threshold chair	2
TPC makes it happen	3
Symposium schedule	3
NE RED program	4
Calendar of events	4
Regional tutorial schedules	5
Standards update	6
Charity golf tournament	7
Moving up the ladder	8
Journal of Electrostatics subscrip- tions	9
Board elections	10
Letters to the editor	10



Association publishes new ESD handbook

Revised, reorganized, and recently re-issued, the ESD Association's new ESD Handbook (ESD TR20.20) is now available for purchase from Association headquarters.



Produced specifically to support ANSI/ESD S20.20, the new 132-page document is a major rewrite of the existing handbook. It focuses on providing guidance that can be used for developing, implementing, and monitoring an ESD control program in accordance with the S20.20 standard.

Opening with an introductory section covering the *Basics of Static Electricity*, the new handbook closely parallels the structure of the S20.20 standard. The other three sections of the handbook cover *Personnel Safety, Administrative Requirements, and Technical Requirements* for an ESD control program. These three sections directly correspond to the three major sections of the standard, making the handbook an easy guide to establishing ESD control programs that conform with S20.20.

Like the standard, the new page handbook concentrates on preventing damage from electrostatic discharges greater than or equal to 100 volts human body model (HBM).

In addition to the reorganization and change in emphasis, content and references have been revised and updated to reflect new technologies and new standards.

The purchase price of the ESD TR20.20 Handbook is \$150 for ESD Association members and \$200 for non-members. Contact Association headquarters for purchasing information.

ESDA presents grants to fund ESD research

The ESD Association has presented two grants to help fund research in the area of ESD. Each of the renewable one-year grants is for \$10,000.

One grant was presented to Dr. Elyse Rosenbaum of the University of Illinois, Urbana-Champaign for research on "Models for Bipolar Transistors in ESD Protection Circuits." This research aims to develop circuit-level models to understand the bipolar device behavior and protection design. The industry is entering a new era in which device physics considerations are changing from MOSFET to bipolar modeling, especially with the emerging RF designs for wireless applications. Accurate use of new simulation tools and models from the research will aid in developing and implementing ESD protection designs for the new technologies.

From the Threshold chair

Of electrical overstress and electrostatic discharge avoidance...

To continue the theme started in the January/February issue, I would like to dwell a little on a new standards working group. No, I am not trying to take Mike B's job of reporting on standards update. This is the start-up of that standards working group and it continues the last column's theme of "Striving for the advancement of theory and practice....".



Leo G. Henry

The idea started back in 1999 when a few of us decided to write a Transmission Line Pulse (TLP) paper based on an improved procedure and new data that we had collected over the past 9 months. It could be a good story so read on.

A comprehensive search of the literature revealed that certain aspects of the

technique for testing the protection structures in ICs had not been addressed, and that the procedure varied tremendously from researcher to researcher. An e-mail call then went out to convene a "special" trial meeting to gauge the interest. The response was tremendous. The STDCOM chair, the ESDA president, the ESDA executive committee and the TAS Chair were all quite supportive.

The first meeting held in Anaheim in February 2000 "netted" over 20 participants. You can say that they came from "far and wide" places.

Two meetings later, again in Anaheim in September 2000, we organized a "round robin" spread sheet to collect existing data covering all the parameters that we felt

would contribute to a standard practice document. Again, the response was tremendous: 21 responses; yes, 21 spread sheets from 21 contributors. Amazing? Oh yes. Simultaneously, the STDCOM chair and TAS approved the FORM 3, which allowed us to become an official WG team. Our fourth meeting was held in February in Portland, and it was well attended by over 20 participants. Here we are with the official designation of TLP WG-5.5 and working under the umbrella of device testing-5.0.

Wish us well in our quest to advance the theory and practice of TLP testing. Our next meeting is in May in Dallas. If you are interested in joining our group, contact me at leogesd@pacbell.net.

Until next issue

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Threshold

THRESHOLD™ is published six times a year for the members of the ESD Association. The association is a not-for-profit corporation. It strives for the advancement of theory and practice of electrical overstress avoidance and of allied arts and sciences and the maintenance of a high professional standing among its members and others.

