Metrology Gets Back to Science

Following the recent Measurement Science Conference in Anaheim, CA, the NCSL Board of Directors met in Santa Barbara for our first meeting of 1999. We had a full three days of discussion with three invited speakers. Dr. K. Gebbie, Director of the NIST Physics Laboratories, presented an overview of these facilities. All of us appreciated her presentation and thank her again for taking the time out of her busy schedule in order to meet with us.

Our second invited speaker was Steve Stahley who brought us up-to-date on accreditation activities within the automotive industry. It appears that we have to get used to terms like accreditation and “life” accreditation. Since the automotive industry is of such a magnitude and importance to the world economies, I hope that we will be able to form a NCSL committee for activity in that industry. Such a committee would allow for the NCSL to provide a focus for all of us to stay in touch with the rapidly changing accreditation and certification processes taking place in the automotive industry.

Finally, Malcolm Smith and Keith Cable presented a proposal for small independent laboratories to start an initiative with the NCSL regarding increased visibility and activities for those facilities. Bill Quigley, NCSL Immediate Past President, has agreed to head an ad hoc committee on this issue and provide detailed recommendations by the end of this year.

As hinted at in my previous message, the NCSL Board of Directors had to take actions regarding the operational budget of the organization. (I am choosing here to differentiate between two budgets, one for operational income and expenses and one for the annual conference.) Operational expenses have been running ahead of income, and actions were required to remedy the situation. The Board agreed during the February 1999 meeting to increase membership dues to $325 starting with the year 2000 renewals. Of this $325, $25 will be discounted for timely renewals (by January 31st of the next year).

In addition, it was agreed to impose a new member fee of $400 for any new applicants starting in February 1999. These increases are required in order for the organization to stay current with technology and skills and to provide sufficient timely services for the membership.

In conjunction with this dues increase, the Board also agreed to move forward with filling the vacant position of the NCSL Business Manager. (This position has been vacant since January 1998.) An announcement regarding this position was mailed to all domestic member delegates in early February this year. The hope is to have this position filled by April or May of this year.

The position of Business Manager, a full-time paid position, is of extreme importance to the organization in order to not only manage the NCSL office in Boulder, CO, but also to serve as the American National Standards Institute (ANSI) Secretariat. The latter responsibility needs a permanent solution so that the organization can continue serving as an official standards-writing body for ANSI. So far, two (2) standards have been written and accepted by ANSI: Z540-1-1994 and Z540-2. We aim to continue with updates to these standards and to expand into additional ones.

Additional functions and responsibilities, difficult to perform by volunteers, will come under the direction of the new Business Manager. These additional duties will be identified in the near future.

Fortunately for the organization, we have been able to rely on the business office services of Doris Schaffner and JoAnn Knowles under the 
(Continued on page 3)
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**Plan Now for Your Annual Meeting with the Metrology Clan**

**THE 1999 NCSL WORKSHOP AND SYMPOSIUM**

**CONFERENCE CENTER**

CHARLOTTE, NORTH CAROLINA

**July 11-15, 1999**

**THEME: METROLOGY—AT THE THRESHOLD OF THE CENTURY—ARE WE READY**

(See pages 5-9 for details)

**Contact:** NCSL Business Office

- 303-410-3339
- E-mail: <ncsl-staff@ncsl-hq.org>

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**EDITOR’S MESSAGE:**

An NCSL Overview

Vice-President Ed Nemeroff has recently created a set of overhead slides to use in presenting an overview of NCSL’s strategies and operations. It is useful to see the many facets of NCSL all in one place, so I decided to summarize the slide set in a short format on pages 20–24.

If you want a set of these slides, you can send an e-mail to Ed, and he will send the whole file in MS Powerpoint software format.

---

**Condolences to Dean Brungart**

Dean Brungart, NCSL Past President, Teledyne Metrology Manager, and decades-long manager for NCSL trade show exhibits, reported that his beloved wife, Carolyn, died February 7, 1999. Carolyn had battled Leukemia’s Disease valiantly for some years. Dean said just that, “She did not wake up today.” A sad day for all who knew her. Many of us will remember the vivacious Carolyn from the many board meetings and annual conferences she attended with Dean. My philosophy of life includes the truism, “Life is a Crapshoot,” as witnessed by the fact that so many of the best of our friends are taken from us too much too early for their time.

We wish Dean and his family and all their friends our best wishes in this difficult time. Donations may be sent to:

- Forbes Norris, MDA/AES Center
- Attn: Carolyn Brungart
- P.O. Box 7999
- San Francisco, CA 94120-7999

(Continued on page 4)
PRESIDENT'S MESSAGE
(Continued from Cover)

dustry. Improving our knowledge of these constants enhances the
associated accuracies, reduces overall uncertainties, and provides
improved metrology.

Other centennial celebrations will follow in the next few years for
several professional societies and organizations. In particular,
NIST will celebrate its 100th year anniversary in the year 2001.
Needless to say we are all looking forward to that celebration and
will join them by scheduling our annual conference in Washing-
ton, DC in that landmark year.

Speaking of NIST, physics, and fundamental constants, brings us
to the Bureau International des Poids et Mesures (BIPM). This
organization is supported by member countries and is providing
traceability and agreements for artifacts and parameter scales. The
only artifact remaining is the kg required for mass metrology. The
BIPM is the official keeper of the original mass artifacts dating
back to the last century. Experiments are well under way at NIST,
the National Physical Laboratory (NPL) in England and others to
realize the kg in the future by the use of current balances based on
the ampere or watt.

Four of the six physical base units, the ampere, the second, the
meter, and the candela can now be realized in any first class met-
rology laboratory by the use of atomic and quantum standards.
(In case of the ampere, the unit is realized through the volt and
ohm.) The BIPM does provide traceability to the remaining physi-
cal parameters, the kg as mentioned earlier and temperature. For
the latter, the Consultative Committee for Temperature (CCT)
defines the temperature scale. The CCT reports directly to the
BIPM.

Recently, the BIPM has embarked on a much wider mission by
initiating a vast round of worldwide Inter-Laboratory Compari-
sions (ILCs) between National Measurement Institutes (NMIs).
These ILCs extend way beyond the base units into derived units
for dimensional, mechanical, electrical, and physical metrology
areas. A database has been established which will list all the re-
sults of these ILCs in detail. This database will serve as the foun-
dation of equivalence for parameters between metrology regions
like Europe, North America, and the Asia-Pacific regions in addi-
tion to bilateral agreements between countries.

The importance of these ILCs at the highest level with their asso-
ciated equivalence statements can not be overemphasized. The
next level ILCs will be between accredited laboratories. Many of
these ILCs are already underway. As a matter of fact, they have
been under way for many years in Europe and other parts of the
world with the USA lagging behind. However, the USA is catch-
ing up and many ILCs are under way between accredited labora-
tories reaching across countries and regions.

Data from all these ILCs need to be captured also in a database
similar in format used by the BIPM. By using data available from
these databases, accrediting agencies around the world can then
drive their statements of equivalence between ILC participants
across national and regional boundaries. This is of course what
industry needs in order to sell and buy products without being
subjected to multiple accreditations, audits or calibrations. Once
again, data of these ILCs and statements of equivalence are needed
in the tough competitive business environment.

We should now go one level lower. Within corporations or local
areas, additional ILCs should be organized having at least one
President's Message

accredited facility participating. This would provide traceability for the participants. It would, however, be much better if all ILC participants were accredited.

Many of such “industrial” ILCs are already operating in the USA and I am sure in other parts of the world. The NCSL through its committee on Measurement Comparison Programs is in the process of collecting such data. (If any of the readers know of ILCs not currently captured by the committee, please contact the committee, listed as #142 in the NCSL Newsletter roster.) Having all the data from these ILCs in a common base would be another leap forward; especially if all three levels of them could be kept in the same format and made accessible to all of us.

The trend is clear. In the future, with the help of accredited laboratories, traceability and equivalence can be demonstrated at multiple levels of parameter uncertainties. Most of the one on one measurements by NMIs like NIST will become passe. Fortunately, many NMIs have already embraced this concept by pro-active participation in the process. Those who are still opposing this concept and are insisting on old-fashioned and expensive traceability measurements, will have to realize that a new reality is upon us.

This brings me to the next step of the metrology evolution. As the accreditation process widens to ever bigger circles and encompassing more and more industries, the use of ILCs will increase tremendously. Facilities will come to realize that a lot of overlap exists between competitors. At the same time, outsourcing activities by large corporations and the government will increase (certainly within the US). This metrology market is going to be huge and individual private metrology facilities need to be able to bid on such contracts, contracts asking for hundred of thousands of metrology services a year! Partnerships and alliances have to be formed. Cost savings between such groups will dictate sharing of resources. In the end, the number of participants in the “industrial” ILCs will decrease but it will not cease.

How long will this evolution take? It is difficult to tell. But the progress made by the BIPM in the last two years is very impressive. Accreditation is now taken hold in the US on a vast scale and corporate worldwide mergers and consolidations are taken place daily. Metrology is not going to be far behind.

I’d like to end this message with a few comments regarding our Newsletter. The format of this publication has essentially been the same for many years. Our editor, John Minck, in his tireless efforts, is always assuring high quality articles and ethical conduct by the authors. However, at least once a year, the Board faces the issue of “free” advertising in the Newsletter. It may come in the form of publicity releases of vendors or, more subtly, included in articles published in the Newsletter. This is not unusual, incidentally, and it is seen in some form, in most commercial trade magazines, where they run industry news and new product releases regularly as part of their standard editorial/advertising mix.

So the question is: “Is it time to change our 38-year practice and start including paid advertisement in the newsletter strategy?” We already depend on substantial income from industry in the paid exhibits at our annual conference. Would paid newsletter advertising take away some emphasis from our exhibition at the annual conference? Once again, I would value your opinion on this matter. Please let your sectional or regional coordinators know your opinion.

Finally, start your planning to attend our symposium/workshop in July. It once again promises to be an exciting program with four full days of speakers, panels, and workshops. This year NCSL will run tutorials before and after the conference. See page 7. Please check out the NCSL web page regarding conference and tutorial registration along with hotel and airline information. I hope to see all of you in Charlotte, NC.

Klaus B. Jaeger
NCSL President

EDITOR’S MESSAGE
(Continued from page 2)

Liaison Reports Expand Greatly

Have you noticed that recent newsletters have carried far more Liaison Reports than before? I see it from a page count, but also, in editing the materials, I also see that NCSL has greatly increased its spheres of influence through official contacts with all these other related organizational activities. I applaud all that, and have chosen to expand the coverage since I believe that you knowledgeable Metrology Manager NCSL members will want to stay abreast of the various activities of these important groups.

John Minck
NCSL Editor
THE 1999 NCSL WORKSHOP AND SYMPOSIUM

Conference Theme
During the second half of this century an increased reliance on fundamental physical constants for base unit realizations has been evident. In addition, increased activities for writing international documentary standards (e.g., ISO series) have been evident together with a lot of new activities for international intercomparisons. The next century will bring further reliance on physical constants and compliance with international documentary standards as well as many international intercomparison programs from the primary to the working standard level. Do you or your company need assistance in any of these areas to further prepare for the next century of business activity? Join us in Charlotte for this important conference.

LEARNING OPPORTUNITIES

Networking
NCSL provides many opportunities to meet other conference attendees from all over North America and other parts of the world - people who have interests, problems, perspectives and situations similar to yours.
- Reception - Sunday Evening
- Conference Banquet - Tuesday Evening
- International Event - Wednesday Evening
- Exhibits - Sunday thru Wednesday
- Luncheons and Breaks - Monday thru Thursday

Committees
Join with the people who are doing the inside work in committees such as:
- ANSI/NCSL Writing Committee
- Utilities
- Healthcare Metrology
- Laboratory Facilities & Evaluation
- Airline Industry Metrology
- Automatic Test & Calibration
- Intrinsic & Derived Standards
- U.S. and Canadian Measurement Requirements
- Calibration/Certification Procedures

Exhibits
Meet face to face with key company executives and technical experts from more than 100 leading manufacturers supplying products and services to the measurement community.
- New Equipment Demonstrations
- Applications Information
- Problem Solving and Networking

TOPICS
Topics will be presented in separate program tracks all day on Monday, Tuesday, Wednesday, and Thursday morning, and in a general session Thursday afternoon:

Theoretical
- New Standards & Improved Standards
- Intrinsic and Derived Standards
- Advances in Measurement Disciplines
- Standards & Calibration at National Laboratories

Applied
- Laboratory Automation
- New Trends in Instrumentation
- Metrology for Petrochemicals, Utilities, Pharmaceuticals and Chemistry

Managerial/Quality
- ISO Documents (9000, Guide 25, etc)
- ANSI/NCSL Standard Z540-2
- Metrology Management Info Systems
- Strategic Planning
- Equipment Management
- Quality Standards
- Laboratory Accreditation
- Metrology Education and Training
- Self-Managed Workforce
- National Measurement Systems Around the World

For information contact the NCSL Business office
(303) 440-3339 FAX: (303) 440-3384 e-mail: ncsl-staff@ncsl-hq.org

Serving the World of Measurement
1999 NCSL Workshop & Symposium — Attendee and Guest Registrations

NOTE: Participants in ALL NCSL activities must be at least 18 years of age.

Name ___________________________ Title ___________________________

Company ________________________ Mail Stop ________________

Dept., Div. or Lab __________________

Address ___________________________ State _______ Zip ______

City ___________________________ Phone ( ) _____________ FAX ( ) ___________

Please note: Conference registration does not include hotel registration. See hotel information page.
Also note: See hotel information page for "Win Free Airline Ticket" details.

1999 PROCEEDINGS

Regular Rate: Late Rate:
NCSL Member $435 $485 after 6/21/99
Non-Member $485 $535 after 6/21/99

* Conference fee includes Banquet

Make all checks payable to: NCSL Conference 99

☐ $____ for International Event ($60 each) Southern barbecue and pace car rides at Charlotte Motor Speedway

Register On-Line at <http://www.ncsl-hq.org> If registering on-line, please DO NOT send this card!
No registration by telephone. If not registering on-line, Mail or Fax this card to:
NCSL, 1800 30th St., Suite 305B, Boulder, CO 80301 • (303) 440-3339 Fax (303) 440-3384

The full program will be available in April. Please see the program for additional information about hotels, guest tours, banquet, and the International Event.

☐ Please note Americans with Disabilities Act (ADA) requirements here:

☐ Please indicate special dietary requirements here:

CONFERENCE REGISTRATION CANCELLATION POLICY:

Full registration fee will be refunded IF WRITTEN NOTICE IS RECEIVED (by fax or mail) BY JUNE 28, 1999. Registrants who fail to attend and do not cancel prior to June 28, 1999, will be liable for a $200 cancellation fee.

You may transfer your registration to another individual from your organization to attend in your place without penalty. WRITTEN AUTHORIZATION FOR THIS SUBSTITUTION IS REQUIRED. Please mail or fax written notice of substitution to the Business Office to arrive in advance of the Conference.

1999 NCSL GUEST'S PROGRAM REGISTRATION

Name: ___________________________

Name of your host NCSL Workshop attendee _____________________________ Tel. (_____) ________

Please Check the Activities You Will Attend

Sunday ☐ Evening reception and registration (Badges will be required) = N/C

Monday ☐ Tour Orientation and Continental Breakfast = N/C
☐ Silver Lining of the Carolinas Tour & Lunch - $80 x __ people
George Vanderbilt "Biltmore House", gardens and winery; buffet lunch at Deer Park Inn

Tuesday ☐ A Day with the Queen Tour & Lunch - $40 x __ people
Charlotte city tour & shopping at South Park & Shops on the Park; lunch at Pewter Rose

☐ Conference Banquet - $50 x __ people

Wednesday ☐ Beautiful Blue Ridge Scene Tour & Lunch - $50 x __ people
Driving tour of Blue Ridge Parkway; lunch at Chefsa Resort; stops for shopping

☐ International Event - $60 x __ people
Southern barbecue and pace car rides at Charlotte Motor Speedway

NOTE: Participants in ALL NCSL activities must be at least 18 years of age.

Total Enclosed
TUTORIALS

This year the NCSL will run tutorials in conjunction with the Annual Workshop and Symposium. Four tutorials will be offered — two on Saturday 10 July 1999, and two on Friday 16 July 1999. The AM session will be 8:00 to 12:00 and the PM session from 1:00 to 5:00. Below are descriptions of the tutorials being offered.

Saturday, July 10, 1999, 8:00 AM

INTERNET WEB PAGES FOR DUMMYS
John Grajera
Lockheed Martin Technical Operations
Sunnyvale, CA

Many of the leading corporations in the US have been involved in writing Web pages for the internet since late 1993. The first pages were out on the net available for public view using Mosaic in 1994. Mosaic was a European software effort to create a viewing program to display web pages. The Mosaic effort was eventually extended and continued in the US. The current efforts consist of many commercially available web browser programs to view billions of pages from the commercial sector of our economies and from all other sectors both public and private. This presentation will define a small set of network terms, then build on those terms to give the audience a basic understanding of the internet. Using a web page editor, a simple page will be built and simple page features explained. The object of the talk is to give the audience enough information and understanding to start writing simple pages. This will enable attendees to put their new skills to work creating pages for their organization or company. The presenter assumes the audience has no technical knowledge of web page design or of the technical aspects of the internet, only a network user understanding. Experience using Netscape, Mosaic, Internet Explorer or any other web browser is highly desirable. The talk will build pages using Microsoft Front Page. This does not mean the presenter promotes the use of this product. It is only used for demonstration purposes.

Saturday, July 10, 1999, 1:00 PM

UNCERTAINTY, SPC AND RISK ANALYSIS METHODS
Dr. Howard Castrup
Integrated Sciences Group
Bakersfield, CA

The tutorial examines methods and techniques of uncertainty analysis, statistical process control and measurement decision risk analysis. Uncertainty analysis methods are taken from accepted standards, including the ISO Guide to the Expression of Uncertainty in Measurement and NIST Technical Note 1297, and from published papers and current research. SPC methods are taken from accepted practices, documented in quality control handbooks, and include new methods emerging from current research in the field. Risk analysis methods, relating to accuracy ratio and guardbanding analysis, are taken from NASA Reference Publication 1342 and from established papers in the field. Concepts will be illustrated using commercially available software.
Friday, July 16, 1999, 8:00 AM

STANDARDIZATION AND TRACEABILITY OF ROCKWELL HARDNESS
Samuel R. Low, Walter S. Liggett, John Song
NIST
Gaithersburg, MD

The National Institute of Standards and Technology (NIST), in partnership with ASTM and US industry, is currently developing a system for providing traceability of indentation hardness measurements to national standards. The key parts of such a system include standardization of the hardness scales at the national level, transfer mechanisms (i.e., test blocks, indenters), secondary hardness calibration laboratories, appropriate test method standards, laboratory accrediation, and uncertainty determination. Initially, the focus has been to develop a traceability system for Rockwell hardness measurements. The intent of this tutorial is to discuss the issues related to the development of the parts of the traceability system, and possible consequences of changes that may result.