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Threshold™ Publication Schedule

Issue	Deadlines
May/June	April 1
July/August	June 1
September/October	Aug. 1
November/December	Oct. 1
January/February	Dec. 1
March/April	Feb. 1



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EOS/ESD Symposium

11 technical sessions, 64 papers—**Hard work makes it happen;
technology makes it easier****Preliminary Schedule**

2001 EOS/ESD Symposium
September 9-13, 2001
Oregon Convention Center
Portland, Oregon USA

Saturday, September 8

David F. Barber, Sr., Charity Golf
Tournament

Sunday, September 9

Tutorials

Monday, September 10

Tutorials

Exhibits and Reception (Evening)

Tuesday, September 11

Opening Session

Technical Sessions

Materials

CMOS Devices

Magnetic Recording

Factory Issues

Simulation and Modeling

Exhibits

Wednesday, September 12

Technical Sessions

Magnetic Recording

Materials

CMOS Design

Workshops

Exhibits

ESD Association Luncheon,
Meeting, Keynote

Thursday, September 13

Technical Sessions

System Issues

RF ESD Technology

TLP

Tutorials

Friday, September 14

ESDC Certification Exams

Getting from submitted abstracts down to 64 papers in 11 technical sessions for the 2001 EOS/ESD Symposium is no easy task. It wasn't that long ago that the work of the Symposium technical program committee was compacted into some very long days at the February meeting series. Abstracts to read (often for the first time and often relying on overhead projection) followed by the inevitable discussion and debate. Sorting, ranking, and re-sorting until finally the Symposium technical program emerged. Tight deadlines, lots of pressure.

Today, the process is easier and faster. Abstracts now arrive in electronic format by e-mail. They're sorted and redistributed by e-mail. Much of the commentary and debate take place by e-mail or conference call. There's more participation in the process by non-US members. "The technical program committee is comprised of members from around the world," explains Joe Bernier, technical program chair. "Often, it simply isn't practical for them to come to the US for a one-day meeting. With electronic distribution of abstracts and the use of conference calls, the Symposium has the opportunity to benefit from their expertise."

By the time February rolls around, many of the preliminaries are complete, allowing TPC members to concentrate on final questions or reevaluation and on properly fitting the selected papers into the appropriate sessions.

Even though technology has helped speed up the work and made life easier for both authors and the TPC, being a TPC member is a 16-month commitment. In mid-summer, the current technical program chair and committee members provide input to the incoming chair and new



Eric Granstrom, Seagate Technology, (left) and Marcus Mergens, Sarnoff Corporation (right) help score abstracts for the Magnetic Recording session and the Simulation and Modeling session, respectively.

committee members, helping identify appropriate topic areas to include in the call for papers. Part of the input involves looking specifically at emerging technologies that may result in new technical sessions such as the RF and simulation sessions scheduled for the 2001 Symposium.

As the abstracts arrive at Association headquarters, they are distributed to various subcommittees for review and discussion. The 60 members of the TPC then begin the process of evaluating and whittling the submissions down to the 64 papers being scheduled at this year's Symposium. "Sometimes a paper will be reviewed by more than one subcommittee," comments Bernier, "Sometimes it is not immediately obvious whether a paper would best fit a session on simulation or a session on CMOS technology, for example. This year we had eight subcommittees reviewing the abstracts and many of the abstracts were reviewed by more than one subcommittee."

Eventually the papers are ranked, sorted, and discussed using e-mail and conference calls. The February TPC meet-

continued on page 9

Calendar of events

March 2001

Midwest ESD Chapter Meeting: March 7, ESD/EMI Testing to IEC 1000-4-2, August Greidanus, Siemens Medical Systems, Bimbo's Restaurant, Palatine, IL, www.midwestesd.org

ESD Northwest Chapter Meeting: March 14, Nuclear and DC Ionization, Jim Curtis, Simco; INTEL, Hillsboro, OR, www.esdnw.org

DISKCON Asia-Pacific: March 14-15, Singapore, www.idema.org

Silicon Valley EOS/ESD Society Membership Meeting: March 27, Ramada Inn, Sunnyvale, CA, www.esdsiva.org, E-mail: leogesd@pacbell.net

Northeast ESD Chapter Meeting: March 28, Corrosion Enhanced ESD Effects, John Franey, Bell Labs/Lucent Technologies; HP-Agilent Center, Burlington, MA, www.nechapteresda.org

April 2001

Midwest ESD Chapter Meeting: April 4, ESD Training - What Should It Include? Bimbo's Restaurant, Palatine, IL, www.midwestesd.org