Friday, July 16, 1999, 1:00 PM

TECHNICAL REQUIREMENTS OF NCSL Z540-1 AND DIMENSIONAL METROLOGY
Theodore D. Doiron
NIST
Gaithersburg, MD

The technical requirements of the U.S. standard, ANSI/NCSL Z540-1-1994, as they pertain to dimensional metrology will be analyzed. The discussion will go through the relevant parts of the standard, sections 7 to 12, and discuss how they relate to the environment, procedures, etc. of the dimensional metrology laboratory. Examples of good and questionable practices will be scrutinized.

---

NCSL Workshop & Symposium, July 11-15, 1999
NCSL Tutorials, July 10 & 16, 1999

Name: ____________________________

Company: ____________________________

Address: ____________________________

City: __________________ State: ______ Zip Code: ______

Country (if not USA): ____________________________

Fees for each tutorial selected:
$90 until 6/20/98
$100 after 6/20/98

Limited to 60 each session
☐ Saturday AM ☐ Friday AM
☐ Saturday PM ☐ Friday PM

Make checks payable to:
NCSL Conference 99

Mail or fax this form, along with your conference registration, to:
NCSL, 1800 30th St., Suite 305B, Boulder, CO 80301 • (303) 440-3339 • Fax (303) 440-3384
Hotel Information
NCSL Workshop & Symposium, July 11-15, 1999

The following hotels have offered special rates for the NCSL Workshop & Symposium attendees. Please call the hotels directly for reservations or additional information.

Adams Mark (Headquarters Hotel)
Ph: (704) 372-4100/Fax: (704) 348-4646
Rate: Sgl $88/Dbl $108

Holiday Inn (Government only)
Ph: (704) 335-5400/Fax: (704) 376-4921

Radisson Plaza
Ph: (704) 377-0400/Fax: (704) 347-0649
Rate: Sgl $108/Dbl $118

Doubletree
Ph: (704) 347-0070/Fax: (704) 347-0988
Rate: Sgl $99/Dbl $99

Marriott City Center
Ph: (704) 333-9000/Fax: (704) 342-3419
Rate: Sgl $99/Dbl $109

Sheraton Four Points
Ph: (704) 372-7550/Fax: (704) 333-6737
Rate: Sgl $92/Dbl $92

DISCOUNT AIRFARE
Fly Delta Airlines to the NCSL Conference in Charlotte — Save 5%-15%

Delta Airlines is offering special meeting fares for all attendees of NCSL who use our Group Booking Number to book their reservations. Book early and take advantage of the promotional fares that give you the greatest savings!

Earn a 5% discount off published domestic fares, including First Class, in effect when tickets are purchased subject to all applicable restrictions, or a 10% discount off full coach domestic airfare.

Earn an additional 5% off either fare if you book 60 days in advance! (Domestic flights only)

In addition, traveling companions accompanying attendees to Charlotte also qualify for the above discounts!

For Domestic travel (including Canada, Mexico, Bermuda, San Juan, Nassau, and U.S. Virgin Islands): Simply call (or have your travel agent call) Delta Meeting Network Reservations at 1-800-241-6760 and refer to File Number 124527A.

For International travel: You must call Delta Airlines direct (cannot use a travel agent). Call the Delta Airlines number in your country. International discounts are 14% from all countries, and 20% from Japan. Refer to File Number 124528A.

Again — when flying to Charlotte for the conference — a 5%-15% discount is available if and only if you refer to File Number 124527A or 124528A.

DELTA AIRLINES IS THE OFFICIAL AIRLINE OF THE 1999 NCSL CONFERENCE

WIN A FREE DELTA AIRLINE TICKET — Traveler must have the Delta File number on his ticket. Those who book their flight later than 2 weeks before the conference must show their ticket at the Conference registration desk to be entered. Winner will be chosen by random drawing to be held during the Conference Closing.

Exhibits
NCSL will have exhibits of products of interest to the measurement community at the 1999 NCSL Conference at the Convention Center in Charlotte, North Carolina.

If you are interested in being an exhibitor in 1999, do not delay in making your reservation because exhibit space is limited.

For information about exhibiting a product, please contact:

Tom Hutttemann
NCSL Exhibits
4850 County Rd. #11
Rushville, NY 14544
(716) 554-6295 Fax: (716) 554-4434
e-mail: <hutt@frontiernet.net>
Past President Ed Nemeroff (with all the luggage) provides "PAYBACKS" by playing doorman for Kevin Ruhl, Tony Anderson, and Mike Suraci.

There goes David Nebel volunteering for something again. Anyone who would agree to be V.P. for Conferences for more than one year loves punishment. John Wehrmeyer, Sharrill Dittmann and Peter Heydemann look on.

President Klaus Jaeger presents a gift to retiring NIST Representative Peter Heydemann, as Klaus's wife Maria observes.

Klaus (r) also presents a departing gift to Bill (don't call me William) Quigley as the retiring NCSL President.

NCSL Executive V.P. Dave Abell of HP makes his presentation.

Getting the brain trust together at the Board dinner, Dave Agy, Tony Anderson, Dick Peitt, John Wehrmeyer, David Nebel, Jim Patterson, Harry Moody.
The runner-up for the most colorful tie contest, NCSL Treasurer Kevin Ruhl who used an NCSL check as his necktie. John Wehrmeyer was the actual winner.

For the NCSL's "Mrs. USA Contest," Maria Jaeger, Sharrill Dittmann, Sharon Hittlemann.

Ed Nemeroff, Dr. Katharine Gebbie and Peter Heydemann. Dr. Gebbie is Director of the NIST Physics Laboratory.

One of the best perks this volunteer Board gets is the convivial Board dinner. Angela Shuler, Rose Morzko, Charlie Morzko, Hong Rosson and NCSL Office Manager, Joan Wilshire.

To draw this crowd, the Board meeting must have been at someplace pretty nice in winter—no surprise, it was Santa Barbara, California. The Radisson Hotel overlooks the blue Pacific.

(See page 19 for more BOD pictures)
METROLOGY CALENDAR

NCSL MEETINGS

July 11-15, 1999
NCSL Workshop & Symposium
Conference Center, Charlotte, NC
CONTACT: NCSL Business Office, (303) 440-3339
FAX: (303) 440-3384
e-mail: ncsl-staff@ncsl-hq.org

INDUSTRY/GOVERNMENT MEETINGS

April 19-23, 1999
10th Intl. Conf. on Modern Trends in Activation Analysis
Natcher Conference Center, NIH, Bethesda, MD
CONTACT: Richard Lindstrom, (301) 975-6284
G. Venkatish Iyengar, (301) 975-6294
Fax: (301) 208-9279
e-mail: mtaa10@nist.gov
Homepage: <http://www.cstl.nist.gov/nist839/>
Electronic Registration: <https://sales.nist.gov/conf/secure/CONF101/conf_register.htm>

April 25-28, 1999
Malcolm Baldridge National Quality Award, Quest for Excellence
Marriott Wardman Park Hotel, Washington, DC
CONTACT: Daniel Barton, (301) 975-3555
Fax: (301) 948-3716
e-mail: daniel.barton@nist.gov
Sue Rohan, (301) 975-4329
Fax: (301) 948-3716
e-mail: sue.rohan@nist.gov
Homepage: <http://www.quality.nist.gov>

June 7-8, 1999
Intl. Symposium on Advanced Materials with Biomedical Applications
NIST, Gaithersburg, MD
CONTACT: Said Jahanmir, (301) 975-3671
Fax: (301) 975-5334
e-mail: said.jahanmir@nist.gov
Homepage: <http://www.msel.nist.gov/programs/Ceramic_machining/>
Electronic Registration: <https://sales.nist.gov/conf/secure/CONF93/conf_register.htm>

June 7-11, 1999
Conf. on Radionuclide Metrology & Its Application
Prague, Czech Republic
CONTACT: Bert Coursey, (301) 975-5584
Fax: (301) 869-7662
e-mail: bert.coursey@nist.gov
Homepage: <http://www.cni.cz/E-index.html>

REGION MEETINGS

REGION 3

Virginia Section, April 12, 1999
Tidewater Virginia Meeting
Tidewater Community College, Norfolk, VA
CONTACT: Deidre Fisher, (301) 384-8500
Fax: (301) 421-1730
e-mail: deidre@eicorp.com

Maryland Section, April 29, 1999
Northern Virginia, Maryland, Washington DC Meeting
Springfield Hilton, Springfield, VA
CONTACT: Martin Johnson, (433) 778-6671
Fax: (433) 778-7061
e-mail: marlin.johnson@jhuapl.edu

REGION 4

Tennessee Section, May 10-13, 1999
International Dimensional Metrology Workshop
Holiday Inn Select at Cedar Bluff, Knoxville, TN
CONTACT: Ed Pritchard, (423) 574-4261
Fax: (423) 574-2802
e-mail: ewp@ornl.gov

REGION 9

April 13, 1999
Mt. Hood Community College, Gresham, OR
CONTACT: Larry Warner, (425) 356-5195
Fax: (425) 356-5992
e-mail: larry.warner@fluke.com

April 15, 1999
Seattle Design Center, Seattle, WA
CONTACT: Larry Warner, (425) 356-5195
Fax: (425) 356-5992
e-mail: larry.warner@fluke.com

CHECK WEBSITE FOR UPDATES

www.ncsl-hq.org

Please send Metrology Calendar additions and corrections to the NCSL Business Office,
(303) 440-3339 FAX:(303) 440-3384, or E-mail to ncsl-staff@ncsl-hq.org
Call for Papers

for the

THE 2000 NCSL WORKSHOP AND SYMPOSIUM

July 16-20, 2000
Toronto, ON, Canada

Metrology, Intangible Imbedded Support?

Conference Theme
Metrology is like insurance, few outsiders realize its importance until it is too late. How do we raise the level of awareness of metrology in order to fully realize the benefits of a strong metrology program? In order to have the ability to control, we must possess the ability to measure, which in turn requires the ability to verify what we are measuring. As metrologists, until we find a way to educate our organizations and customers about the tangible benefits of metrology we will continue to see metrology treated at the corporate level as a necessary evil as opposed to an integral part of business in the new millennium. The 2000 conference will provide the forum for answering these important questions. Join us in Toronto in July 2000.

Papers, Panels and Workshops

Suggested Topics

Theoretical
◆ New Standards & Improved Standards
◆ Intrinsic and Derived Standards
◆ Advances in Measurement Disciplines
◆ Standards & Calibrations at National Labs

Applied
◆ Lab Automation & Calibration Processes
◆ New Trends in Instrumentation
◆ Metrology for Petrochemicals, Utilities, Healthcare, Pharmaceuticals, Chemistry, Transportation, & Specialized Disciplines

Management/Quality
◆ ISO Documents (9000, Guide 25, etc.)
◆ ANSI/NCSL Standard 6540-1 & Handbook
◆ Metrology Management Info Systems
◆ Strategic Planning
◆ Equipment Management
◆ Quality Standards
◆ Laboratory Accreditation
◆ Metrology Education and Training
◆ Self-Managed Workforce

◆ National Measurement Systems Around the World

Requirements and General Information

Papers, panels, and workshops submitted for consideration must relate to measurement science, and treat current and future concerns and technology. Wherever appropriate, the papers should relate to the conference theme. They must be non-commercial and objective.

The following deadlines must be met, as abstracts are used to develop the Conference Program and the manuscripts are published in the Conference Proceedings.

Authors who meet the publication deadline for papers included in the proceedings will receive one complimentary registration per paper to the 2000 NCSL Workshop & Symposium.

Panel and workshop participants are encouraged to provide manuscripts for publication also, and thereby qualify for a complimentary registration.

Abstracts are required for Workshops, Panels, and Papers.

Due Dates

Abstract: December 20, 1999
Paper: April 17, 2000

Abstracts of 100 words or less and camera-ready manuscripts should be sent to:
Dave Nebel
NCSL Technical Program
1370 Black Oak Dr.
Centerville, OH 45459-5411
Office Phone: (937) 436-1888
FAX: (937) 436-2131
e-mail: DEnebel@aol.com
Home Phone: (937) 435-5231

9002
TRAINING INFORMATION

TWO TIME AND FREQUENCY SEMINARS
SPONSORED BY NIST
BROKER INN
BOULDER, CO

INTRODUCTION LEVEL I
June 21-22, 1999

Aimed at beginning mathematicians, scientists, engineers. Presents techniques related to analysis and evaluation of oscillators and frequency standards.

FUNDAMENTALS LEVEL II
June 23-25, 1999

Particularly appropriate for those who are responsible for certification of oscillator performance at levels where traceability to national standards is required.

Contact: John Lowe
Phone: 303 497 5453
FAX 303 497 6461
<lowe@boulder.nist.gov>

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CEESI FLOW MEASUREMENT COURSES
(See Training Directory for more information)

Natural Gas Flow Measurement Course
June 8-10, 1999
August 24-26, 1999
Cost: $795

Introduction to Flow Measurement Course
Sept. 14-17, 1999
Cost: $1,045

Advanced Flow Measurement Course
April 19-23, 1999
Sept. 20-24, 1999
Cost: $1,375

The Introductory Course is designed for individuals with little or no experience in flow measurement. The Advanced Course builds on the introductory concepts and covers in-depth material about various metering techniques. The Natural Gas Course offers a comprehensive overview of measurements from wellhead to town border, and emphasizes practical applications.

Contact:
Colorado Engineering Experiment Station
54043 County Road 37
Nunn, CO 80648
Phone: 970 897 2711
FAX 970 897 2710
<http://www.ceesi.com>

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LIQUID AND GAS FLOW MEASUREMENT COURSES MEASUREMENT UNCERTAINTY COURSE

Flow Dynamics, Inc.
Location: Scottsdale, AZ
(See Training Directory for Course Information)

Liquid Flow Measurement
Oct 19-22, 1999
Cost: $925.00

Gas Flow Measurement
Oct 25-28, 1999
Cost: $925.00

Measurement Uncertainty
September 21-24, 1999
Cost: $925.00

Course Objectives:
After completing the Liquid Flow course, each student will understand the optimum selection and use of liquid flowmeters. In addition, each student will understand how density and viscosity affect liquid flowmeters. After completing the Gas Flow course, each student will understand the optimum selection and use of gas flowmeters. In addition, each student will understand Gas Law calculations and how they apply to gas flow measurements.

After completing the Measurement Uncertainty course, each student will understand the nature of measurement errors and be able to determine the random, systematic and total uncertainties of a measurement system. In addition, students will understand how to monitor and control the results of a measurement process, on a continuing basis, to produce evidence that the measurement process is in statistical control.

Contact:
Flow Dynamics, Inc.
7419 E. Helm Drive
Scottsdale, AZ 85200
Phone: 602 948 3789
FAX: 602 948 3610
Email: <dynamic@dancris.com>

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COAST QUALITY COURSE “DETERMINING MEASUREMENT UNCERTAINTY THROUGH MEASUREMENT PROCESS CONTROL” NEW STANDARD: ISO 10012 - PART 2

(See Training Directory for more course information).

July 5-9, 1999, Charlotte, North Carolina, the week prior to the NCSL Workshop and Symposium there.

Jan. 25-28, 2000, Anaheim, CA, the week after the Measurement Science Conference there.
A new international standard has been released in 1997, ISO 10012 - Part 2, “Control of Measurement Process.” This standard is based on the approach to quantify measurement uncertainties taught in this course. This course culminates our work on the development of this method, initially in cooperation with NIST. We have promoted this standard in the ISO after having been invited by the ANSI/ASQ Committee Z-1, to write the first such standard with the ASQ writing group.

Contact:
COAST Quality Metrology Systems, Inc.
35 Vista del Ponto
San Clemente, CA 92672-3130
Phone and FAX 949 492 6321
Visit our Web Site for 20 pages of technical information on the origin and development of the course:
<http://home.earthlink.net/~cqms>

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DUKE ENERGY CEO TO KEYNOTE 1999 NCSL CONFERENCE

Rick Priory, chairman, president and chief executive officer of Duke Energy Corporation, will present the keynote address to the 1999 NCSL Symposium and Workshop. Priory was president and CEO of Duke Power Company prior to its merger with PanEnergy Corp in 1997.

Priory served as engineering consultant to Duke Power from 1974-76, and joined the company as a design engineer in 1976. He held positions of increasing responsibility in engineering and project management, and was elected vice-president, design engineering in 1984. He was named executive vice president, power generation group in 1991, and president and CEO in 1994. He also served as a design engineer with Union Carbide, and was assistant professor of structural engineering at the University of North Carolina.

Priory is a BS graduate in civil engineering from West Virginia Institute of Technology, and holds an MS engineering degree from Princeton University. He was elected a member of the National Academy of Engineering, and serves on the North Carolina Governor’s Council, and numerous boards, including three power institutes.
I logged 33,016 air miles this quarter supporting regional NCSL activities in India and the Middle East. I also completed a new slide presentation describing the benefits of NCSL membership.

**British MT Association:**
I provided the British Measurement & Test Association Council with a copy of the new NCSL presentation with the hope that we would be able to make a presentation to their total membership. It was suggested that NCSL consider taking a booth and/or making a presentation at the upcoming “National Measurement Conference 99” to be held in Brighton, England, November 2-4, 1999. This conference is sponsored by the Department of Industry and Trade and managed by NPL. I will contact Jerry Benson at NPL as suggested and obtain more information.

**India:**
I attended the National Conference on Test Engineering and Metrology January 6-8 in Bangalore, India. This was a successful conference. There were 150 attendees. NCSL was listed as a co-sponsor. I presented the new NCSL talk, and participated as a panel member in an open forum on standards as they affect trade in India. Both were well received. I expect 4-5 new member applications shortly. Had a meeting with regional and area coordinators; we shared ideas for upcoming regional meetings and support. I was very pleased at the reception both NCSL and I received.

**Middle East:**
Egypt: NIST and NIS hosted a workshop, November 8-12, on Standards, conformity assessment and laboratory accreditation in Sharm El Sheikh, Egypt. I ended up being one of the 3 workshop organizers and opened the workshop and also presented the new slide show. We had a display there.

One day of the workshop was the first NCSL regional meeting in the area. There were 117 workshop attendees from 16 nations including, Egypt, Morocco, Tunisia, Israel, Jordan, Turkey, Oman, United Arab Emirates, Saudi Arabia, Kenya, and South Africa, Algeria, Ghana, Zambia and the USA. VIP attendees included, Ray Kammer of NIST, Dr. Terry Quinn of BIPM, US Deputy Ambassador to Egypt, an Egyptian Cabinet Minister, members of the WTO, SIM and OAS. NCSL will have a display. We have since received 3 new members from the region. For a more detailed report, please see the January 1999 Newsletter.

I have now spent just under 5 months over the last 2 years working in Egypt. All of the activities that I participated in were in support of USAID programs, specifically the Gore - Mubarak agreement: The US - Egypt Partnership for Economic Growth and Development was created to promote bilateral trade and invest-

(Continued on page 18)
Butler County Community College (BCCC) is pleased to announce its 1999 Metrology graduating class. As in the past, we have several students that have selected to continue their education, and some who have already committed to employment after commencement. However, BCCC anticipates these students entering the job market after graduation in May.

Once again, we would like to extend our appreciation to those of you who have contacted BCCC to meet your needs for Metrology personnel or for specialized Metrology Training programs. Last year was another successful year for the program in both areas. In recent years, companies such as USX, Mine Safety Appliances, Motorola, Armco, Honeywell, ACR International, NIST, TEGAM and numerous others have contacted BCCC for Metrology Training and personnel.

We would also like to extend our appreciation to those who continue to support our program through gifts. Once again, NCSL showed their financial support. Your generosity made it possible for seven metrology students to receive academic scholarships. Also, several companies have showed their support through the donation of equipment. It is through such support that we are able to keep modernized, and again, I would like to express our sincere appreciation.

We invite you to visit our campus to speak to our classes or to interview potential employees. Further questions concerning the program can be directed to David Schiebel at 724 287 8711 ext 258, <dms7400@bc3.cc.pa.us>. Our Career Services Specialist, Lois Trimbur, ext 310, will facilitate the posting of any job openings.

David Schiebel

Sally Lynn Forrester
133 Merritt Drive
Butler, PA 16001
724-283-8846
<mustangsall y@hotmail.com>

I will be graduating on May 20, 1999, from Butler County Community College with an A.A.S. Degree in Metrology and an A.A.S. Degree in electronic Technology. I am looking for a job in Metrology, preferably in the electrical, dimensional, physical or chemical areas. I would like to someday continue on to get my B.A. in Electrical Engineering. I have a GPA of 3.308 and am a member of Phi Theta Kappa. I am willing to relocate, but I am looking for a job in the Pittsburgh/Western PA area, or the Seattle, Washington area. My resume and portfolio are available on request. I can be reached at the above address.

Kerri-Anne Killmer
133 Valley St.
Butler, PA 16001
724-283-0561

I will graduate December, 1999, with an Associate in Applied Science Degree in Metrology. I wish to obtain a position in a chemistry lab or pharmaceutical lab and would like to also continue my education in chemistry. I prefer to remain in the local area, but will consider any job location.

Jonathan Nauman
104 Lyn Dale Drive
Butler, PA 16001
724-285-8004

I have training experience in temperature, pressure, voltage and power measurements, am familiar with quality-department procedures for physical and dimensional work, and have industrial experience with calibration cycles for gage blocks, micrometers, calipers, indicators and quality-control software (ISO 9000). Additionally, I have experience in training, communication and information technology editing.

Lisa Thomas
265 Vogel Road
Butler, PA 16002
724-287-0125

I will be graduating from Butler County Community College in May of 1999, with an Associate in Applied Science Degree in Metrology. I am a recipient of the NCSL Scholarship while holding a 3.6 GPA in Metrology. I am eager to start a career in a position involving chemical analysis, research, and/or physical testing and calibrations. My geographical preference is Western Pennsylvania or surrounding areas.

Michael J. Wesch
5378 McCandless Rd.
Butler, PA 16001
724-285-1538

I am expecting to graduate from the Butler County Community College with an Associate in Applied Science Degree in Metrology in the Fall of 1999. I am interested in all metrology-related jobs, including the electrical aspects. I desire a job in Western Pennsylvania but will relocate for a desirable job.
SOMEONE YOU SHOULD KNOW

Peter Mauro

Pete Mauro has recently been appointed Region 2 Coordinator, after two successful years as the New York Section Coordinator of Region 2. Pete has worked in the Metrology discipline for over thirty years, starting his career as a technician in the Standards Lab of Singer-Kearfott.

After three years in the Standards Lab, he was promoted to Metrology Engineer, responsible for assisting his department’s technicians perform routine calibrations and repairs. His first management position was as Supervisor of Electrical Metrology Engineering, responsible for a group of Metrologists tasked with devising calibration procedures and providing technical assistance to the Calibration lab.

In 1986 when Singer-Kearfott was bought, divided, and the individual companies sold, Pete became a Quality Assurance Manager in the new Company, Plessey Electronics of Great Britain. One of his immediate tasks was to create a Metrology Department from the ground up. Standards, calibrators, and a recall system had to be purchased and installed. Technicians and Engineers had to be hired and trained.

As this process was ongoing, GEC, a bigger British company, purchased Plessey, causing further disruption. When the dust settled, his new Metrology department was given the responsibility of maintaining the Company’s test, measurement, and manufacturing equipment. All the standards and calibrators, and most of the original staff, are today still carrying out that original mission.

On the personal side, Pete and his wife of 32 years, Mary Margaret, have two grown sons, and live in Lake Hopatcong, New Jersey. His hobbies include amateur radio, photography, playing guitar, and home wine-making.

Pete has given many presentations to groups of newly-hired engineers for his Company. The anecdote he enjoys telling relates to his first job in the Standards Lab. The Supervisor said, "If you work it right, you could spend your entire career in Metrology." It looks like that’s what happened to Pete. And he repons that Metrology has been good to him.

INTERNATIONAL REPORT
(Continued from page 16)

The second part of my activities was spent supporting NIST and the MOU between NIST and NIS. This is under the Science and Technology Agreement, which is part of the Gore - Mubarak agreement.

As a direct result of this work, this effort has played a major role in promoting the US measurement system in Egypt, which has been previously dominated by the members of the EU. I believe that now NVLAP is in process of an agreement with NLAB to assist in joint accreditation of Egyptian Industry. I plan on continuing this effort.

Israel:
While at the workshop, I had several meetings with Israeli NCSL members and senior management of NPL, Israel and NIST. We concluded that it would be in the best interest of NCSL to appoint a new regional coordinator in Israel. Dr. Avinoam Shenhar, Director of the National Physical Laboratory in Jerusalem is the new coordinator. Since returning from the Middle East, I have had 3 telephone conversations with Dr. Shenhar. He is going to set up a regional meeting this spring. In addition NPL wants to host a Middle East regional metrology workshop in late 99 or early 2000 and would like NCSL to be involved. I have received from him some ideas and a preliminary budget.
ON-LINE REGISTRATION:
NCSL WORKSHOP & SYMPOSIUM AND TUTORIALS

1999 brings a new interactive Internet service for NCSL Members and Member Organizations "Introducing Secure On-line Registration for both the NCSL Workshop & Symposium, and Tutorials." To use this new service, select "On-line Registration" from the NCSL "Conference" page located at: <http://www.ncsl-hq.org>.

This new service has been designed to be straightforward and easy to use. Attendees and their guests will be able to conveniently register 24 hours a day, 7 days a week. Guests are provided access to a full array of NCSL, area tour and visitor activities. After completing registration, the attendee is e-mailed a detailed confirmation of all registration information.

NEW NON-JAVA NAVIGATION OPTION

The NCSL home page was recently updated to include a new alternative "Non-Java" navigation option to link to NCSL site menus. If you have not yet upgraded your Internet browser to a version 3.x or higher, and your browser won't read JavaScript, ... Or, if you simply get tired of waiting (popular acronym: www=world wide wait) for the Java menu to load on the home page, try clicking on the new "Non-Java Menu" link. All of the pages available on the NCSL web site will be displayed in a simple scrolling list.

MORE CALIBRATION AND CERTIFICATION PROCEDURES

The "Calibration/Certification Procedure" Procedures Sharing Database located under "Highlights" on the NCSL web site is growing. More calibration and certification procedures that may be pertinent to your particular discipline are now available. If you haven't visited this page recently, you might want to check it out.

ON THE LIGHTER SIDE — A LITTLE Y2K HUMOR

Y-to-K Date Change Project Status:

Our staff has completed the 18 months of work on time and on budget. We have gone through every line of code in every program in every system. We have analyzed all databases, all data files, including backups and historic archives, and modified all data to reflect the change.

We are proud to report that we have completed the "Y-to-K" date change mission, and have now implemented all changes to all programs and all data to reflect your new standards to include:

Januar, Februar, March, April, Mak, June, Julk, August, September, October, November, December

As well as:

Sundak, Mondak, Tuesdak, Wednesdak, Thursdak, Fridak, Saturdak

I trust this is satisfactorily, because to be honest with you, none of this Y-to-K problem has made any sense to me. But I understand it is a global problem, and our team is glad to help in any way possible. And by the way, what does the year 2000 have to do with it? Speaking of which, what do you think we ought to do next year when the two-digit year rolls over from 99 to 00? We'll await your direction.

Thanks,
MIS Y-to-K Project Manager

SOME ADDITIONAL BOD MEETING PICTURES

Maria and Klaus Jaeger turn away for a moment from a gorgeous Pacific sunset in Santa Barbara.

Three spouses show up for the day's activities beneath a spectacular red-blooming flower wall.
NCSL SLIDE PRESENTATION

National Conference of Standards Laboratories
Prepared BY Ed Nemeroff - VP NCSL

NCSL
Celebrating 37 years
Serving the world of measurement science in 46 countries

Today, NCSL has over 1500 member organizations around the world from academic, scientific, commercial, industrial and government facilities.

NCSL Strategic Vision
Promote competitiveness of member organizations by improving the quality of products and services through excellence in calibration and testing.

What NCSL Does
✓ Provide forums for the exchange of information and ideas by sponsoring an annual workshop, industry committee meetings and regional meetings
✓ Develops standards and recommended practices
✓ Publish technical and industry news
✓ Promote cooperative efforts to solve common situations faced by member organizations
✓ Assist national laboratories in disseminating information
✓ Maintain liaison relationships with other standards organizations, technical societies, trade associations and other organizations with common interests worldwide

✓ Founded in 1961
✓ NCSL is a volunteer organization
✓ NCSL is not a for profit organization
✓ NCSL an international organization
✓ Annual dues for new members are $40.00 USD - $325.00 thereafter.

1800 30th St. Suite 305B Boulder Colorado, 80301 USA
Tel 303-440-3396  FAX 303-440-3384
e-mail ncsl-staff@ncsl-hq.org
Web Site http://www.ncsl-hq.org

What He L Does
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✓ Maintain liaison relationships with other standards organizations, technical societies, trade associations and other organizations with common interests worldwide
Industries Served by NCSL

- National Laboratories
- Biomedical
- Petroleum
- Automotive
- Electronic Instruments
- Telecommunications
- Aircraft & Aerospace
- Service organizations
- Chemical
- Transportation

- National Defense
- Pharmaceutical
- Computer
- Process Control
- Avionics
- Scientific Instruments
- Consumer Electronics
- Semiconductor
- R&D Organizations
- Electronic components

NCSL Publications

- newsletters, published quarterly
- standards:
  - handbook:
    - For the Interpretation and Application of ANSI / NCSL Z540-1-1994

National Measurement Institutes, NCSL Members

- Argentina
- Belgium
- Canada
- Czech Republic
- Egypt
- England
- Greece
- Hong Kong
- India
- Ireland
- Israel
- Jamaica
- Japan
- Korea
- Malaysia
- Mexico
- Netherlands
- Norway
- Republic of China
- Saudi Arabia
- South Africa
- Sweden
- Switzerland
- Thailand
- Trinidad
- Uruguay

NCSL Member Organizations include:

- Sandia National Labs
- Duke Engineering
- Tennessee Valley Authority
- Electronic Distributors
- Wyle Laboratories
- Wavetek Corporation
- Guildline Instruments
- Fluke Corporation
- Boeing Company
- Hewlett Packard
Training Resources

Identifies training material for use in the lending library.

The library is for use by all members. Material is computer based and on video and is available free from the NCSL business office.

Training Information Directory

Published annually by NCSL, this is a single point of reference that identifies, books, seminars, universities, training material and courses that are generally available commercially.
Personnel Requirements

Develops and publishes a recommended practice that explains how to create job descriptions, helps companies understand how to answer documentary standards such as ISO Guide 25, "how do I know that my personnel are adequately trained and assigned tasks are performed by qualified staff."

Liaison Organizations (more)

A2LA - American Association for Laboratory Accreditation
AIA - Aerospace Industries Association
AMMAG - Association Mexicana de Metrologia
ANSI - American National Standards Institute
APLAC - Asia Pacific Laboratory Accreditation Cooperation
ASQ - American Society for Quality
ASTM - American Society for Testing and Materials
CORM - Council for Optical Radiation Measurements
CPFM - Conference on Precision Electromagnetic Measurements
EA - European Cooperation for Accreditation

Annual Conference & Workshop

→ 1999: Charlotte N.C.- July 11-15
→ 2000: Toronto, Canada - July 16 - 20
→ 2001: Washington DC - July 29 - Aug 2
→ Celebrate NIST's 100 Birthday
  • Exhibitors: Over 140
  • Parallel Sessions: 5
  • Technical Papers: Over 125
  • Proceedings available On CD ROM

The William A. Wildhack Award

NCSL's highest award, presented annually in recognition for outstanding contribution to the field of metrology and measurement science.
The William A. Wildhack Award

**Past Recipients Include**

- Dr. Ernest Ambler
  Director NIST
- Dr. Andrew Dunn
  Canadian NRC
- Peter Clifford
  City University, London
- Dr. David Braudaway
  Sandia Corporation
- Dr. Klaus Jaeger
  Lockheed Martin
- David Packard
  Hewlett Packard Company
- John Fluke
  Fluke Corporation
- Edward Nemeroff
  EN Industries
- Graham Cameron
  Canadian DOD
- Dean Brungard
  Teledyne Systems

**Major Current & Future Initiatives**

- Sustain partnership with NIST (USA), NRCC (Canada)
- Improve partnership with India and Mexico
- Promote partnership with other NMI’s
- Active participation with:
  - International Laboratory Accreditation Cooperation (ILAC): Stakeholder Member
  - Continue active participation in National Cooperation for Laboratory Accreditation (NACLA). Board Member.

**Laboratory Accreditation to ISO/DIS 17025**

- Actively pursue accreditation efforts with:
  - Industrial laboratories, world wide
  - National Measurement Institutes
- Promote Mutual Recognition Agreements between:
  - Accrediting bodies
  - U.S. and Canada and Mexico
  - U.S. and Europe and Asia, Africa and the Middle-East

NCSL and the International Measurement Community Partners in preparing Metrology for the Next Millennium
STANDARDS POLICY
Anthony Anderson, V.P.

Activities:

Since the last board meeting I attended the November meeting of the National Cooperation for Laboratory Accreditation (NACLA) permanent board and in December I participated in an Executive Committee meeting. The main focus of the organization at present is to solicit membership, which by the end of the year totaled over 30 members.

Preparation for the first recognition assessment of an accrediting body continues to progress. On March 25, 1999 at NIST there will be the first annual general membership meeting of NACLA. Anyone with an interest in accreditation and the status of NACLA is welcome. Prior to the Santa Barbara board meeting I will be attending the January board meeting of NACLA in Whittier CA.

Our application for stakeholder membership in ILAC has been accepted. I will be attending the next ILAC Laboratory Accreditation Liaison Committee meeting in Brussels on March 3, 1999.

Provided input to Dr. Peter Heydemann regarding the US Trade Representatives proposal considering the addition of three more categories to the US/EU MRA and in particular calibration services. More will be discussed on this topic at the board meeting, even though formal input was required by January 15th.

Provided input to JoAnne Knowles for the NCSL Conference Registration Web Site. I would like to make special mention of the excellent work both JoAnne and Craig Gulka have put in to creating this very professional looking on-line registration process. It really looks great.

Committee Activities:

U.S. GOVERNMENT AFFAIRS
Mike Suraci

INTERNATIONAL MEASUREMENTS COORDINATION
Graham Cameron

MEASUREMENT SCIENCE & TECHNOLOGY
Richard Pettit, V.P.

The US National Measurement Requirements Survey is taking shape; soon you will be hearing more about it at your local NCSL Section meetings. See Jeff Walden’s report below. In addition, the Canadian National Measurement Requirements Survey has provided useful input and additional information will be solicited in a revised survey. See Les Peet and Lorraine Yeoman’s report below.

Finally, very positive feedback has been received on the Dead- weight Pressure RISP-4 that was recently released. As you may know, the Working Group that developed that document is still together and energetically thinking about future projects. If you have any comments/suggestions on this document, additional needs in the area of pressure metrology or additional Recommended Intrinsic/Derived Standard Practices (RISPs) developed, please contact John Bell.

MEASUREMENT COMPARISON PROGRAMS
Jim Wheeler

The Recommended Practice on “Interlaboratory Comparisons” was reviewed by the NCSL Board of Directors and approved with a few modifications that Woody Eicke, (NBS Retired and RP Chairman), will incorporate into the final document.

Craig Gulka, NCSL Webmaster, assisted in constructing and uploading a MCP database for reviewing old MCP newsletter articles from 1989 to the present. The MCP database can be found under the “Highlights” menu selection on the NCSL Webpage. The database is sorted by measurement area selected from the form page. Craig also is working on a “Round Robin” forum section on the NCSL Webpage.

Review the MCP Webpage at <http://members.aol.com/nscslmcp> for round robin updates by selecting “View Round Robin Updates”. I request that anyone who is coordinating a round robin provide an update by selecting the “Update a Round Robin” selection on the Webpage and fill out the form. I periodically prompt round robin coordinators to provide updates to the Webpage. I appreciate those who sign the guest book and provide information for the ongoing MCP survey.

Committee Report:

The Recommended Practice for conducting interlaboratory comparisons is now in the publisher’s hands according to Woody Eicke. Look for it listed in the NCSL Newsletter in 1999. Contact Woody if you would like a draft copy. Woody’s e-mail is <weicke@us.net>.

A small meeting took place at Measurement Science Conference in Anaheim in January. Minutes may be seen in the committee space on the NCSL Website <www.ncsl-hq.org> under Committee: Measurement Comparison Program. You can also find the committee Long Range Plan (LRP) there along with future meetings times and places.

Craig Gulka is also working on a Round Robin Forum area. There is a Highlights area too that has past committee information on interlaboratory comparisons sorted by measurement discipline.

National Association of Proficiency Testing (NAPT) has a measurement forum page at <http://www.proficiency.org/forums.htm>

MCP News

The 1999 10 Volt Josephson Array ILC is starting according to Bill Miller, Lockheed Martin Astronautics. Bill reports that 16 laboratories are participating along with NIST Gaithersburg and NIST Boulder. I am preparing a letter for Sharrill Dittrmann, NIST Office of Calibrating Services, requesting NIST support of this very important effort. Contact Bill at <william.b.miller@lmco.com> for more details. Clark Hamilton, NIST Boulder.
reports that CENAM Mexico and NRC Canada are also participating in this ILC. The artifacts are four Fluke Model 732B DC Reference Standards. Clark also reports that this effort may be reported on at NCSL Charlotte.