Texas Regional ESD Tutorial: April 5-6, 3M Innovation Center, Austin, TX, PH: 512-984-3170, Email: sckoenh@mmm.com

Silicon Valley ESDiscovery 2001: April 17, Westin Hotel, Santa Clara, CA, www.esdsiva.org, E-mail: leogesd@pacbell.net

International Reliability Physics Symposium: April 30-May 3, Orlando, FL

May 2001

Midwest ESD Regional Tutorial: May 1-2, Motorola Galvin Center, Schaumburg, IL, www.midwestesd.org

The local scene

Northeast RED program focuses on certification, education

Combining tutorial sessions with the ESDC certification exams, the Northeast RED program provides education with career advancement opportunities. The program is being co-sponsored by the ESD Association and the Northeast Chapter.

Scheduled for June 11-13 in at the Boston University Corporate Education Center in Tyngsboro, MA, the RED program features four tutorials that offer in-depth background on ESD Basics, Standards and Procedures, Auditing Measurements, and ESD Engineering Calculations. Although a primary emphasis of this RED program is providing education for persons intending to take the professional certification examination, the tutorials are also appropriate for persons who want to improve their knowledge of electrostatic discharge. In addition to the tutorials, the ESDC technician's and engineer's exams will be administered on June 13.

The June 11 tutorial on *ESD Basics* focuses on the fundamental concepts of electrostatic discharge: how and why it occurs and how to control it. Presented by Burt Unger of Burt Unger and Associates, the tutorial is appropriate for those who desire an introduction to the subject as well as those who desire an in-depth review prior to taking the certification exam.

The June 12 morning session on *ESD Standards and Procedures* is a comprehensive review of ESD Association standards documents and an overview of related ESD control procedures. Presented by Dave Swenson of 3M, the standards tutorial is oriented to persons planning to take either the ESDC technician or ESDC engineer certification exam.

Two afternoon tutorials on June 12 build on the concepts presented in the previous sessions and also will help attendees prepare for the ESDC certification exams. Presented by Don Pierce, Ph.D, of Sandia Technologies, the *Engineering Calculations for the ESD Engineer* tutorial covers engineering calculations for ESD and a review of device testing and sensitivity.

This session is oriented to persons seeking ESDC engineer certification. The second tutorial, *In-Plant Auditing and Evaluation Measurements*, is oriented toward ESDC technician applicants and is presented by Steve Halperin of SH&A/Prostat.

To accommodate individuals interested in ESDC certification, the Association has arranged for administration of the certification exam for both engineers and technicians on Wednesday, June 13, immediately following the tutorials. The eight-hour, open-book examinations cover a broad range of ESD control fundamentals including program design and management, ESD theory, standards and specifications, and specific ESD control procedures. The exam administrative fee will be waived for these examinations; however, the examination and application fees are still required.

The RED program schedule can be found on page 5 in this issue. For additional information on the professional certification program and a complete registration brochure on the Northeast RED program, contact the ESD Association, 7900 Turin Rd., Building 3, Rome, NY 13440-2069. Ph: 315-339-6937, Fax: 315-339-6793. E-mail: eosesd@aol.com. You can also download a copy of the program from the Association's web site, www.esda.org.

Correction ESDA Membership Roster

The new membership roster mailed in December contained incorrect contact information for two local ESD organizations. The correct information is

Silicon Valley EOS/ESD Society
Gene Johnson, 1-888-463-7373

**Southern California
Local Chapter**
Harry Lamberth, 1-714-447-4810

ESD education in your own back yard

This spring four local ESD organizations are providing close-to-home opportunities for expanding your

knowledge about ESD. ESD tutorial programs and seminars are being offered in Austin, TX, Santa Clara, CA,

Schaumburg, IL, and Tyngsboro, MA. Program and contact information for these events can be found below.

Texas Regional ESD Tutorial April 5-6 3M Innovation Center Austin, TX

Co-sponsored by the Texas ESD Association and the ESD Association

Thursday, April 5

Basics of ESD, David E. Swenson 3M
ESD Auditing, David Chestnut, C & M Consulting

Friday, April 6

Using ANSI/ESD S20.20 for ESD Program Development, David E. Swenson, 3M
Panel Discussion on ESD Issues

Information and Registration:

ESD Association
Web sites: www.esda.org
www.CenTxESDAssoc.homestead.com

Silicon Valley ESDiscovery 2001 Tutorial and Exhibits April 17

Westin Hotel, Santa Clara, CA

Sponsored by the Silicon Valley EOS/ESD Society
Tracks are running simultaneously.

Track 1

ESD Basics, Fred Lack- Interconsal-Protek
Establishing an ESD Control Program, Wayne Tan, AMD
Workstations, Ben Baumgartner, ESD West
Auditing and ISO-9000, Larry Burich, Lockheed

Track II

System Level ESD Testing, Doug Smith, D. C. Smith Consultants
ESD in Cleanrooms, Gene Williams, Semtronics
ESD-ICs Testing and FA, Leo G. Henry, ESD/TLP Consultants
ESD- MR Heads, Al Wallash, Quantum

Exhibits open all day

Information and Registration:

Leo G Henry
Ph: 510-657- 5252
888-4EOS-ESD (436-7373)
E-mail: leogesd@pacbell.net
Web site: www.esdsiva.org

Midwest Regional ESD Tutorial May 1-2 Motorola Galvin Center Schaumburg, IL

Co-sponsored by the Midwest Chapter and the ESD Association

Tuesday, May 1

ESD Basics, Burt Unger, Burt Unger Associates
Products and Services Show

Wednesday, May 2

ESD S20.20 Certification, Ron Gibson, Celestica, Inc.
Auditing and Training, Ted Dangelmayer, Lucent Technologies

Information and Registration:

ESD Association
Web sites: www.esda.org
www.midwestesd.org

Northeast Regional Education Program June 11-13 Boston University Corporate Education Center Tyngsboro, MA

Co-sponsored by the Northeast Chapter and the ESD Association

Monday, June 11

Tutorial 1, ESD Basics, Burt Unger, Burt Unger Associates

Tuesday, June 12

ESD Standards and Procedures, Dave Swenson, 3M
Engineering Calculations for the ESD Engineer, Donald G. Pierce, Ph.D
In-Plant ESD Auditing and Evaluation Measurements, Stephen A. Halperin, SH&A/ Prostat

Wednesday, June 13

ESDC Technician & Engineer Exams, Part 1
ESDC Technician & Engineer Exams, Part 2

Information and Registration:

ESD Association
Web sites: www.esda.org
www.nechapteresda.org

February 2001 standards meetings

Activities at the February 2001 standards committee and working group meetings were largely focused on review of existing documents and the continued development of technical reports.

Five-year Review

Two existing standards have completed their five-year review process required by ANSI and ESD Association procedures. No technical changes were made to either document. Reaffirmed as standards test methods were

STM 9.1: Resistive Characterization of Footwear

STM11.31: Evaluating the Performance of Electrostatic Discharge Shielding Bags

Working Group Activities

Wriststraps WG-1 reviewed and addressed several issues contained in its draft technical report on constant monitors.

Ionization WG-3 continued work on a technical report covering alternate test methods to the charged plate monitor for determining discharge time and offset voltage in ionizers. The group is discussing a variety of issues including plate size, voltage levels, and instrumentation.

Worksurfaces WG-4 reviewed comments on its draft technical report "A Survey of Static Control Worksurfaces and Grounding Mechanisms." Additional commentary on the draft will be reviewed at the May meeting series.

Human Body Model Device Testing WG-5.1 concluded that the test data for alternative methods of measuring high pint count devices was inconclusive for the preparation of a proposed technical report. In addition, the group concluded that any proposed changes to the existing HBM standard are of a minor nature and that the existing document could be sent to ANSI. The group also worked on the



Michael T. Brandt
Editor

next revision of the HBM document.

Machine Model Device Testing WG-5.2 completed its review of a proposed technical report discussing the reasons for not reducing the number of pulses per stress level from three to one and reducing the time between pulses from 1 second to 0.5 seconds. Because industry focus seems to indicate a shift in emphasis from MM to CDM, the group will be examining these industry trends to determine the future direction for machine model work.

CDM Device Testing WG-5.3.1 defined the focus and issues to be addressed in the next revision of the CDM document. The group completed the preparation and working group presentation of individual "white papers" discussing—and limiting—the important issues. Next a "CDM workbook" that links the identified issues to specific STM 5.3.1 sections with requested or required updates will be created.

Socket Discharge Model (SDM) Device Testing WG-5.3.2 is developing a draft standard practice document based on the 1994 draft document and the technical report prepared in 1999. The goal is to have a draft document ready for comment and review at the September meeting series.