Albert Lee, NIST Gaithersburg, and Brian Fitzpatrick, Hi-Tech, have informed me about a pressure round robin in progress. Six labs have had the artifact and there are 23 labs in the list. The artifact is a Paroscientific 200 psi transducer. The artifact is now at NIST with Wyle Labs and Langley Research Center waiting. Greg Driver, NIST Gaithersburg, is the NIST Point of Contact. Greg’s Phone Number is (301) 975-4832. The start date was Sept 1998 and it should be completed June 1999. They hope to report on this effort at NCSL in Charlotte. Albert can be contacted at <albert.lee@nist.gov > or FAX (301) 208-6962. Brian can be contacted at <bfitzt@compusearch.com >.

Steve Morse, Superior Gauge Service, reports that the Cylindrical Ring Gage and Plug Round Robin has 4 participants and they are looking for more interested laboratories. The ILC began in Nov 1998 and is open. The artifacts are 6 rings and 6 plugs. The artifacts are at Baldor Electric Motors and will then go to Giddings and Lewis, Sheffield. Steve can be contacted at <tmorse@worldnet.att.net > or by FAX at (918) 458-4710. John Stoup is the contact at NIST Gaithersburg. Steve will report on this at a later NCSL meeting.

Richard W. Caron, Ford Motor Co., updated me on the Gas Flow Measurement. There are seven participants with more labs invited to participate. The effort began in March 1995 and will end in May 1999. The artifacts are Tandem Critical Flow Venturis. International participants include NEL, NRLM, KRISS and Taiwan. Dr. George Mattingly, NIST Gaithersburg, is the NIST Contact. George can be contacted at (301) 975-5939. Richard can be contacted at <rcaron@ford.com > or FAX (313) 337-9671.

Jeff Gust, GTE ERS, reported in Nov on the Thomas 1 Ohm ILC. This began in August 1998 and will be completed in August 1999. There are 20 labs participating along with NIST, Gaithersburg. Jeff also remarked that they have the maximum number of participants with a few on standby. There may be a future ILC so contact Jeff if you are interested. Jeff’s e-mail is <jeff.gust@gte.com > or FAX (219) 424-1031.

National Association of Proficiency Testing (NAPT) has a measurement forum page at <http://www.proficiency.org/forums.htm>

Interested Contacts at the MCP Website:

Name / Company / MCP Interests / Measurement Ranges / E-mail

Martin Chab / Ch&W / Mass / 1 mg - 1 kg / <metrology@asqnet.org >

Doug Evink / Palen Kimball Co. / Temp / -70 - +500 F / <doug@palenkimmall.com >

Vikram Salunkhe / Accurate India / Dimensional / 1000mm / <accurate@giaspn01.vsln.net.in >

Vern Milholen / Wyle Labs / Flow, Mass / <milholen@nwk.wylelabs.com >

Martin Chab / Ch&W / Temp / 0 - +350 C /

We invite you to the committee meeting at NCSL in Charlotte. Watch for details on the scrolling section on the bottom of <http://members.aol.com/nscImcp >

For more information about the committee contact me at (619) 545-9705, FAX (619) 545-9861 or <wheeler_j@al.nadeqmi, navy.mil >. My work e-mail address will be changing soon, if you have trouble contacting me via work e-mail try <jimw@ieee.org >.

INTRINSIC/DERIVED STANDARDS

John Ball

Meeting was held mid-afternoon the day before the Measurement Science Conference at Disneyland Hotel, Anaheim, California.

Working Group Reports

Working Group #3 - Charles Ehrlich reported on the activities of WG 3, now an independent entity continuing to pursue pressure metrology issues after the publication of the Deadweight Piston Gage RISP. This working group operates under the auspices of the IDSC and will include IDSC chairman in E-mail correspondence to any members. Dr. Ehrlich will provide a WG report to IDSC chairman. Approval was requested and received for the WG to develop and publish a handbook. The activities of WG 3 will be separately reported.

Argon Triple Point Cell - Stanley Pond reported slow progress on this RISP. Members briefly discussed the need for this WG and it was agreed that a RISP in this area will benefit the community.

Two Pressure - Two Temperature - Robert Hardy has completed a draft, with all sections except uncertainty and traceability addressed. This is a significant document. Bob’s goal is to have a document ready for review by the next MSC. He is also expanding the WG membership and will contact potential members at Thunder Scientific, Kodak and NIST who have expressed interest. Richard Pettit offered to take action to provide information on how much assistance Sandia might be able to provide on the uncertainty analysis.

Definitions

Dr. Wallard, NPL, did not respond to John Ball’s correspondence in which it was suggested to develop an article that would address CIPM concern about the use of “intrinsic standards.”

Charles Ehrlich proposed the following definition for “Derived Standard”: “A Primary standard which is not an intrinsic standard” and reminded us that a primary standard derives its value from measurement other than the quantity for which it is a standard. A wonderful discussion followed.

Possible New RISPs: The chairman will investigate gold-platinum thermocouple and length (interferometric) as new RISP subjects.

MSC meeting attendees: John Ball, Bob Hardy, Chuck Ehrlich, Dick Pettit, Stanley Pond, Ronald Ginley, and Harold Glick.
CONSENSUS STANDARDS
Open

The chairmanship of this committee remains open. Any possible points of contact would be appreciated. Dick Pettit, Sandia, is still interested in soliciting interest for someone in the semiconductor industry in taking over this committee.

U.S. MEASUREMENT REQUIREMENTS
Jeff Walden

Jeff has focused efforts on recruiting industry participation on the committee. John Fishell, Navy, has offered some help in making that happen. If you have any suggestions on this subject please pass them on. Work has been completed on a power point presentation discussing and soliciting interest in the USMR survey. In addition, a CD ROM about the survey has been developed with narration. A draft Survey was discussed at the committee MSC meeting. The final Survey should be ready by April, 1999. It will be circulated to all NCSL members at their local NCSL Section meeting. In addition, the survey will be available at the 1999 NCSL Workshop and Symposium in Charlotte, NC. Individuals filling out the survey will be eligible for a special drawing prize.

CANADIAN MEASUREMENT REQUIREMENTS
Les Peer and Lorraine Yeomans

The purpose of this committee is to determine both our member's current and future needs for measurement services from the Institute for National Measurement Standards (INMS) at the Canadian National Research Council (NRC). Needs encompass calibration services, member training, expert advice and project assistance. Some of the ways this information is collected is through conversations with members at NCSL meetings and joint meetings of SCC accredited laboratories, by listening to member's suggestions made following NCSL meeting presentations, and by surveying members. Survey results are most important and carry the most weight as they are the member's opinions presented in their own writing. As a result a great deal of effort is expended by the committee and the members in conducting a biannual survey.

This year an initial survey has been faxed to our 102 member delegates by our co-chairperson Lorraine Yeomans of Pulse Engineering in Winnipeg. Lorraine's efforts have resulted in the receipt of 51 completed surveys. However, our one-page survey was briefer than it should have been as the results do not provide us with enough information to form any opinions of true user needs.

The preliminary findings were reported to the members attending the Fall Canadian Region Symposium and Workshop hosted by IBM in Granby, Quebec this past October. In summation they are:

- 5 members said their needs are meet with satisfaction.
- 5 members said they are very pleased with the assistance they received from INMS measurement experts.
- 10 members said they do not actually use INMS services but instead use outside calibration laboratories, some of which are SCC/CLAS accredited to ISO Guide-25, to perform their calibrations.
- 6 members requested extended services or decreased uncertainties and provided brief details of their needs.
- 22 members checked off using INMS services but made no comments.

Attendees said they felt the survey is an important one and that it should be repeated soon using a reworked form to solicit more needed information. On that note of enthusiasm, we are preparing another multi-page survey which will again be faxed to members early in the new year, we hope we are not pushing our luck! This survey, incorporating suggestions from the attendees, will list many more questions with option boxes for checking off, in place of space for additional comments. We expect to have results to present at the 1999 Canadian Region Spring Meeting.

INDUSTRIAL PROGRAMS
Gary Shuler, V.P.

Committee Activities:

UTILITIES COMMITTEE
Ken Ralston

The Utilities Committee meeting was held on January 26, 1999 at the Disneyland Hotel in Anaheim, California. There were thirteen attendees representing ten member utilities.

Ben Kirk of Canus made a presentation on Y2K embedded systems. Ben indicated that recent tests conducted by end users have shown that embedded micro processors located in various applications have experienced the same failures that personal computers have experienced during the Y2K transition.

Some typical applications of embedded systems are programmable logic controllers, speed controls, combustion controls, test equipment, protective relaying, and security and data acquisition systems. The resolution is to establish a management plan that identifies, categorizes, and prioritizes the effect each application would have on the safety and operation of the facility. The priorities can be used to determine the effort, schedule and cost for becoming Y2K compliant.

There is some discussion in the ISO community about whether or not an instrument owner should perform an exit calibration before decommissioning it. The committee felt, that to remain compliant with our respective QA programs, either a final calibration should be performed or the instrument should be treated as being in an “AS FOUND” condition and the appropriate analysis performed.

The possibility of establishing a Measurement Assurance Program within the utility lab community was discussed. If interested, please forward your comments or concerns to me. Responses should include any potential benefits/liabilities, at least three disciplines, e.g. gage blocks (grade 1), pneumatic pressure-range (absolute, gauge), suggestion concerning the sources and types of artifacts, and if your organization would be willing to be the pivot lab. If there is enough interest, we will develop an action plan at the next meeting.

Many of our nuclear plants require a test accuracy ratio (TAR) of at least 4:1. With technological advancements in measuring and test equipment, achieving this TAR is becoming increasingly difficult. Simply identifying what the actual TAR is may not be adequate in all cases. One possible solution is guardbanding. This is a new technique, and as such, there are several methods of guardbanding currently published.
Committee News

It is the hope of the committee to agree on a single guardbanding method. Two methods were briefly discussed at the meeting - one proposed by Bill Hutcherson of Motorola and another by Dave Deaver of Fluke. If you would like to receive a copy of these for review or have other alternatives, please contact me. We are hoping to agree on a method by the next meeting.

There was some discussion of the value of utility calibration labs becoming accredited. The general feeling was that accreditation is something that should be customer or regulatory driven. In our case, our customers, or the NRC, do not currently require accreditation. Therefore, there is no justification at this time for the additional expense accreditation would necessitate.

Web page update - the new hardware upgrades are being installed. When they are completed, we should be able to have the utilities web site up and running soon. The next meeting will be held in conjunction with the NCSL in July, 1999 in Charlotte, North Carolina.

Attendees:
Gary M. Skuler
Dennis Dubro
Kent Crow
Larry E. Nielsen
Kenneth C. Riginalston
Stephen L. Gifford
Cl. Younglandford
Steve Curry
C. (Ray) Noyes
John Ragdada
Harry Kowanick
Peter Buzzard
Tracy Harper
Duke Engineering & Services
Pacific Gas & Electric
PGE Energy Company
Commonwealth Edison
Arizona Public Service
Arizona Public Service
Washington Public Power Supply System
Tennessee Valley Authority
Public Service Electric & Gas
Public Service Electric & Gas
Baltimore Gas & Electric

HEALTHCARE METROLOGY
Mitch Johnson
To all Healthcare Metrology Committee members:

I have started a new job with Lockheed Martin this last February. This will be my last year as your committee chair because I'm no longer employed in the healthcare field. I will not be able to make the workshops or symposium in Charlotte, even though I have a paper that has been selected for presentation.

My current employer doesn't have money in its budget to allow for me to go. This will make for some changes in the programs that I had planned. The FAA would not commit to sending someone to be part of a panel discussion. I'm still trying to set up a panel group so all those that want to participate will have a chance to. The committee currently has one opening for a Co-Chair and two Vice-Chairs. If any one would like to be considered for one of these positions please contact me.

The RP-6 rewrite has been completed and approved by the Board of Directors and should be distributed as soon as it's published. I want to thank all the people who worked on the rewrite, your names will be listed as part of the rewrite committee in RP-6.

EQUIPMENT MANAGEMENT FORUM
James Tavernier

Agenda For 1999 NCSL

1. Personnel required to make the forum work.
   A. Recruit others
   B. Draft RP's
   C. Present papers and or panels at MSC and NCSL

2. By-Laws and mission statement at NCSL.
   A. Rewrite new mission statement.
   B. Write updated by-laws.

   A. Within the EMF
   B. With NCSL Board

People are needed to accept responsibly and carry-out the task willingly. An outline of the mission statement and by-laws will be presented at the 1999 NCSL meeting in North Carolina. I personally will attempt to keep the NCSL web page updated with news and needed information.

The EMF can only work if individuals get involved!!

AIRLINE METROLOGY
Carl Clusmore

The Airline Metrology Committee met at the Measurement Science Conference in Anaheim, CA, on January 27, with representatives from NIST & FAA to discuss the adoption of an Airline Quality Document Standard to assure quality and consistency in calibrations on test equipment used by Airlines.

The meeting was very productive. The resulting decision was unanimous, that ISO 17025 would best fit the Airline program. It was felt that due to its ISO origin, it would be accepted both nationally and internationally.

The committee has also decided to use the Interpretation Guide for ANSI/NCSL Z540 as a starting point due to the present lack of an interpretation document available for the ISO 17025 Document.

The next Meeting is planned for April.

Attendees:
Gary Skuler
Mike Thilges
Victor Cleland
Ray Lewis
Lee Clements
Bridget Sluck
Greg Tankersley
Tom Weber
Francis Horton
Glen Hilderbrand
Ed Nemeroff
Tom Brandrup
Jamec Giger
Steven Carpenter
Glenn Kinney
Karen Brown
Bob Hefner
Ernest Garner
NCSL
United Airlines
United Airlines
Delta Airlines
Delta Airlines
Delta Airlines
Delta Airlines
US Airways
American Airlines
NCSL
Boeing
NIST/NVLAP
NIST/MAA
FAA
NIST
NIST
NIST

28
EDUCATION & TRAINING
William B. Sorrells, V.P.

Activities:

Coordinated with Mike Suraci, the 1999 VP Education and Training, to hand off the files and materials of this office. A replacement for Dave Lorenzen, Chair, Training Information Directory Committee, is still needed.

I received a letter from Ridgewater College-Hutchinson Campus, identifying the recipients of scholarships sponsored by NCSL. The awardees are Steven Euriich and Bill Moser. A copy of the letter is attached to the Education System Liaison report.

A teleconference was held on 16 December to discuss the preparation of a joint committee newsletter article. The article is planned for the April Newsletter. The article will explain the role and goals for each of the committees and how they are reached. This same material will be presented as a session at the conference in Charlotte. Mike Suraci was able to attend the conference and we discussed the hand off of the responsibilities of this office.

John Gerhard announced that due to commitments at work he would have to step down as the Chair, Education System Liaison Committee. I want to thank John for the work he has done for NCSL in this capacity.

Committee Activities:

TRAINING RESOURCES
Gary Swinairski

Additional copies of the Omega Engineering training material were purchased. This was necessary to reduce the long delays in the membership receiving training material. Cost $1600 plus shipping.

TRAINING INFORMATION DIRECTORY
Dave Lorenzen (Need a Replacement)

The Training Information Directory was printed and distributed. The committee is in a quiet mode during this quarter.

PERSONNEL TRAINING REQUIREMENTS
Hong Rosson

No Activity reported

EDUCATION SYSTEM LIAISON
TBD

As reported in the body of this report, the Chair position is vacant as John Gerhard had to resign due to work commitments.

Dear Mr. Sorrells:

Thank you for your support of the Ridgewater College Foundation scholarship program. On behalf of the Foundation, we are pleased to announce the students who are the recipients of the $500.00 Measurement Science Scholarships provided by the National Conference of Standards Labs, Inc. for Spring Semester 1999 at Ridgewater College. The students were presented with a certificate reflecting the scholarship just before Christmas. I’ve included some information about them below:

Steven Eurich of Glencoe is a 1974 graduate of Glencoe High School. He is enrolled in the measurement science program on the Hutchinson campus of Ridgewater College. His goal is to complete the program and become a more employable worker. Steven is a member of the ISA club and the measurement science club. In his application, Steven states: “I am a 43-year-old student that has an opportunity to improve myself through education. It is not easy to go back to school. I do need money to do this. I have a family to support. I have the chance to improve myself, and with this scholarship, it would help me reach my goals.”

Bill Moser of Darwin, is a 1977 graduate of Maryvale High School. He has been on the dean’s list for two years and plans to complete the measurement science program in spring 1999. Bill has a goal of earning an AAS degree and continuing college to complete a bachelor’s and master’s degrees. He is a past recipient of the NCSL grant and is a member of the Instrument Society of America and the National Conference of Standards Laboratories. Bill states: “The continuing support of my education through this scholarship will provide added testimony to the fine academic programs offered at Ridgewater College.”

On behalf of the Ridgewater College Foundation, we would like extend a thank you or your support of our scholarship program. Again, should you ever have a question about the foundation, please don’t hesitate to call us.

Sincerely,
Susan Mattson Les Monson
Foundation Director

CANADIAN LIAISON
Graham Cameron

DOCUMENTARY STANDARDS
William B. Sorrells, V.P.

Activities:

Coordinated an exchange of information with Dave Abell, past 170 VP and was updated on 170 Guidelines and LRP.

Committee Activities:

LABORATORY EVALUATION RESOURCES
Leroy Britain

A committee meeting was scheduled for 27 Jan., 1999 at Southern California Edison facilities in Westminster. David Dikken presided at this meeting.

LABORATORY FACILITIES
Dr. David Braudaway, Doug Cooper

1. The Guide to Selecting Standards Laboratory Environments has been approved and awaits final formatting and printing.

2. A “one” page attachment for RP7 will be discussed by the committee meeting during the MSC. This cannot be finished until the number of the new RP is known and response from ISA concerning the fate of ISA RP 52.1 is known. Note that the ISA move will be predicated on the new NCSL Guide. The rest of the con-
tents and the form of the attachment, however, can and will be finished.

METROLOGY PRACTICES
Dr. Howard Castrup

The Committee met January 29 to further define the objectives of our four subcommittees and to discuss progress to date.

CALIBRATION INTERVALS
Don Wyatt

At present, the objectives of the Calibration Interval Subcommittee have not been altered from those of the former Calibration Interval Committee. In addition to keeping RP-1 up to date in a general way, the Subcommittee has been developing methods for setting parameter calibration intervals, and has been refining methods for setting intervals at the instrument level. The Subcommittee has also continued work on developing criteria for ensuring the applicability of calibration intervals established in-house or by contract. Don Wyatt of Diversified Data Systems chairs this Subcommittee.

MEASUREMENT DECISION RISK ANALYSIS
Chris Grachanen

One of the agenda items for the January meeting will be the development of an outline for an RP on the analysis of decision risks accompanying calibration. The outline topics will include risk analysis methods, calibration feedback analysis, risk-based SPC control limits, calibration interval reliability targets, test guardbands, and reporting guardbands. Chris Grachanen of Compaq Computer Corporation chairs this Subcommittee.