Transient Latch-Up Device Testing WG-5.4 completed an initial draft standard practice covering transient latch-up and anticipates having a final version for review in May.

Flooring WG7 continued its 5-year review of the existing flooring standard, the working group has developed generic descriptions for the three types of meters that would be used for resistance measurements in the document: laboratory, acceptance, and auditing instruments. The

group had earlier discussed including resistance measurements made at 10 volts in the document, but has removed this requirement.

Footwear WG-9 has prepared an initial draft of a standard for measuring the electrical resistance of foot grounders and has forwarded the draft to TAS for review. The group is discussing whether there should be a standards document covering footwear testers.

Handlers WG-10 reviewed the grounding, ionization, and EMI content of its technical report. Sections on low voltage, low field and low resistance will be added in time for completion of a final draft by the May meeting series.

Packaging WG-11 reviewed a proposed draft of a revised EIA-541 document. Two Point Resistance (Packaging) WG-11.13 has constructed a second probe for taking two-point resistance tests for evaluation and comparison to existing procedures. Loose Fill (Packaging) WG-11.14 is reviewing and evaluating data from a second round robin test. The 5-year review of ANSI/EOS/ESD11.11 is in process and should be completed by the May meeting series.

Handtools WG-13 is selecting additional handtools used at work stations and will be conducting resistance testing of them. This preliminary work will help establish the validity of test procedures.

Simulators 14 completed an initial draft of its initial document and has begun work looking at radiated measurement technology.

Gloves WG-15 completed initial resistance testing of gloves using the procedures of S11.11 and S11.12. Additional analysis of the data and a review of the variables affecting the measurements are underway.

Workstations WG-53 is conducting a 5-year review of the existing standard. The group is revising some of the existing

continued on page 7

continued from page 6

Standards update

artwork in the document and expects to complete a revised draft for review by the May meeting series.

Cleanrooms WG-55 has nearly completed its technical report is nearly complete, which should be ready for publication in late spring. The group is also working on future additions covering cleaning materials, garments, and packaging that may be added as addenda at a later date.

Glossary

A revision of the *ESD Glossary* is targeted for completion in the fall.

Handbook

A revised ESD Handbook, *ESD TR 20.20* is ready for distribution. See page 1.

Tentative Schedule—May Meeting Series

Adams-Mark Hotel, Dallas, TX
May 18-20, 2001

Friday, May 18, 2001

8 AM: Wrist Straps WG-1
Ionization WG-3
Device Testing Working
Groups WG-5

1 PM: Handlers WG-10
Worksurfaces WG-4

5:30 PM: Daily Activity Review

Saturday, May 19, 2001

8 AM: Footwear WG-9
Cleanroom Considerations
WG-55
Work Stations WG-53
Device Testing Working
Groups WG-5

1 PM: Packaging WG-11
Flooring WG-7

5:30 PM: Daily Activity Review

7:00 PM Working Group Chairs

Sunday, May 20, 2001

8 AM: Simulators WG-14
Gloves WG-15

1 PM Standards Committee

Tee it up for charity



The ESD Association will sponsor its first ever, charity golf tournament in conjunction with the September 2001 EOS/ESD Symposium.

The David F. Barber, Sr. Charity Golf Tournament makes its debut Saturday afternoon, September 8 at Langdon Farms Golf Club, just 20 miles south of the Oregon Convention Center in Portland. Held in honor of David F. Barber, Sr., an avid golfer and one of the founders of the Symposium, the event will raise funds for two Portland charities, Doernbecher Children's Hospital and the Portland Ronald McDonald Houses. Proceeds from entry fees and from event sponsorships will be directed to these two organizations.

In announcing the event, David E. Swenson, Association past president and golf tournament co-chairman stated, "We felt that an event such as this is one way in which the Association can give something back to the communities that play host to our annual Symposium. We plan to make this an annual affair."

In order to appeal to participants of all skill levels, the event will be a scramble format. Golfers hit their shots from the position of the best ball in the foursome, including putts on the green.

To add to the fun, there will be hole sponsorships, contests such as longest putt or straightest drive, on-course refreshments, and plenty of prizes. The afternoon event will conclude with an evening barbecue supper at the golf course.

Participants may sign up as individuals or in foursomes. Participation is limited to 144 golfers.