SPC METHODS

This Subcommittee has been recently been engaged in defining control limits for measurement process SPC and on expanding the scope of measurement process SPC to include SPC for standards. Integration of SPC with parameter interval analysis has also been under development. An outline for a Metrology SPC RP was presented at the January meeting. Topics include adapting traditional SPC methods to metrology, applying new Bayesian methods, establishing risk-based SPC control limits, and setting parameter calibration intervals based on SPC control chart analysis. I chair this Subcommittee at present.

DECISION SUPPORT
Derek Porter

This Subcommittee has been focusing on developing an RP for managing calibration program decision variables. Topics to be considered include cost modeling, setting reliability targets, identifying and managing significant out-of-tolerances, establishing cost-based risk criticality categories, optimizing calibration and servicing policies, and managing interval extensions. At the January meeting, the topic of integrating analytical subsysnms into corporate data acquisition and management systems was considered. Derek Porter of Boeing chairs this Subcommittee.

ANSI/NCSL WRITING COMMITTEE
John A Weinmeyer

During the fourth quarter of 1998, the committee has been active in commenting on the ISO Draft International Standard (DIS) 17025, which will replace the ISO Guide 25. The comment period for the ISO (DIS) 17025 closed in December of 1998 with a lot of noteworthy input from the membership of the NCSL. It seems fair to say that we are becoming much more proactive and influential in the writing processes of international standards.

As we continue this effort, we need to continue to refine our mechanisms for soliciting and gathering input as well as keeping all concerned parties informed of the standards development process. We have come a long way in this respect, but there is still much room for improvement.

The next committee meeting was held on January 30, 1999 from 10:30 AM to 12:30 PM at the facilities of Southern California Edison.

Thanks to Mr. Larry Nielson of SCE for making these facilities available.

The general committee meeting followed the meeting of Working Group One (WG-1) under the direction on Mr. James Cigler of NVLAP.

At the meeting on January 30, we hope to begin the work on re-writing ANSI/NCSL Z540-1-1994, Calibration Laboratories and Measurement and Test Equipment - General Requirements.

Committee Report:

The period to comment on the ISO Draft International Standard ISO/DIS 17025, General Requirements for the Competence of Testing and Calibration Laboratories, which will replace the ISO Guide 25, closed December, 1998. The NCSL made a number of comments on the DIS 17025 through our representatives, Ms. Lynne Neumann of Entela and Mr. James Cigler of NVLAP. Mr. Cigler, who is the Chair of Working Group 1, of the ANSI/NCSL Z540 Accredited Standards Writing Committee, reports that there were two major topics of comment on the DIS.

One issue was the proposed requirement of 100% guard-banding. Due to the number of concerns expressed to the writing committee, this requirement has been dropped from DIS 17025. The draft standards now simply states that measurement uncertainty must be considered.

The second major topic of concern was in regard to traceability. The DIS 17025 does not currently provide for traceability other than the traditional path to a national standardizing organization. Many individuals in the US would like to see provision for appropriate alternative approaches such as the use of intrinsic standards, or traceability to natural physical constants. Thus far, the majority of the ISO writing committee have not been receptive to including these alternatives.

In April, the committee will meet again. At that time, one of two actions are likely to be taken: 1) a new draft international standard will be issued which will contain some significant changes, or 2) a final draft, FDIS 17025, which will be essentially the same as the DIS 17025 will be issued for vote. Since a sufficient majority of the voting members have already voted affirmatively on the DIS 17025, it is most likely that the final draft will be issued. Voting on the FDIS will be strictly affirmative or negative with two-thirds majority needed to pass it. Assuming this happens, we
can expect to see ISO 17025 released this Summer.

According to John Wehrmeyer, Chair of the ANSI/NCSL Z540 Committee, the Z540 Committee will then determine how to best harmonize the ANSI/NCSL Z540-1-1994 Standard with the ISO 17025 standard. If the ISO Standard meets the needs of US industry, it may be decided to adopt it as a US National Standard and withdraw Z540-1-1994. If the ISO Standard does not serve the US well, the Z540 Standard will either be reaffirmed or revised.

ACCREDITATION RESOURCES
Larry E. Nielsen

Per our last meeting, I’ve sent out letters of invitation to 24 NCSL member organizations seeking their representation on our committee. We’ve received many favorable responses and words of encouragement. I expect a very good turn out for our next committee meeting.

MSC Meeting Report

The second meeting of the Accreditation Resources Committee was held on Thurs. January 28 at the Disneyland Hotel in Anaheim, as an adjunct to the 1999 Measurement Science Conference. As the result of last fall’s recruiting effort, there were many new attendees representing a diversity of government and small and large company calibration laboratories; consulting firms, an academic institution, and the accreditation bodies and assessors. Thank you all for your interest, comments and support.

The purpose of the meeting was to discuss possible committee products or projects with potential for serving the NCSL member organizations in their quest for formal calibration laboratory accreditation. Major discussion items included the development of an NCSL Recommended Practice document as a guide to accreditation; holding panel-type discussions or seminars on accreditation in conjunction with regional or national NCSL meetings; staffing a consulting booth or office during the National Conferences or Measurement Science Conferences to provide one-on-one advice for seekers of accreditation; and establishing an on-line database of accreditation information or a discussion forum.

Consensus was reached on the need to broaden the inquiry to the general membership. It was agreed that a questionnaire would be developed over the coming weeks via e-mail discussion groups for mailing to NCSL member organizations. Also, developing a 1-day seminar and getting on the docket for a National Conference were discussed as a near term goals for the committee. Our next meeting was tentatively planned for the week of July 11 at the National Conference in Charlotte, NC.

Web Page

If you haven’t seen the charter, I’ve finally gotten around to getting the long range plan posted on the NCSL server. You will find it in the committee area of the NCSL website <http://www.ncsl-hq.org>. Access to the committee area is gained by entering the word "committee" in both user name and password fields. Any comments you have would be appreciated. Incidentally, since we have this forum available to us, we should plan to do as much committee business as possible in this on-line format (perhaps in lieu of these long-winded emails).

Based on our recruiting campaign, I’ve added a few folks to our distribution list who have expressed an interest in the committee - at least those whose email addresses are known. These are Tom Smith of National Calibration and Testing Laboratories, Richard Pettit of Sandia National Laboratories, Carol Hockett of Minnesota Metrology Laboratory, Jim Patterson of Southwest Research Institute, and Wayne Underwood of Cincinnati Precision. Welcome all!

PUBLICATIONS
John B. Ragsdale, V.P.

OVERSIGHT
Dr. Stuart Kupferman and Steven Stahley

Received 4 NCSL publications for formatting. These are the Catalogue of Intrinsic and Derived Standards, the revised RP-6, and new RPs on Selecting Standard Laboratory Environments and Interlaboratory Comparisons. These publications will printed and distributed during the first quarter of 1999.

GLOSSARY
Jesse Berlanga

No activities this quarter.

ARCHIVAL
Lewis Fong

Lewis Fong, Lockheed/Martin, has replaced Don Dowell as Chairman of the Archival Committee. Lewis is looking for volunteers to serve on this committee.

Committee Report:

Get involved and get digitally archived! NCSL is building a digital library for posterity. Where your filing cabinet at work or bookshelf at home serve this role for facts, data, and other relevant information related to NCSL activities, no such equivalent yet exists for digital information. With the costs of data storage dropping, archiving cost is dropping. Imagine viewing an audio/video clip of this year’s Keynote Speaker, or a simple historical name list of Board of Directors, Committee Chairpersons and Members, Regional Coordinators, and Liaison Delegates. NCSL was formed in 1961, thus we’ve got a tremendous amount of archival activity ahead.

The NCSL Archival Committee (183) is chartered to build a digital library. Technical expertise on gathering, storing, and serving the terabytes of information that will be accessible on the NCSL homepage is welcomed. It would be appreciated if interested volunteers to serve on the Archival Committee contact Lewis A. Fong (408) 756-3534. In addition, please send suggestions for items you’d like to see on the NCSL digital library to <lewis.fong@lmco.com>. Thank you.

CALIBRATION/CERTIFICATION PROCEDURES
Harry Moody

The National Conference of Standards Laboratories (NCSL) has added a procedures database to its website <www.ncsl-hq.org>.

To locate the database, go to the homepage, click on HIGHLIGHTS, the click on CALIBRATION PROCEDURES. A search
capability can be found on the Calibration Procedures page to help locate sources of procedures.

The NCSL Certification/Procedures Committee (185) is soliciting calibration procedures to populate the database as a service to the membership and to the calibration industry. Instructions for submitting procedures can be found on the CALIBRATION PROCEDURES. The committee does request that the procedures meet the requirements of ANSI/NCSL Z540.1-1994. Your help is needed to make this NCSL service a success.

If you would like to find out more about the NSCL Calibration/Certification Committee, go to the NSCL homepage, click on COMMITTEES, click on 180 PUBLICATIONS, and then click on 185 CALIBRATION/CERTIFICATION PROCEDURES. In addition, you may contact Harry J. Moody at (208) 526-2656.

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DOE METROLOGY COMMITTEE AND STANDARDS LAB MANAGERS COMBINE ANNUAL MEETINGS TO FURTHER DOE/TSP0 GOALS

Don Ragland (SNL/A, Technical Standards Program)

Citing similar DOE interests and issues plus cost savings, the DOE Topical Committee on Metrology and the DOE Standards Laboratory Managers have agreed to conduct their meetings back-to-back at DOE/NVOPS in Las Vegas, NV, March 24-26, 1999.

Several Standards Lab Managers, who represent the Nuclear Weapons Program, are also members of the Metrology Committee and both groups share common interests in the various subjects to be addressed at the Third Annual Meeting of the Metrology Committee. In addition, both groups share common DOE/TSP0 (Technical Standards Program Office) goals for conserving DOE expenditures. They view the back-to-back meetings as an opportunity for cost savings for their individual facilities and for DOE. At the same time, they will be furthering their aims of increased communications and cooperation among DOE facilities. Everyone benefits.

The Metrology Committee has been instrumental in recommending that DOE adopt the International Standards Organization (ISO) Guide 25 (General Requirements for the Competence of Testing and Calibration Laboratories), which is currently being drafted by ISO as a standard (DIS/ISO 17025). One focus of the meeting will be the status of DIS/ISO 17025 in the formalization process, an examination of its impact in various DOE technical areas, and its relationship to DOE quality assurance.

The relationship of DIS/ISO 17025 and health physics instrumentation calibration will be covered at the meeting. The Metrology Committee recently polled its entire database as to the standard(s) to which facilities adhere in their calibration efforts. The results of that poll will be addressed.

An ongoing project for the Metrology Committee has been the DOE/TSP0’s goal of establishing more widespread communications and sharing of resources, not only throughout the DOE complex but also between the DOE and other US organizations that rely on metrology and calibration. To that end, the National Institute of Standards and Technology (NIST), with which the DOE Metrology Committee operates in close contact, will address DIS/ISO 17025 as it affects traceability issues in technical fields.

In addition, the metrology contingent within the Department of Defense (DOD) and the DOE Metrology Committee have agreed to open avenues of communications. Those involved believe that both organizations, and ultimately the US, should experience stronger capabilities and increased cost savings as a result of these efforts. A representative from the DOD will speak to these efforts at the meeting.

Topics to be presented by speakers at the Metrology meeting include:

Dick Pettit, SNL/A
"Status Report on National Cooperation for Laboratory Accreditation (NACLA) activities"

Jim Bowman, ORNL
"Status of DIS/ISO 17025" (General Requirements for the Competence of Testing and Calibration Laboratories)" within the ISO formalization process.

Sharrill Dittmann, NIST
"DIS/ISO 17025 & Traceability Issues"

Dr. Charles Brokopp, NELAC
"Implementing NELAP (National Environmental Laboratory Accreditation Program)"

Gary LaBrayeere, INEEL
"DIS/ISO 17025 & Health Physics Instruments"

Jeff Walden, DOD
"DOD Metrology and Mutual Metrology Issues with DOE"

Bud Danielson, DOE/HQ
"Status of DOE Order 414.1: Quality Assurance" (formerly 5700.6D)

David Green, ANL
"Common Interests of the DOE Analytical Managers Group (DAM) and the DOE Metrology Committee."

According to Bob Wayland (SNL/A), Secretariat for the Metrology Steering Committee, attendance at this meeting is open to all DOE personnel and DOE contractors involved with measurements, standards, and calibration. For more information, or to submit your registration for the meeting, contact: Don Ragland (SNL/A) at 505.845.9623 or email him at <dragla@sandia.gov>.
Main entrance and future reception area.

Work area for doing daily mail and in-house mailings.

New staff area with lights being added.

Proposed office for new business manager.
A MESSAGE FROM PETER HEYDEMANN, NIST REPRESENTATIVE TO THE NCSL BOARD

I have decided to retire on April 3, 1999, after 35 years at NBS and NIST. NBS was a unique institution and I have enjoyed work there very much. NBS establishment in 1901 was greeted by the House of Representatives with the words "...no more essential aid could be given to ... commerce ... than by the establishment of the institution proposed in this bill," and that was certainly true.

Participating in fulfilling this promise was very rewarding, interesting, and challenging for me. There was the satisfaction of providing a useful public service, the stimulating cooperation with colleagues from NBS, industry and other agencies, and the increasingly demanding requirements for new and better measurements. I collaborated with and learned from some of the most dedicated engineers and scientists at NBS. We had a great deal of freedom in the way we structured our work as long as the needed services were provided to our customers promptly and accurately.

After a few happy and productive years in the laboratories, I was given opportunities to develop skills in management and then to apply these skills in directing the work of several parts of NBS, e.g., programs, budget and finance, chemistry, physics, and the early version of Technology Services. In 1988 I had the opportunity to serve at the U.S. Embassy in India for five years. That was in many ways a special and exotic part of my career. Among other duties I ran a large cooperative science program that gave me opportunities to travel all over the country, to work on diverse subjects with many academic and government institutions, and to learn a great deal about this most interesting country.

At the end of 1993 I returned to NBS, now NIST, and was surprised by the changes that had taken place in the five years of my absence. My assignment to Technology Services gave me a welcome opportunity to support measurement services and to advance a program to provide direct support for U.S. exports with the "Standards in Trade Program." This program is now one of NIST’s most successful services to industry.

I may still occasionally get involved in standards, trade, and measurement issues, but most of my time will be devoted to scholarly research and writing on ancient history. I will miss the many good, resourceful and intelligent people that I had the fortune to meet and work with at NIST, NCSL, NCWM, and at many companies and government agencies. I will also miss the work on calibrations, reference data and materials, and on the support of U.S. exports in highly competitive markets.

FY 99 NIST BUDGET HIGHLIGHTS

On October 21, 1998, President Clinton signed H.R. 4328, Omnibus Consolidated and Emergency Supplemental Appropriations for fiscal year 1999, into law. The conference agreement includes full funding for base activities for the internal research programs of NIST and includes the following program increases:

1) $1,800,000 for semiconductor metrology; 2) $1,200,000 to continue the disaster research program on effects of windstorms on protective structures and other technologies begun in FY 98; 3) $2,500,000 for increased support for international standards activities; 4) $1,800,000 to expand the Baldrige National Quality Program to education and health care.

The conference agreement includes $106,800,000 for the Manufacturing Extension Partnership (MEP). NIST is to provide a report regarding an independent evaluation of the MEP program and provide this report to the Congress. Language also is included waiving the statutory six-year limitation on federal funding for MEP regional centers. The conference agreement includes $203,500,000 for ATP, including $66,000,000 for new awards in FY 99 and $41,100,000 for administration, internal NIST lab support, and Small Business Innovation Research requirements; and a rescission of $6,000,000 from prior year unobligated balances. An amount of $56,714,000 is provided for construction, renovation, and maintenance of NIST facilities, including making $40,000,000 of the funds provided in this account available upon submission of a spending plan. CONTACT: Verna Hines, (301) 975-3080.

NEW WWW SITE PROVIDES REMOTE, NIST-TRACEABLE TIME AND FREQUENCY CALIBRATION DATA USING GPS

Michael Lombardi and Judah Levine of the Time and Frequency Division (Boulder) have developed an online database of comparisons between the NIST time scale and the Global Positioning System (GPS) satellite signals. Calibration and standards laboratories that use GPS signals as a frequency reference can use the World Wide Web database to complete their chain of traceability to NIST. The database, accessible at <http://gpsmonitor. timefreq.bldrdoc.gov/gpstrace.htm>, is automatically updated each morning, and past data are archived. The archive allows users to retrieve past data and retroactively confirm the traceability of their measurements.

This service was developed in response to requests from calibration and standards laboratories and from GPS receiver manufacturers who develop products for the time and frequency marketplace. The new service complements the NIST Frequency Measurement and Analysis Service, another distributed calibration service allowing customers to calibrate time and frequency standards in their own laboratories by using a dedicated telephone connection to NIST to compare locally received GPS signals with NIST time and frequency standards. CONTACT: Michael Lombardi, (303) 497-3212.
FREQUENCY SYNTHESIZER FOR LASER-COOLED ATOMIC CLOCKS

Researchers in the Time and Frequency Division (Boulder) have developed improved microwave frequency synthesizers to support new laser-cooled atomic clocks for both laboratory and advanced space applications. The Physics Laboratory (PL) is developing a laser-cooled atomic fountain clock to replace NIST-7 as the nation's primary frequency standard with significantly reduced uncertainty. PL is also working with NASA to develop a laser-cooled clock for use in Earth orbit, where the free-fall environment will permit lengthy observation of very slow atomic beams, reducing frequency uncertainties by an order of magnitude.

Critical to the dissemination of the signals from these new laser-cooled clocks are the high performance microwave frequency synthesizers developed by Fred Walls and guest researchers Amitov Sen Gupta and Darko Popovic. This new synthesizer uses simple and rugged digital technology, with some key components already space qualified. The phase stability, temperature coefficient, and frequency agility of the synthesizers should be more than adequate for every standard now under development and might well serve generations of standards beyond these. The new synthesizer technology also should be useful for standards for phase-noise and amplitude-noise measurements.

The key design advance is the use of digital technology and the removal of narrow-band filters, which typically produce temperature-stability and phase-stability problems. Measurements between a pair of these synthesizers indicate a fractional-frequency stability of better than $5 \times 10^{-16}$ at 10 seconds averaging down to $1 \times 10^{-18}$ at 1 day. The measured temperature coefficient is 0.12 ps/K. The new synthesizer is small (particularly important for space applications), and the circuitry is easier and less costly to assemble, since there are many fewer critical adjustments involved. CONTACT: Fred Walls, (303) 497-3207.

1998 EDITION OF NIST SP 814 PUBLISHED

The 1998 edition of NIST Special Publication 814, Interpretation of the SI for the United States and Federal Government Metric Conversion Policy, has been published. Edited by Barry N. Taylor of the Physics Laboratory (PL), the new edition of NIST SP 814 contains: 1) a diagram with accompanying text that shows graphically how the 21 derived units of the International System of Units (SI) that have special names and symbols are related to the seven SI base units; 2) the Department of Commerce, NIST, Federal Register notice of July 1998 that sets forth the current interpretation of the SI by the Department of Commerce for use in the United States; 3) the Metric Conversion Act of 1975, as amended in 1988, 1995, and 1996; 4) Executive Order 12770 issued by the President of the United States in July 1991 that provides Presidential authority and direction for the use of the metric system of measurement by federal departments and agencies in their programs; and 5) the Department of Commerce, Office of the Secretary, Federal Register notice of January 1991 that revised the Code of Federal Regulations to remove the voluntary aspects of the conversion to the metric system of measurement for federal agencies. Single copies of SP 814 may be obtained from the NIST Metric Program, by calling (301) 975-3690, or by email at metric_prog@nist.gov. CONTACT: Barry N. Taylor, (301) 975-4220.

LATEST ADVANCES PAVE THE WAY FOR A QUANTUM-BASED DEFINITION OF MASS

Physicists in the Electronics and Electrical Engineering Laboratory (EEEL) have obtained a new measurement of Planck's constant, h, a constant that serves numerous roles in quantum mechanics. The new value for h of $6.62606891 \times 10^{-34}$ has an uncertainty of 89 parts per billion and instantly improves the accuracy of values for related fundamental constants, such as electron mass, proton mass, elementary charge, and Avogadro's number. Further, the reduced uncertainty paves the way for a quantum-based definition of mass.

The experiment, first proposed by Brian Kibble of the National Physical Laboratory in England in 1976, uses a moving-coil watt balance apparatus with a kilogram mass and a copper coil of wire in a magnetic field that makes use of the Josephson and quantum Hall effects. First, the group allowed the coil to move downward/upward, measuring its velocity and the voltage it generated. Next, they sent a current through the coil, which created an upward magnetic force that exactly balanced the downward force of gravity on the mass. From their data, in which factors such as the geometry of the setup canceled out, the researchers could extract the value of h. These results recently have been published (Edwin Williams, Richard Steiner, David Newell, P.T. Olsen, Phys. Rev. Lett. 81, 2404, 1998.)

Steiner presented these results in July 1998, as an invited speaker, at the Conference on Precision Electromagnetic Measurements and Fundamentals (CFEM) held in Washington, D.C. At the same conference, Newell presented the designs for the next generation of the experiment and detailed the progress anticipated with these changes. The goal of the new version is to improve the uncertainty by an order of magnitude. This accuracy will allow the monitoring of the artifact kilogram and lead to a new quantum-based definition for the kilogram. CONTACT: Ed Williams, (301) 975-4206.

IMPROVED TECHNIQUE FOR ASSESSING MEASUREMENT SYSTEMS FOR HIGH VOLTAGE EQUIPMENT TESTING

High reliability of electric power equipment such as power transformers is assured by testing it with high voltage (hv) pulses prior to placing the equipment into service. The accuracy requirements for hv pulse measurements used in this testing is specified by national or international test standards, which have become stricter in recent years. To ensure that the measurement system errors do not exceed the requirements, signal processing techniques such as numerical convolution have been prescribed by IEEE Standard 4-1995 on hv testing.

A new technique for effectively performing the deconvolution of measured high voltage impulse waveforms has much less sensitivity to the random noise inherent in hv pulse measurements than direct deconvolution methods. Using the latter, small random errors in the measured waveforms can result in large errors in the deconvolved waveforms.

The key to the new technique is the use of a numerical model, based upon the impedance parameters of the test circuit, for the hv pulse that appears at the input to the measuring system.
A forward convolution of this numerical model with the measured response of the hv measuring system then is used to calculate the output waveform. The model then is iteratively adjusted to find the best fit between the calculated waveform and a measured hv pulse waveform using the Levenberg-Marquardt non-linear least-squares fitting algorithm.

When found in this way, the optimal model waveform is effectively the deconvolution of the impulse waveform recorded by the measurement system. By comparing the deconvolved waveform with the recorded one, it is possible to estimate the amplitude errors and wave shape distortion introduced by the measurement system and then determine whether the measurement system errors meet the requirement of the standards.

To further substantiate their results, the researchers tested the model-based deconvolution approach with simulated waveforms having added random noise. These tests demonstrated that the errors associated with the amplitude and time parameters were well within the requirements of the standards, even with waveforms having noise levels of 5 percent of the peak amplitude. When this technique is transferred to industry, it will yield a double benefit: it will help to correct those errors introduced by the hv measurement systems and improve the measurements made during the high-voltage testing of electric power equipment. CONTACT: James K. Olthoff, (301) 975-2431.

NEW SRM DEVELOPED FOR WAVELENGTH CALIBRATION OF OPTICAL FIBER COMMUNICATION SYSTEMS

Optical fiber communication systems are becoming more complex as operators try to push more information down the same fibers. New systems are being adopted which expand capacity by using many different wavelengths of light; these wavelength division multiplexing (WDM) systems operate in the near infrared (1500-nanometer) wavelength region. Sarah Gilbert and William Swarm of the Optoelectronics Division have developed a new wavelength reference now available as Standard Reference Material (SRM) 2519. The SRM enables accurate wavelength calibration of equipment and characterization of the wavelength dependence of the optical components used in WDM systems.

The SRM is an optical-fiber coupled absorption cell containing a small quantity of hydrogen cyanide gas. A user-supplied light source can be coupled into and out of the units via optical fiber connectors. The gas molecules have distinctive absorption features in the 1500 nanometer region due to their quantized vibrational and rotational motion. Fundamental absorption lines provide references that are very stable under changing environmental conditions and have well-understood physical behavior.

Hydrogen cyanide has more than 50 accurately measured lines in the 1530 to 1565 nanometer region. NIST has measured the line centers and pressure-induced shifts of 21 lines and certifies their wavelengths with an expanded uncertainty (coverage factor k = 2) of +/-0.0006 nm. The remaining lines in the band are certified with an expanded uncertainty of +/-0.003 nm.

SRM 2519 is part of a series of wavelength references for optical fiber communications. SRM 2517, which was introduced in 1997, is based on the absorption of light by acetylene. Current NIST research is focused on providing higher-resolution wavelength references and covering other wavelength regions where WDM systems are being developed. CONTACT: Sarah Gilbert, (303) 497-3120.

COPLANAR WAVEGUIDE CALIBRATION SETS ARE NOW AVAILABLE AS NIST REFERENCE MATERIALS

Coplanar waveguide calibration sets have become NIST’s newest high-frequency Reference Material (RM), RM 8130. These calibration sets give manufacturers a means of verifying the integrity of their microwave wafer-probe measurement stations using NIST-developed methods for measuring instrument drift and precharacterized NIST artifacts. This is the first attempt by any standards laboratory to use standard artifacts to support microwave-on-wafer measurements. The RMs, which contain microwave circuitry characterized at NIST, can be used to measure the drift of microwave on-wafer probing stations and to verify that the instrumentation is capable of repeating NIST measurements. It is also possible to test the integrity of the test instrumentation and setup using the RMs. For example, the test procedure identifies unsound connections and other common instrument problems.

NIST developed the verification sets with help of the NIST Monolithic Microwave Integrated Circuit (MMIC) Industrial Consortium. Each RM contains a thru-reflect-line (TRL) calibration set and 12 test structures characterized at NIST. Additional information on this new reference material is available on NIST’s High Speed Microelectronics Project web site. The address is <http://www.boulder.nist.gov/micro/> . CONTACT: Bob Judish, (303) 497-3380.

NEW BOOK CONFRONTS ISSUES CHALLENGING SEMICONDUCTOR INDUSTRY

A wide range of issues important to the U.S. semiconductor industry and a strategy to correct what some experts see as a potentially dangerous trend of declining long-term basic research and development are reported in a volume of scientific and engineering papers now available.

The book, Characterization and Metrology for ULSI Technology, is published by the American Institute of Physics and was edited by six scientists led by Dave Seiler, chief of the Semiconductor Electronics Division in NIST’s Electronics and Electrical Engineering Laboratory.

“What’s at stake is American jobs and the preeminence of the U.S. semiconductor and electronics industry, which is, in a broad sense, the single largest employer in the nation,” said Seiler. “People are not doing the basic research that will be needed in 15 to 20 years from now.”

The papers specifically address issues concerning how to measure and understand the materials and technologies involving “ultra large scale integration,” or the production of larger and larger circuits that contain more and more densely-packed electronic components. Among the issues discussed in the papers is the concept of meeting future R&D needs by forming partnerships among industry, universities and government agencies. The strategy of forming consortia is referred to as a “cross-functional approach” to the problem. CONTACT: Emil Venere, (301) 975-5745.
NEW GROUP TURNS THE FIRST PAGE ON E-BOOK STANDARDS

The Open Electronic Book Standards Committee (OEBSC) recently launched its effort to develop voluntary standards for the emerging electronic book industry. The committee, which includes book publishers and electronics executives, met during Electronic Book 98, an October 1998 workshop cosponsored by NIST and the Video Electronics Standards Association. The workshop brought together librarians, publishers, software and hardware developers, information technology engineers and others with an interest in electronic books.

E-books are hybrid products that combine features found in books and computers. Manufacturers hope to take advantage of advances in fields such as video display technology and high capacity storage media (such as digital video display or semiconductor memory) to produce the next generation of easy-to-use, portable battery-powered E-books.

Members of the OEBSC would like to develop standards that would support the growth of the industry within a year. Along with NIST representatives, the group features members from E-book manufacturers such as EveryBook Inc., Librius Inc., Nuvomed and Softbook Press. Other participants of note include Microsoft Corp., Random House and the Association of American Publishers.

A major goal of the OEBSC is to develop voluntary standards for electronic content. Another goal is to ensure "interoperability" among the different electronic books coming on the market. This interoperability would allow consumers to buy a machine from one manufacturer and purchase the actual text of a book from multiple sources. CONTACT: Philip Bulman, (301) 975-5661.

SUMMARY OF SUMMIT ON U.S. STANDARDS STRATEGY PUBLISHED

A summary of the recent national "standards summit," which explored options for advancing U.S. technology interests in international standards, is now available from the NIST Office of Standards Services.

Sponsored by NIST and the American National Standards Institute, the September 23, 1998, meeting attracted more than 300 representatives from U.S. companies, federal agencies, and standards developing organizations. Participants examined the feasibility and challenge of devising a national standards strategy, given the tremendous diversity within the U.S. voluntary standards system. More than 600 organizations and consortia develop standards in the United States.

The new report summarizes keynote addresses made by Robert Mallett, Deputy Secretary of Commerce; Dana Mead, Chairman and Chief Executive Officer of Tenco; and Evangelos Vardakas, Director of the European Commission’s Directorate General for Industry. It also summarizes three roundtable discussions involving a total of 20 speakers representing a variety of organizational perspectives. More complete proceedings of the summit will be published later this year. CONTACT: Mark Bello, (301) 975-3776.

ONE COMPETITION DOES IT ALL FOR 1999

The 1999 Advanced Technology Program (ATP) competition features a new structure to help ensure that each proposal will be carefully evaluated in competition with other proposals from the same technology area.

This year, to simplify the application procedure and encourage the broadest possible participation by industry, the ATP is conducting a single large competition rather than several competitions in different technology areas. The ATP will establish several independent technology-specific selection boards and assign each project proposal for review by the board most qualified to evaluate the proposal’s merits.

The ATP provides funding on a cost-shared basis to industry to carry out research and development on high-risk, high-payoff emerging and enabling technologies. The program concentrates on those technologies that offer significant, broad-based benefits to the nation’s economy but that are not likely to be developed in a timely fashion without the ATP’s support because of the technical risks involved.

The ATP expects to have approximately $66 million available in fiscal year 1999 for first-year funding of new projects. Based on previous competitions, this would be expected to initiate innovative R&D projects with a joint industry/government investment of from $300 million to $450 million through 2003.

The ATP also has established a base line of $2.721 million in annual corporate revenues (including parent companies and related subsidiaries) to classify a company as a "large company" for purposes of ATP competitions in FY 1999. Under ATP rules large companies or their subsidiaries, competing for an ATP award as a single company, must provide cost-share funding of at least 60 percent of the annual total costs of the project.

The deadline for proposals to the 1999 ATP competition is 3 p.m. Eastern Daylight Time on Wednesday, April 14, 1999. CONTACT: Michael Baum, (301) 975-2763.

THREE NEW BIBLIOGRAPHIES OF ELECTRONICS-RELATED WORK AVAILABLE

Persons interested in the optoelectronics, electronics and electromagnetic research programs of the NIST Boulder, Colorado laboratories will want copies of bibliographies of technical work in these divisions dating back to 1970. The first, "Metrology for Radio-Frequency Technology: A Bibliography of NIST Publications (NISTIR 5075), lists published research from the Radio-Frequency Technology Division (formerly the Electromagnetic Fields Division) between January 1970 and July 1998. Subject areas discussed include antennas, dielectric measurements, electromagnetic interference, microwave metrology, noise, remote sensing, time domain and waveform metrology.

The second volume is "A Bibliography of Publications of the NIST Electromagnetic Technology Division (NISTIR 5076). It lists the publications of this division from January 1970 through July 1998. Topics covered include cryoelectronic metrology, and superconductor and magnetic measurements. The third and final publication is "Bibliography of the NIST Optoelectronics Division (NISTIR 5077). Subject areas covered include high-speed measurements, laser radiometry, fiber optic measurements, integrated..."
optic measurements, optical fiber sensors, fiber and discrete components, dielectric materials and devices, and semiconductor materials and devices. CONTACT: Fred McGeohan, (303) 497-3246.

A DECADE OF METROLOGY RESEARCH AT YOUR FINGERTIPS

Reprints of a decade of key papers by the Optical Frequency Measurement Group in NIST's Time and Frequency Division have been compiled and published as Precision Spectroscopy, Diode Lasers, and Optical Frequency Measurement (Technical Note 1504).

The papers describe work done over the past decade in the areas of diode lasers, frequency stabilization by optical and electronic techniques and by phase-locked loops, tunable lasers, optical synthesis, extended wavelength coverage, multiphoton interactions, and optical coherences. Several applications of diode lasers are described, such as an all-diode laser optical frequency reference using laser cooled and trapped atoms, detection of methane in air, high-sensitivity and high-accuracy spectroscopy, a one-gigahertz delay line oscillator, a demonstration of laser oscillation without population inversion, and others. CONTACT: Collier Smith, (303) 497-3198.

LASER DIODE PRODUCES LIGHT PULSES EVERY HALF-PICOSECOND

American industry currently markets digital sampling oscilloscopes with input signal bandwidths of up to 50 gigahertz that are capable of testing ultrafast electronic equipment and circuits. To ensure proper function of the oscilloscopes, a rigorous method is needed to test their dynamic response. Such calibration work, however, requires a device that produces a smooth pulse of electricity lasting only one trillionth of a second (one picosecond), an extremely difficult task.

NIST scientists recently developed a system in which an ultrafast laser generates optical pulses having smooth waveshapes and then converts these laser pulses into corresponding electrical pulses using newly developed photoconductors (materials that conduct electricity when exposed to light). Because there is typically a short response time in the conversion from light to electricity, the laser pulse width actually has to be shorter than a picosecond.

The researchers' next goal is to develop photoconductors and associated circuitry capable of turning the half-pico-second-wide optical pulses into corresponding picosecond-wide electrical pulses. This is about 10 times faster than possible with available U.S. commercial pulse generator technology. CONTACT: Emil Venere, (301) 975-5745.

DIGEST AVAILABLE ON OPTICAL FIBER MEASUREMENTS

Researchers interested in the characterization of optical fiber and related components will want a copy of the recently published technical digest that chronicles the Tenth Symposium on Optical Fiber Measurements held at NIST's Boulder, Colorado laboratories September 1998.

Two of the major topics in this compilation of symposium papers are measurements of polarization-mode dispersion and multimode fiber measurement. Fiber geometry is represented in the digest along with the broad topic of fiber mapping with length, including such parameters as chromatic dispersion and polarization properties. Although the focus on multimode fiber measurement may seem outdated, recent developments have brought multimode fiber issues back into the measurement arena.

In all, the digest consists of 44 papers (10 invited and 34 contributed) with two-thirds of the papers originating outside the United States. CONTACT: Fred McGeohan, (303) 497-3246.

SIMNET LAUNCHED TO FOSTER FREE TRADE IN AMERICAS

When Columbus set sail from Spain in 1492, his goal was to open up trade with the New World. Today, the countries of that New World [the Americas] are starting out on a new trade journey, one that promises unrestricted flow of goods and services among themselves. On December 4, 1998, at NIST's Gaithersburg, Maryland headquarters, a step toward realizing that goal occurred with the inauguration of SIMnet, an Internet-based, interactive system for metrology collaboration in the Western Hemisphere.

SIMnet will support real-time comparisons of measurements performed at laboratories throughout the 34 nations that make up the Interamerican System of Metrology (known by its Spanish abbreviation of SIM). SIM's efforts, soon to be enhanced by a fully operational SIMnet, are critical to increasing cooperation in science and technology, eliminating technical barriers to trade and establishing the proposed Free Trade Area of the Americas (envisioned to extend from Alaska to Tierra del Fuego) by 2005.

Organized by NIST and conducted under the auspices of SIM, SIMnet will be piloted tested in a 12-nation intercomparison of high-precision digital multimeters. Participating nations are Argentina, Brazil, Canada, Colombia, Costa Rica, Ecuador, Jamaica, Mexico, Panama, Trinidad and Tobago, the United States, and Uruguay. CONTACT: Mark Bello, (301) 975-3776.

FEBRUARY WORKSHOP TACKLES CONFORMITY ASSESSMENT ISSUES

Proving that they meet the testing, inspection, product certification, and other requirements of foreign markets can be very costly and time consuming for U.S. exporters. At a national workshop held on February 9, 1999, in Washington, D.C., U.S. companies, laboratories, regulatory bodies and other organizations sorted through the array of conformity assessment issues sometimes lurking as trade barriers, and then identified their top concerns.

Sponsored by NIST, the American National Standards Institute, and ACIL (formerly, the American Council of Independent Laboratories), the all-day workshop was held at D.C.'s Wyndham Hotel (1400 M St., N.W.). It responded to one of several consensus recommendations resulting from the September 1998 national "summit meeting" on international standards issues, hosted by NIST and ANSI. Many among the more than 300 people at that meeting stressed the need for efforts to simplify conformity as-
assessment procedures and eliminate duplicative requirements.

Audits, testing requirements and other conformity assessment practices peculiar to regions and nations have emerged as important trade issues. Many exporters have complained that, as international agreements help to reduce tariff barriers, some countries are erecting technical obstacles in their place.