Entry fees are \$125 for individuals and \$450 for foursomes. Sponsorships range from \$500 to \$1,200. Non-golfers may come for only the evening barbecue if they wish for a charge of \$25. Transportation to the golf course from the DoubleTree Hotel—Lloyd Center will be provided.

Complete information regarding playing in the tournament or sponsoring prizes, events, or holes will be mailed to Association members shortly. Registration and sponsorship forms can also be downloaded from the Association web site at www.esda.org.

Start making your plans now to participate in this first ever event. You will not only have an afternoon of fun and relaxation before getting down to the more serious business of tutorials and technical sessions, but you will be helping raise money for two good causes.

Moving up the ESDA ladder

By
Ed Weggeland,
Vice President, ESDA

At our December Board meeting held in cold and snowy Rome, NY, we discussed and approved the ESDA organization structure, goals, and objectives for the future.

Our strategy is to move forward in a specific direction to achieve common goals and objectives. Our objectives are defined as

- Achieving global acclaim through programs, services and materials
- Developing human resources

The business unit

As a result of many meetings during this past year, we are now organized into “business units,” each having 3-year plans with clearly stated objectives, strategies, and tactics to achieve global acclaim within their field(s) of activity. Each business unit is organized and led by a business unit manager. The four primary business units and their managers are Symposium/Technical – Koen Verhaege; Standards – Ron Gibson; Education – Ginger Hansel; Certification – Ron Gibson. Each business unit has a volunteer staff organized to achieve specific business unit objectives for the years 2001, 2002, and 2003.

Although the ongoing activities have had their annual operating plans, until now we didn’t have any “corporate” master plan or “corporate” human resource plan. For many years we have talked about our industry role and our human resources (volunteers and their significant value). We wondered and discussed, “What if a Mack truck took away our volunteer activity leader(s), or if they retired from active service?”

The rungs on the ladder

We now have a human resource development plan – we call it the “ladder”. Think of this plan in the form of a step-ladder, with rungs. When we identify and select people to work within an activity, they are on the first rung. As they gain experience and perform, they are invited to move up a rung – to a specific task assignment. Task completion results in being invited to move up another rung, to be mentored by a senior experienced volunteer/manager in a business unit activity.

The next step would be to become a business unit manager. From business unit manager to being nominated to run for a director’s position on the board of directors, and hopefully being identified and elected by the directors to the executive committee – the top rung (president, senior vice president, or vice president). After completing the top rung, they can look forward to retirement and basking in the sun

on some deserted island in the southern hemisphere (with a cell phone so they can lend council to their successors).

The “ladder” is open to all. What does it take to get on that ladder? Be a volunteer, step forward and be identified. Does every activity volunteer have to more up the ladder? No, only those who want to progress and fill our future needs of leadership.

Qualifications for the board

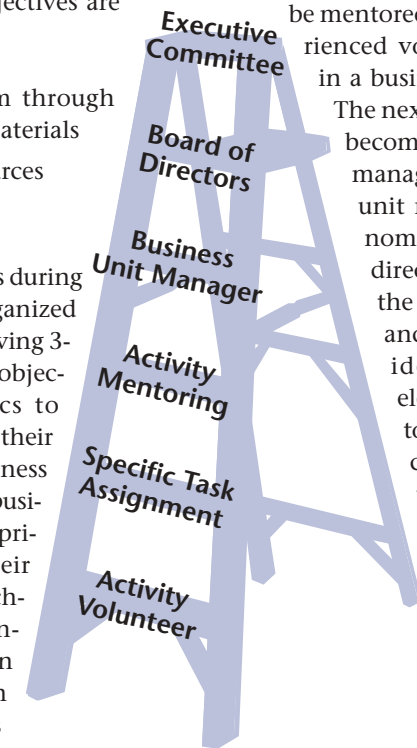
As part of the ladder, we also created a list of qualifications for candidates to run for election to the BoD. They are:

- Member in good standing
- Been on the ladder
- Completed a special task assignment
- Acted as a business unit manager or back-up
- Has written employer support
- Willing to commit to serving a minimum of 3 years on the board, 4 meetings per year
- Willing to accept a director’s job assignment when elected, with job description and end of year performance review
- Has experience in a discipline that has value to ESDA and contributes to ESDA growth and achieving operational 3-year plans
- Is a self-starter, has initiative, understands risk-benefit management concepts
- Has shown leadership qualities and performance
- Willing to commit to director’s term(s) plus a potential minimum of 6 years on the executive committee

We currently have a board with diverse backgrounds, experience, and active participation.

We cover many fields and activities. Some are from the industry user community, suppliers, educators, engineers, women and men. You can easily spot us; we wear the embroidered ESDA logo knit shirts in blue or white.

Besides paying attention to business unit activities, we are involved in member services, headquarter operations, regional tutorials, supplier contracts and joint venture presentations of our tech-



ESDA Human Resources Ladder

Special subscription rates offered to the *Journal of Electrostatics*

The ESD Association and Elsevier Science BV in the Netherlands are again working together to provide Association members with special subscription rates to the prestigious *Journal of Electrostatics*.

Produced by Elsevier, the *Journal's* normal subscription rate is over \$1,000 per year, making corporate libraries the typical subscriber. However, members of the ESD Association may obtain a personal subscription to the *Journal* for only \$99.00 per year. This offer is extended to ESD Association members for personal use only. No corporate subscriptions allowed.

Published in 3 volumes (4 issues/volume) per year, the *Journal* is the central point for papers dealing with all aspects of static electricity. Some of the best papers from the EOS/ESD Symposium are published in the *Journal of Electrostatics*

from time to time. For more details about the *Journal*, visit the following web site: www.elsevier.nl/locate/elstat.

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If you subscribed through this program last year, you will receive a renewal notice directly from the ESD Association.

Remember this special offer is for **ESD Association members only**.

Continued from page 8

Moving up the ladder

nology and products with other organizations, associations and trade events, in North America, Europe, and Asia.

We want you

So . . . you have a place to contribute to the continuing success of your ESD Association, if you want to. As the WWII poster said –“We want you”. If you want to become more active, please search us out – and let’s talk. Any board member or business unit manager would welcome the opportunity to discuss a role for you in our association activities. The directors are: John Kinnear, Steve Halperin, Ed Weggeland, Dave Swenson, Kay Adams, Tom Albano, Joe Bernier, Tom Diep, Charvaka Duvvury, Ron Gibson, Ginger Hansel, Leo G. Henry, Mark Kelly, Tim Maloney, Arnie Steinman, Koen Verhaege, and Steve Voldman.

continued from page 3

Hard work, technology make technical sessions happen

ing concentrates on a final overview. Often these face-to-face sessions provide the opportunity for the various subcommittees to compare notes on the papers that may have been reviewed by more than one subcommittee. And, sometimes a paper needs to be checked to see if it has previously been published. The Symposium only accepts original, unpublished work.

The work of the TPC doesn’t end with the selection of papers. The TPC needs to determine the number of sessions, assign papers to the sessions, decide a logical order of presentation, help revise abstract wording and paper titles if necessary for publication and promotion, and assist the authors produce a quality paper and presentation. This year’s program features 64 papers in 11 technical sessions: two on

CMOS, one on RF, one on Simulation and Modeling, two on Magnetic Recording, two on Materials, one on Factory Issues, one on TLP, and one on Systems ESD. Three of the papers are invited papers.

When the February meeting series comes to an end, the technical program has a firm shape. Now it’s up to the moderators, mentors, and authors to put the final touches on the presentations themselves and the slides that accompany them.

There are two final chores that await the committee, however. One is to select the best paper and best student paper following the presentations at the Symposium. In addition to sitting through as many presentations as possible, committee members need to go through the complete proceedings to help make the selection.

Then, of course, the input process to the next year’s committee and chair begins and we’re back to where we started this discussion.

The 2000 and 2001 symposiums had record numbers of papers submitted and accepted. “We think that the increase in submittals is due in part to a broader distribution of the call for papers,” says Bernier. “But, it also may be impacted by an easier and more timely submittal process for the authors. It’s an added benefit.”

When the curtain rises in September on the 64 papers being presented at the 2001 EOS/ESD Symposium, it represents the culmination of many hours of work by the members of the technical program committee, 60 individuals who are committed to offering a quality technical product.

Board elections fast approaching

How time flies! National elections disappear from the headlines, but for the ESD Association, the nomination and selection of new members to the board of directors is just getting underway. As many of you know, one-third of the board is elected each year for a three-year term. This presents the possibility of four new directors, but also assures the continuity and experience that eight on-going directors bring.