NIST Director Ray Kammer will be the keynote speaker at the February workshop. During the morning session, a series of expert panels will describe ongoing conformity assessment activities underway in the United States and in trading-partner nations. The afternoon session will be devoted to identifying priority issues and to proposing follow-up actions. CONTACT: Mark Bello, (301) 975-3776.

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NEW SERVICE CHECKS TIME SOFTWARE'S Y2K COMPATABILITY

NIST's Time and Frequency Division has established a service to assist users in testing how well their time-setting software will handle dates after January 1, 2000. The year 2000 problem, or Y2K, refers to the failure of a computer program or system because the “100” year designation is mistaken for “1900.”

The service sends the exact time to any computer that requests it, but transmits dates that are exactly two years in the future. For example, the message transmitted at 14:37:26 Coordinate Time Universal (known as UTC) on November 1, 1998 had a time of 14:37:26 UTC on November 1, 2000.

The service supports all common digital formats. The time of day will be correct and will be directly traceable to the NIST atomic clock. The service will run until the end of 1999. Users with time-setting software on their computers that receives digital time messages over the Internet can access this test facility by changing the address in the software to connect to “y2k-test.timefreq.bldrdoc.gov” (IP address 132.163.135.136). Users of NIST's Automated Computer Time Service modern dial-up service can test their systems by dialing (303) 554-7760.


This facility is for testing only, and users should be careful about connecting operational systems to these servers. NIST will not be responsible for damage to systems that cannot properly handle dates in the year 2000 and beyond.

The client and server software were developed as part of a joint project between NIST and the University of Colorado at Boulder through JILA, a joint institute operated by the two organizations. The work at JILA was supported in part by a grant from the National Science Foundation. CONTACT: Collier Smith, (303) 497-3198.

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HELP FOR SMALL MANUFACTURERS IN CHECKING Y2K COMPLIANCE IN FACTORY-FLOOR EQUIPMENT

Small manufacturers will find it easier to determine whether embedded devices in factory-floor systems have a year-2000 date problem thanks to a recently formed partnership between centers in the Manufacturing Extension Partnership’s nationwide network and TAVA Technologies, Inc.

Under an agreement signed last week by the Modernization Forum and TAVA, MEP centers will have access to TAVA’s Plant Y2KOne product suite, an extensive database of Y2K compliance information on factory-floor automation equipment. The agreement also provides for training of MEP center field staff on TAVA’s product suite and methods for assessing Y2K problems on the plant floor.

Some examples of factory automation systems with embedded devices that may have a Y2K problem include programmable logic controllers, bar coding systems, environmental management systems and conveyor control systems that could malfunction and prohibit the execution of scheduled production.

Through its nationwide network of centers and offices, NIST MEP also is offering seminars and a computer-based tool to help small manufacturers better understand and deal with the year 2000 date problem. MEP’s computer-based tool called Conversion 2000: Y2K Self-Help Tool will help small manufacturers conduct an inventory of equipment, including hardware, software and embedded systems; identify core business systems and rate their importance to the survival of the business; develop contingency plans; and plan and manage remediation projects.

For assistance with the year 2000 problem, as well as other business and technical projects, small manufacturers can call 1-800-MEP-4MFG (637-4634) to reach the MEP center serving their region. MEP’s World Wide Web site, <http://www.mep.nist.gov/hottopics>, also has information on the year 2000 problem. CONTACT: Jan Kosko, (301) 975-2767.

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LASERS FOR WAVELENGTH-SCANNED INTERFEROMETRY

Richard Fox and Leo Hollberg of Physics Laboratory (PL) Time and Frequency Division (Boulder) have been collaborating with Lowell Howard and Jack Stone of Manufacturing Engineering Laboratory (MEL). Precision Engineering Division on the development of rapidly scanned diode lasers for application to wavelength-scanned interferometry. This length measurement process does not require physical movement of the arm of an interferometer. The objective of this joint project is to achieve precision length metrology with systems that can be easily used in a machine-shop environment.

The requirements for the laser system are that it must operate with a single longitudinal and transverse mode, and that its wavelength (oscillation frequency) can be scanned continuously and rapidly without mode jumps. After some study of several laser types, a distributed-Bragg-reflector laser with a three electrode structure was selected for testing. The 852 nm laser and optics have been enclosed in a "hand-held" 40 mm x 40 mm x 100 mm package. A tuning range as broad as 1.3 nm at 852 nm was demonstrated with the period for tuning through the full range being as small as a few milliseconds. The modular electronic systems used to power and control the laser are of a standard design that could be substantially miniaturized if necessary. Staff members of the Precision Engineering Division are now testing the system. CONTACT: Richard W. Fox (303) 497-3478.
CIRMS REPORT IDENTIFIES IONIZING RADIATION MEASUREMENT NEEDS

The Council on Ionizing Radiation Measurements and Standards (CIRMS) recently issued its “Second Report on National Needs in Ionizing Radiation Measurements and Standards.” Established in 1993, CIRMS represents thousands of users of ionizing radiation and radioactive sources engaged in industrial radiation processing and sterilization, medical radiation diagnostics and therapy, nuclear power generation, worker radiation protection, and environmental measurement programs. The CIRMS national needs reports are important tools to help NIST determine customer needs.

The second report lists 25 measurement needs in four major areas: medical applications, public and environmental radiation protection, occupational radiation protection, and industrial applications and materials effects. Under medical applications, one of the most critical needs is development of national standards for measuring radiation from tiny radioactive “seeds” widely used in treatment of prostate cancer and other conditions. A major need in the environmental area is development of standards to measure how radionuclides interact chemically with different components of soils to aid in clean-up of nuclear waste. Improved electronic personnel dosimetry for radiation workers is a critical need cited under occupational applications. One of the most important industrial measurement needs is a dosimetry standard for medical device sterilization.

The CIRMS report includes roadmaps with timelines for responding to these critical measurement needs and notes that “the effort to meet the needs of the user community for new measurements and standards requires strong collaborative efforts with NIST on the part of medical, industrial, academic, and government researchers.”

The first CIRMS report (1995) demonstrated the importance of CIRMS in identifying measurement needs and the responsiveness of NIST in meeting those needs. That report cited mammography standards as a critical need, and NIST cooperated with FDA and the University of Wisconsin to develop and disseminate those standards quickly. Physics Laboratory Ionizing Radiation Division now operates the mammography X-ray instrument calibration facility to ensure the accuracy of radiation exposure measurements in all 11,000 U.S. mammography facilities.

The 106-page report is available from CIRMS, P.O. Box 1238, Duluth, GA 30136; phone/fax: (770) 622-0026. CONTACT: Bert M. Coursey (301) 975-5584.

CHANGES TO THE SI PROPOSED

At its 13th meeting held in early September 1998, the Consultative Committee for Units (CCU), one of the nine Consultative Committees that provide advice to the International Committee for Weights and Measures (CIPM), prepared and sent forward to the CIPM three recommendations regarding the International System of Units (SI), the modern metric system.

Recommendation U 1 (1998) proposed the special name for the SI unit mole per second (symbol mol/s), the katal (symbol kat), for the expression of catalytic activity. This recommendation was in response to a request of the International Federation of Clinical Chemistry and Laboratory Medicine.

Recommendation U 2 (1998) proposed the adoption of the special name neper (symbol Np) for the dimensionless derived unit one, for expressing the values of logarithmic quantities such as logarithmic decrement, field level, or power level, while at the same time confirming the CIPM decision to accept for use with the SI the non-coherent unit bel (B), and its commonly used submultiple the decibel, dB.

Recommendation U 3 (1998) proposed the introduction of the special name uno (symbol U), for the SI unit one for use with SI prefixes to express the values of dimensionless quantities that are much greater or less than one. Thus one could write that mass fraction is \( w = 2 \times 10^4 \cdot 6 = 2 \cdot \text{U}, \) the relative uncertainty of the Planck constant \( h \) is \( \text{hr} (h) = 8.7 \times 10^4 \cdot 8 = 87 \text{mU}, \) etc.

At its meeting later in September, the CIPM decided 1) to seek the advice of its Consultative Committee for Quantity of Matter (CCQM) regarding the katal before asking the 21st General Conference on Weights and Measures (to be held in October 1999) to formally approve the adoption of the katal; 2) to ask the 21st CGPM to adopt the neper and confirm the continued use of the bel with the SI; and 3) not to introduce the uno at this time but to have the CCU seek the views of potential users of the uno in order to decide if it will be helpful. CONTACT: Barry N. Taylor, (301) 975-4220.

A DECADE OF METROLOGY RESEARCH AT YOUR FINGERTIPS

Reprints of a decade of key papers by the Optical Frequency Measurement Group in NIST's Time and Frequency Division have been compiled and published as Precision Spectroscopy, Diode Lasers, and Optical Frequency Measurement (Technical Note 1504).

The papers describe work done over the past decade in the areas of diode lasers, frequency stabilization by optical and electronic techniques and by phase-locked loops, tunable lasers, optical synthesis, extended wavelength coverage, multiphoton interactions, and optical coherences. Several applications of diode lasers are described, such as an all-diode laser optical frequency reference using laser-cooled and trapped atoms, detection of methane in air, high-sensitivity and high-accuracy spectroscopy, a long-gighertz delay line oscillator, a demonstration of laser oscillation without population inversion, and others.


LEAP SECOND ADDED NEW YEAR’S EVE

On December 31, 1998, a leap second was inserted into the world’s coordinated Universal time scale, known as UTC, to keep it synchronized with the rotation of the Earth. The leap second was added to the last minute before 7 p.m. EST, 6 p.m. CST, 5 p.m. MST and 4 p.m. PST, making that minute 61 seconds long. This
adjustment was made to precise clocks all over the world that keeps
UTC time or local time based on UTC. In the U.S., UTC is kept
by the National Institute of Standards and Technology and the
U.S. Naval Observatory.

See <http://www.boulder.nist.gov/timefreq/faq/faq.htm> for more
information. You can call (303) 499-7111 to hear NIST’s correct
time announcement.

(David Lovering, an electronics engineer in NIST’s Information
Technology Laboratory, has a penchant for poetry.)

Media Contact: Collier Smith, (303) 497-3198

THE SECOND SPRUNG
BY DAVID LOVERING

In UTC at midnight
On December Thirty-One,
You’ll find you get an extra
Second full of fun.
If you’re not in Greenwich England
When the moment comes about,
You’ll need to make adjustments
To the interval in doubt
At seven in the evening
(For those on EST),
Or six p.m. in Central,
Or five for MST.
Or four p.m. Pacific
Or wherever you may be,
Please thank your friendly NISTie
In Time and Frequency!
For our globe is spinning slower
(As we all are, I’m afraid),
While the Earth Rotation Service
Notes the seconds it’s delayed.
Since we cannot speed the planet,
We must compensate the clock,
And leap an extra second
To match our slowing rock.

DO AS THE ROMANS DO ... OR DON’T?

While the Year 2000 problem has people worldwide fearing what
will happen to their computers on that Jan. 1, another calendar-
related controversy will begin 365 days earlier. The dilemma faced
on Jan. 1, 1999: how will one write out the year in Roman numerals?

Because the National Institute of Standards and Technology is one
of two official timekeepers for the United States (the U.S. Naval
Observatory is the other atomic clock operator), the agency’s Re-
search Library often addresses questions on how to correctly ex-
press times and dates. Recently, the NIST librarians were asked
to tackle the issue of whether the year 1999 should be written as
MCMXCIX or MIM.

Their response was that while MIM is more convenient,
MCMXCIX probably will be favored because of earlier preced-
ents with numbers such as 1998 (written as XIX rather than IX).
However, the librarians point out that purists will use neither MIM
nor MCMXCIX, opting instead for MCMXCIII. The ancient
Romans, they explain, did not use the 10th century convention of
IX for the number nine.

Calls to the U.S. Copyright Office, the Motion Picture Association
of America, the Directors Guild of America and the Ameri-
can Institute of Architects revealed that none of the bodies con-
trolling copyright notices, film credits and cornerstone inscrip-
tions - all of which use Roman numeral dates - has an action plan
for dealing with the “Year 1999 problem.”

Media Contact: Michael E. Newman, (301) 975-3025

NEW TECHNIQUE MAY IMPROVE
GALLIUM-ARSENIDE WAFERS

Gallium-arsenide-based semiconductors promise to fill a vital role
in various defense and commercial applications. However, be-
cause they frequently combine layers of more than one element,
they are more expensive and difficult to fabricate than silicon-
based semiconductors.

A 3-inch processed wafer costs as much as $4,000. To reduce the
costs and improve performance, industry needs a method to as-
sess wafer composition during production. Such a real-time anal-
ysis would reveal flawed wafers long before the investment in ex-
pensive post-growth processing is made.

NIST scientists have developed a technique using X-rays to ob-
serve the composition of gallium-arsenide-based semiconductor
wafers as they are being grown. The technique, called electron
beam induced X-ray emission, can detect layers down to five
monolayers thick as they are being sprayed onto wafers.

The X-ray measurement works by hitting the surface of a wafer,
at glancing angles, with beams of electrons, stimulating atoms to
emit characteristic X-ray signatures. The X-ray then are counted
with a detector that features a novel design: it includes an outer
window that is heated to 400 degrees Celsius, preventing arsenic
from coating and obscuring the detector.

The research is discussed in a scientific paper appearing in the

For more information, contact Joseph G. Pellegrino, NIST, 100
Bureau Drive, Stop 8121, Gaithersburg, Md. 20899-8121, (301)
975-2123, <joseph.pellegrino@nist.gov>.

SUPERCONDUCTING SENSOR PROVIDES MORE
SENSITIVE AC MEASUREMENTS

Engineers measure alternating current voltage or current by using
devices known as “thermal transfer standards,” where the tem-
perature of a structure is elevated in a well defined and predict-
able fashion when electricity is applied. An unknown AC signal
is applied to the device and the temperature rise is recorded. A
known direct current signal is then applied and adjusted until the
same temperature rise is reached. This establishes a comparison
between the unknown AC and known DC signals. If the error in
the transfer standard is known (a quantity calibrated by NIST)
and if the DC signal is known, then the AC voltage or current can
be determined.

Present thermal transfer standards operate at room temperature,
and are limited by the performance of their temperature sensors
and by other effects that can be reduced at very low temperatures.
Therefore, a NIST research team designed and built a new prototype standard cooled with liquid helium that uses a much more sensitive, superconducting temperature sensor. The new device operates at temperatures below 10 Kelvin (minus 263 degrees Celsius or minus 441 degrees Fahrenheit).

Because of its high sensitivity, the superconducting sensor runs at millivolts of a watt, where conventional thermal-transfer devices may require more than a hundredth of a watt to operate. This reduction in operating temperature and power allows for comparisons at unprecedented low signal levels with a level of precision comparable to (and potentially better than) the best room temperature measurements.

For more information, contact Joseph R. Kinard, NIST, 100 Bureau Drive, Stop 8111, Gaithersburg, Md. 20899-8111, (301) 975-4250, <joseph.kinard@nist.gov>.

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DIGGS TO BECOME NCWM CHAIRMAN AT 84TH ANNUAL MEETING

G. Weston Diggs, the program supervisor for product and industry standards at the Virginia Department of Agriculture and Consumer Services, will be installed as chairman of the National Conference on Weights and Measures at the conference’s 84th Annual Meeting in Burlington, Vt., July 25-29, 1999. Diggs serves on the NCWM Inc. Board of Directors and the National Type Evaluation Program committee. He also is a member of the National Type Evaluation Technical Committee Weighing Sector and chairman of the Strategic Planning Work Group on the NCWM Inc. Business Plan.

NCWM is a standards-writing organization of more than 3,500 state, county and city weights and measures officials and representatives of industry, federal agencies, many foreign government agencies and consumer groups. The organization is, in part, self-supporting and, in part, sponsored by the NIST Office of Weights and Measures.

For information on the NCWM and the 84th Annual Meeting, contact the organization at 15245 Shady Grove Rd., Suite 130, Rockville, Md. 20850; (301) 258-9210; fax: (301) 990-9771; or visit the NCWM web site at <http://www.nist.gov/ncwm>. Questions on the technical agenda of the Annual Meeting should be directed to the NIST Office of Weights and Measures, 100 Bureau Drive, Stop 2350, Gaithersburg, Md. 20899-2350; (301) 975-4004; fax: (301) 926-0647.

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REPORT PRAISES NIST PROGRAMS FOR 1998 ACCOMPLISHMENTS

The Visiting Committee on Advanced Technology, NIST’s primary private-sector advisory board, has released its annual report that evaluates the agency’s 1998 performance of its mission to work with U.S. industry to promote economic growth. The report, which is submitted to the Secretary of Commerce for transmittal to Congress, reviews and makes recommendations regarding the general policy, organization, budget and programs of NIST.

In the report, the VCAT calls the NIST Measurement and Standards Laboratories "...the finest anywhere, as they must be." The committee states that it supports NIST’s efforts to modernize its facilities and backs the proposed construction of the Advanced Measurement Laboratory in Gaithersburg, Md. The committee also reiterates the National Research Council’s assessment that “many NIST programs are well-tied to industry, and the staff effectively outreach their technical peers in both industry and academia.”

The VCAT report also commends the 1998 successes of NIST’s other three major programs - the Advanced Technology Program, the Manufacturing Extension Partnership and the Baldrige National Quality Program. The committee “believes that the ATP is a well-managed program...where collaboration often pays substantial benefits to the companies participating...” It noted that the MEP “is making a significant difference to a growing number of small and mid-sized manufacturers...” and “is a valuable program for the nation.” And the committee says that it looks forward to the expansion of the BNQP to the education and health care sectors because they are “communities that can benefit greatly from the focus on quality inherent in the Baldrige Program.”

Finally, the VCAT 1998 Annual Report recognizes the importance of NIST’s role as a leader in the international and domestic standards arenas, especially concerning the creation of a national standards policy. The committee members note that “…the approach NIST is taking toward achieving a consensus within the standards community on a U.S. strategy is constructive and appropriate.”

Single copies of the VCAT 1998 Annual Report are available by faxing a request to NIST Public Inquiries, (301) 926-1630, or sending an e-mail message to <inquiries@nist.gov>.

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IBM’S BROWN NAMED AS NEW NIST DEPUTY DIRECTOR

National Institute of Standards and Technology Director Ray Kammer has announced the appointment of Karen H. Brown as the agency’s new deputy director. Brown, who was most recently a Distinguished Engineer at IBM Microelectronics in Hopewell Junction, N.Y., also served (on assignment from IBM) as director of lithography for SEMATECH from 1994-1998.

Brown’s 22 year career at IBM concentrated on solving problems in semiconductor lithography and microelectronics. She brings to NIST a proven track record in management, having successfully met the challenges of moving ideas from the laboratory into manufacturing.

Brown’s service as a review panel member for the annual National Research Council assessment of the NIST Measurement and Standards Laboratories has given her a solid understanding of the agency’s mission and operations.