The director's position is a very important one for the membership and the Association. Board members are not only responsible for strategic planning and decision-making as a group, but each member typically manages one of the Association's business units or committees such as meeting planning, membership, education, standards, Symposium, or Threshold.

At press time your nominations committee was busily preparing the slate of

Continued from page 1

Research grants

The second grant was presented to Dr. Albert Wang of Illinois Institute of Technology, Chicago, for "An Investigation into the Vt1-tr Relationship in Transmission Line Pulse (TLP) Testing." Transmission line pulse testing has recently become a popular approach to understanding the device physics behavior and subsequently develop protection circuit designs. TLP can also serve as an effective tool for debugging ESD failures in product chips. The advantage of the TLP is that it simulates the ESD stress with control over the dynamics of the pulses for a more clear insight into the phenomenon. This project will help establish practical guidelines for the use of TLP testing and the methods to correctly interpret the data protection circuit design.

Research work on both projects is scheduled for 2001 and is anticipated for

candidates and soliciting nominations from the membership. All candidates must be properly qualified and meet the requirements spelled out in the nominations letter, which recently was sent to each member. Ed Weggeland also discusses these qualifications in his "ladder" article in this issue.

Ballots will be mailed to all Association members at the beginning of May and must be returned postmarked by July 1 to be counted in the election. The winners will be announced at the Association's annual meeting during the Symposium in Portland in September.

When you receive your ballots, read the information on each candidate carefully and make your choices for directors to lead your Association. Your vote does make a difference! Please be sure to get them in on time and make them count!

Joe Bernier, Nominations Chair

presentation at the EOS/ESD Symposium in 2002 or 2003.

"We received four excellent proposals this year," said academic outreach chair, Charvaka Duvvury, Texas Instruments. "Evaluation and recommendation of the proposals was by members of the EOS/ESD Symposium technical program committee with specific expertise in the fields."

The research grant program is an ongoing activity of the ESD Association Council on Education (ACE). The program goals are to expand fundamental understanding of ESD and critical future issues associated with the phenomena by encouraging education and university research efforts..

A call for proposals for research grants for the year 2002 will be announced in September.

On ohms per square what?

I enjoyed Gene Chase's article, "Ohms per Square What?" in the Jan/Feb 2001 issue and appreciated his efforts to explain something that continues to cause confusion among those in the ESD (and EMC) community. Having been involved with conductive fabrics for well over a decade and written a couple of articles discussing surface resistivity, I, too, have often been called upon to explain the concept and unit of surface resistivity to various people.

Even though, technically, the "per square" part of the unit is not necessary, I personally prefer and advocate the use of ohm/sq. If one accepts the definition of sheet (or surface) resistivity given by Berry, et al.* for thin materials, then, to me, it is appropriate to use ohm/sq because it distinguishes a properly measured surface resistivity from a surface resistance one might measure by just placing two probes randomly on the surface of a conductive sheet. Thus, if surface resistivity is reported in units of ohm/sq, then it usually can be assumed that the measurement took into account the geometry and placement of the probes and the size of the test specimen. Now, I realize that this is not always a safe assumption, but probably most people experienced in the field are aware of the difference between a properly measured surface resistivity and what I call a simple surface resistance.

There are certainly other factors that come into play when measuring surface resistivity, but when done properly under controlled conditions and reported in ohm/sq, surface resistivity can be considered a key, intrinsic material property. Therefore, I believe that the use of ohm/sq, not just ohms, is justified.

Sincerely,
Art Henn, Ph. D.
Marktek Inc., Chesterfield, MO

* Berry, R.W., Hall, P.M., Harris, M.T., *Thin Film Technology*, Van Nostrand Reinhold Company, New York, NY, 1968.

Dr. Henn is the president and founder of Marktek Inc. He holds a Ph. D. in physical chemistry from Princeton University and a B.S. in chemistry from Virginia Tech.

Institutional Listings

<p style="text-align: center;">Trek Incorporated P.O. Box 728, Medina, NY 14103 Tel: 716-798-3140 Fax: 716-798-3106 www.trekin.com Manufacturer of instrumentation for measuring surface voltage, ionizer performance, and surface resistivity</p>	<p style="text-align: center;">Compass Concepts, Inc. 467 Forbes Blvd., South San Francisco, CA 94080 Tel: 415-583-4244 Fax: 415-583-9564 Distributor of ESD flooring</p>
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