A native of Schenectady, N.Y., Brown holds a BA in chemistry and history, and a Ph.D. in chemistry from the University of Rochester. She takes over her new position at NIST from acting deputy director Robert Hebner. Hebner, formerly the deputy director of NIST’s Electronics and Electrical Engineering Laboratory, will return to EEE as director following the retirement later this year of Judson French.
ADMINISTRATION SEeks $735 Million for NIST in FY 2000

President Clinton has submitted to Congress a fiscal year 2000 budget request for NIST of $735 million, a 16 percent increase above the FY 1999 appropriations of $641 million.

Included in the FY 2000 request are three separate appropriations: $290 million for Scientific and Technical Research and Services (including $285 million for the NIST Measurement and Standards Laboratories and $5 million for the Baldrige National Quality Program); $339 million for Industrial Technology Services (including $239 million for the Advanced Technology Program and $100 million for the Manufacturing Extension Partnership); and $107 million for Construction of Research Facilities to maintain and improve existing facilities, and begin construction of the Advanced Measurement Laboratory in Gaithersburg, Md. (with $95 million of proposed FY 2000 funds to be combined with $108 million from FY 1998 and 1999). The CRF funds are necessary to bring NIST's 30-45 year old research facilities up to the state of the art and meet U.S. industry and science needs well into the next century.

Three initiatives under the STRS appropriation would receive $5.5 million in NIST's Measurement and Standards Laboratories to remove standards barriers to expanded global trade, protect the information technology elements of critical national infrastructures and begin work on a program to foster professional development of mathematics and science teachers in Grades K-12.

Additional highlights of the FY 2000 request are an increase from FY 1999 of $41.2 million for the NIST Advanced Technology program to continue current projects and conduct a new competition open to all areas of technology, and $1 million to gather, promote and effectively deploy to all NIST Manufacturing Extention Partnership centers the highest-priority best practices in areas such as employee development and service delivery.

More data on the proposed budget are found in "FY 2000 Technology Administration Budget Highlights," a document available by faxed request to (301) 926-1630 or on the World Wide Web at <http://www.nist.gov>.

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GUIDE TO CALIBRATION SERVICE FOR CAPACITANCE STANDARDS AVAILABLE

NIST is offering the first publication that provides a comprehensive description of its calibration service for capacitance standards at low frequencies.

Theses standards are used by industry to calibrate secondary laboratory standards that ensure the quality of various other capacitors contained in electrical and electronic products. Traceability of the capacitance value and/or the uncertainty of the value is important for safety, performance, reliability and stability reasons.

NIST Special Publication 250-47 includes new information, such as improved uncertainty figures for the NIST calibration of fused-silica capacitance standards, which are gaining widespread use in industrial standards and calibration labs. It also contains material taken from National Bureau of Standards (NIST's predecessor) work dating back to the 1950s.

SP 250-47 can be ordered under stock no. SN 003-003-03549-1 from the U.S. Government Printing Office, (202) 512-1800; or under order no. PB 98-144587 from the National Technical Information Service, (800) 553-6847.

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NEW DIRECTORY LISTS FEDERAL CERTIFICATION AND RELATED PROGRAMS

A newly revised NIST directory, distributed via the Internet, lists federal certification and related requirements for hundreds of products and services regulated or purchased by 18 federal departments and independent agencies. An update of a 1988 edition, the new directory outlines requirements for items ranging from bottled water to building products, and from nuclear facilities to narcotic test kits and other law-enforcement equipment.

For each federal program, entries explain its purpose, whether requirements are mandatory or voluntary, and procedures for ensuring compliance and identifying conformance. Additional particulars include agency contact points, authorizing laws and regulations, inspection and testing requirements, sources of documentation, manufacturer or vendor obligations, and reciprocity arrangements.

The intended audience for the directory includes industry, government agencies (federal, state, local and foreign) and the general public.

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The Directory of Federal Government Certification and Related Programs is one output of NIST's efforts to build a comprehensive database on U.S. standards, regulations and conformity assessment programs. It can be downloaded from the World Wide Web at <http://ts.nist.gov/its/hrdocs/210/217/217.htm>. Printed copies of the directory will be available later this year. For more information, contact Maureen Breitenberg, Office of Standards Services, NIST, 100 Bureau Drive, Stop 2100, Gaithersburg, Md. 20899-2100, (301) 975-4031, <maureen.breitenberg@nist.gov>.

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TWO LONG-TIME AND TIME-HONORED LAB DIRECTORS TO RETIRE

Two of NIST's most respected and influential researchers, Judson French and Richard Wright, have announced their retirements early this year as directors of the Electronics and Electrical Engineering Laboratory and the Building and Fire Research Laboratory, respectively.

French (who will serve as EEEL Director Emeritus while completing a number of activities) is the dean of the NIST staff, having served longer than any other active employee. He started at the National Bureau of Standards (as NIST was known prior to 1988) in 1948. NIST Director Ray Kammer said, "Judy's tenure has coincided with the most extraordinary developments in electronics. Among other things, he witnessed - and helped to promote - the era of the integrated circuit by developing and managing our semiconductor and electronics programs;"

Outside the agency, French helped launch the National Electronics Manufacturing Initiative; served as an active member of ASTM standards committee; fostered the development of one of the first
semiconductor industry roadmaps; co-chaired the management committee for the U.S.-Japan Joint Optoelectronics Project; and has been a recognized leader in numerous professional organizations, including the Electronics Industry Association and the Optoelectronics Industry Development Association.

Among the honors French has received in his 50 years of government service are the Silver and Gold Medals of the Department of Commerce, the rank of Distinguished Executive in the Senior Executive Service, selection into the National Academy of Engineering and being named a fellow of the Institute of Electrical and Electronics Engineers.

Wright, who retired on Jan. 31, 1999, has been in charge of the NBS/NIST buildings-related research for 25 years. He came to NBS in 1971 after serving 17 years at the University of Illinois at Urbana as a professor of civil engineering. For the former Center for Building Technology and the current BFRL into which it evolved, Wright has been chief of the structures division, technical deputy director and director (since 1974).

"Our building and fire research is among NIST's oldest areas of eminence, but it has grown and matured during Dick's tenure," said NIST Director Ray Kamm. "Dick has shown us just how important the built environment is to our economy and has shaped BFRL's work to more closely align with U.S. industry's needs and opportunities both here and abroad.

Wright has published more than 100 technical papers and has served as chairman or president of several federal and international committees. He is a fellow of both the American Society of Civil Engineers and the American Association for the Advancement of Science. His honors include the Commerce Department's Gold Medal, selection for the rank of Meritorious Executive in the Senior Executive Service and being named Federal Engineer of the Year in 1988.

BFRL Deputy Director Jack Snell will serve as acting director until a permanent replacement is named.

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The latest NIST SRM Price List is off the press.
A2LA
Ramona Saar, Liaison Delegate

Status of A2LA Programs

As of January 25, 1999, A2LA has accredited 43 calibration laboratories and 1167 testing laboratories. More than 200 testing laboratories and 45 calibration laboratories are currently seeking accreditation.

New A2LA BOD Member Elected

Mr. John Wehrmeyer has been elected to serve on the A2LA Board of Directors (BOD) for the 1999-2000 term. Mr. Wehrmeyer is the Technical Manager at the Eastman Kodak Co. Corporate Metrology Center located in Rochester, N.Y. In addition, Mr. Wehrmeyer is the Chairman of the ANSI/NCSL Writing Committee and serves as the CORM Liaison Delegate to NCSL.

In Search of Qualified Calibration Assessors

Efforts are underway to recruit technical assessors in all fields of calibration as part of A2LA’s continuing effort to meet the demands of the rapid growth in the calibration field. Calibration assessors must be peer experts knowledgeable about the laboratory business in which audits will be performed.

To enter into the A2LA assessor training program, the assessors must have approximately 10 years (or more) of recent relevant technical experience in specific calibration fields, be able to communicate effectively both in writing and orally, and demonstrate leadership, poise, tact, persistence, integrity, and maturity. A willingness to travel is also very important since laboratories are located throughout the US and overseas.

To obtain more information, interested individuals can send a cover letter, resume and technical references to A2LA Headquarters.

APLAC
Peter Unger, Liaison Delegate

Status of APLAC MRA

Three more accreditation bodies (JAB and JNLA of Japan and KOLAS of Korea) successfully completed the evaluation process to become signatories to the APLAC Mutual Recognition Agreement (MRA). The signing ceremony took place at ILAC in Sydney on October 23. Ten bodies are now signatories. Nine other bodies are in various stages of evaluation.

APLAC General Assembly

The fourth APLAC General Assembly met in Auckland, New Zealand during the week of October 12. Elections for all offices of APLAC were conducted. The fifth General Assembly meeting will be held in New Delhi, India, during the week of November 29, 1999.

More details of the above meetings are contained in the December 1998 issue of APLAC News Notes.

INSTRUMENT SOCIETY OF AMERICA
Mike Suraci, Liaison Delegate

ISA distributed our NCSL material at ISA EXPO in Houston, Texas in October.

I have also maintained contact regarding the upcoming Temperature Symposium. I have corresponded with Charlotte Clayton at ISA Headquarters. In addition, I have communicated with Dean Ripple of NIST. Dean and Larry Rubin are active in developing the Symposium. I indicated our continued interest in participating as a sponsor.

The ISA Executive Director, Glenn Harvey, will be retiring in March. A dinner in his honor was held in San Diego on Feb. 9, 1999.

GIDEP METROLOGY
Jim Carlton, Liaison Delegate

1. GIDEP Metrology Data CD’s. The GIDEP Metrology Data CD-ROM set provides quick-no-hassle information.


   * CD #9. Scheduled for release in February 1999. Will provide data from 1 July 1998 thru 30 September 1998. Also, the Army’s Metrology Procedures Index, TB 43-180 (including Electronic Technical Bulletins (ETB’s)) will be available on MET_0009 GIDEP Metrology Data CD. The TB 43-180 database includes the Army’s instrument calibration intervals and will allow users to search for calibration information by manufacturer model number, National Stock Number, or Calibration Procedure number.

2. GIDEP’s strategy planning for the next millennium is likely to include an initiative for becoming the central distribution point for Metrology data.

The rationale for this is as follows:

* Role model within GIDEP already: DMSMS, Alerts/SAFE Alerts.

* With the commercialization and draw down of the Defense establishment, industry’s role is becoming a more significant aspect of the Metrology Data (GIDEP’s charter provides for support of industry and provides for access to industry information).

* Duplication of costs to individual services for distribution and data access would be eliminated.

* There should be one clearinghouse of the information.

* Individual government agencies; such as the FDA, DoT, DoA, DoC need not produce similar data and data distribution organization.

* GIDEP offers the Metrology community more than just the applicable Calibration Procedures (GIDEP database provides access to Failure Experience, Diminishing Manufacturing, and other Product information about the instruments being used and/or calibrated).

* The ability to serve as a central data access and distribution point has been established (GIDEP is already clearinghouse for DMSMS data).

* This initiative should be presented to the Joint Logistics Command.

3. GIDEP Website Links to NCSL Website

* NCSL Web Site Home Page

* Procedures Sharing Database

* Measurement Comparison Program PoCs

* Training Information

* Publications

4. International “Global” GIDEP

* GIDEP Workshop and Information Sharing Conference will be across the boarder in Toronto, Canada on 4 - 6 May 1999.

* Forum on International “Global” GIDEP is scheduled at the GIDEP Workshop.

* Past NCSL President, Bill Quigley has been invited for the GIDEP Workshop forum.

CPEM

Norman B. Belecki, Liaison Delegate

The CPEM Executive Committee meeting of July 8 & 9, 1999, was covered in my July 17, 1998, report to you.

The Executive Committee would like to hold our annual meeting at the 1999 NCSL Workshop and Symposium in Charlotte. I have asked Dave Nebel about getting a meeting room for about 15 people for three hours for the meeting.

The meeting will cover multi-conference issues such as finding funding to enable metrologists from third-world countries to attend, soliciting sponsorship, and the future handling of the CPEM reserve fund (we still are hopeful for NCSL help in this area!). The normal progress reports for past and future conferences will also be heard: a wrap-up for CPEM 98, and planning for CPEM 00 and CPEM 02, to be held in Sydney and Ottawa, respectively.

CPEM 98

The Electricity Division hosted the 1998 Conference on Precision Electromagnetic Measurements (CPEM '98) in the Washington Renaissance Hotel during the week of July 6 - 10. It was attended by 519 metrologists, physicists and engineers from National Measurement Institutes (NMIs), industry, and universities around the world who discussed the latest advances in standards, instrumentation, technique, and practice. The conference covered the entire spectrum of electromagnetic measurements from dc to light in 310 talks, with the two largest technical fields being time and frequency and dc-low frequency metrology. Plenary speakers included William D. Phillips (NIST), 1997 Nobel Laureate in Physics, and Carl Wieman of the JILA/University of Colorado team that was the first to demonstrate Bose-Einstein condensation.

In recognition of the need to provide a more uniform international measurement system and thereby reduce related technical barriers to trade, a special Tuesday evening session featured a panel of international experts on conformity assessment discussing the need for laboratory accreditation and its impact on the NMI community. There was a spirited discussion after the talks about the NIST position on the BIPM effort to create a multilateral framework for comparisons and mutual recognition of measurement capabilities.

Klaus Jaeger, NCSL Executive Vice President, gave an introduction to NCSL at a luncheon session.

A Conference Digest containing summaries of the presented papers was distributed to attendees and is available through the IEEE. The most significant 125 papers will be published in the April 1999 IEEE Transactions on Instrumentation and Measurement.

The Conference appears to have been a modest financial success, but the exact figures will not be available until later this year when IEEE publishing charges will be known. One problem has surfaced: the Conference reserve hotel, the Marriott, presented our conference management company with a bill for $60k since we only used four of the 50 rooms we had blocked. (The unused rooms should have been released the Monday of the Conference.) At this time, Courtesy Associates' lawyers have gotten that reduced to $6k on the basis of the millions of dollars of business Courtesy brings to Marriott each year, and are striving to eliminate it altogether.

IEEE I&M
David Braudaway, Liaison Delegate

The IEEE Instrumentation & Measurement Society (I&M) is working with representatives from NIST (US), PTB (Germany), BIPM (UK), NPL (UK), Sandia National Laboratories (US) and several manufacturers to study the problem of Modernization of Measurement Systems. This effort may last as long as five years (my estimate is that a much longer time may be required) and is intended to address the problems that are being experienced in international comparison of precision measurements. This initiative was introduced to the NCSL BOD by Bob Nebeker of NIST.

The steering group met in London last year and generated a number of action items, most of which were addressed at activities during the May 1999 Venice meeting of the Instrumentation and Measurement Technology Conference. Several panels are scheduled for this conference with possible follow-on meeting to further discuss the needs and possibilities. Topics are Telenet/Inter-active Metrology, Data Base Activities, Verifying Uncertainty in Laboratories and Data Gathering Activities.

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CORM
John Wehrmeyer, Liaison Delegate

The major event in CORM during 1998 was the third Oxford Conference that was held at the end of June, 1998.

The Oxford Conferences are co-sponsored by two groups - the UV Spectrometry Group (UVSG) of the United Kingdom and the Council on Optical Radiation Measurements (CORM) of the United States. The UVSG group was founded in 1948. Its original name was the Photoelectric Spectrometry Group. Its purpose was to provide a forum to discuss problems of methodology using the new spectrometers.

As the years increased so did the scope of the group. It now concerns itself with UV, visible, and near IR measurements. The UVSG maintains a very close relationship with the National Physical Laboratory, NPL. The CORM group was founded in 1972 as a permanent organization of practicing radiometry and photometry professionals, with the general purpose of establishing and defining consensus standards in the field of optical radiation. The council maintains a close relationship with National Institute of Standards and Technology.

The first Oxford Conference on Spectrometry I took place in September 1986 in Keble College at Clarendon Laboratory of Oxford. Seventy-five attendees from seven countries participated in the conference. Internationally acclaimed experts presented twenty-four papers, and there were ten poster papers. These proceedings were published by Elsevier in 1987 as Volume 2 of the Analytical Spectroscopy Library.

The second Oxford Conference on Spectrometry II took place in June 1994 at the Franklin Pierce College in Rindge, New Hampshire. Twenty-nine papers were presented and 10 poster papers presented. Elsevier published these proceedings in 1995.

The third Oxford Conference convened on Sunday, June 28, 1998 at the University of London's Royal Holloway College in Egham, England. The conference was entitled Optical Spectrometry III - Applications and Instrumentation into the 21st century. There were approximately 100 people registered for the conference representing government agencies, academia and industry.

CORM and the ISSC are beginning planning for Oxford IV to be held in 2002. The preliminary plans have CORM and ISCC teaming in the US with the NPL in the UK, since UVSIG no longer exists. The tentative overall theme is expected to be pertaining to the measurement of color and appearance.

Scientific advances in optical metrology, and advancement of the state of the art in optical spectrometry since the second Oxford Conference in 1994 were immediately obvious. Reviewing the proceedings from the second conference, it is clear that new technologies are emerging and the uncertainty between national laboratories continues to decline.

The organizers, A. Springsteen in the U.S., Dr. Mary Barnard in the U.K., T. Frost and J. Taylor and all those involved are to be applauded for their accomplishment. The relevance of the material presented, the quality of the presentations and the quantity of the poster papers silently attest to the quality and success of this conference. The full proceedings of the conference are scheduled to be published by the organizing committee in early 1999. Contact the secretary of CORM, Dr. Art Springsteen, for purchasing information.

A call for papers for the CORM 1999 annual conference is below.

CORM99 Annual Conference
Announcement and Call for Papers
Measurement and Characterization of Signaling and Illumination Devices in Transportation

The 1999 annual meeting and conference of the Council for Optical Radiation Measurements (CORM99) will be held at the Gaithersburg Hilton, Gaithersburg, MD, May 3, 1999 through May 6, 1999.

For details and updates, check the CORM website at <www.corm.org>.

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JLC/CCG
(Joint Logistics Command/Calibration Coordination Group)
J. V. Fishell, Liaison Delegate

1. ISO/DIS-17025 Review. Comments were provided on ISO/DIS-17025 (version CS981040033) to the American National Standards Institute (ANSI/ICAC ad hoc working group chairman, J. Cigler (National Institute for Standards and Technology (NIST)) on 29 October 1998.

The review included 52 recommended changes to ISO/DIS 17025. Of these, 28 (approximately 54%) were incorporated into the latest draft of the ANSI/ICAC comments which were to be provided as the U.S. position to the International Committee. Thirteen of the remaining comments are significant. Of these, about half must
have resolution either in the standard or the implementing guidance for effective DOD utilization.

2. National Cooperation for Laboratory Accreditation (NACLA). DOD representative, D. Costlow, participated in the NACLA meeting held at NIST Gaithersburg on 3 November 1998. Following the general meeting, a NACLA Requirements Committee meeting was held. The various unique dimensions of the DOD, Federal Highway, and DOE Metrology and Calibration METCAL Programs were discussed. On 15 December, the NACLA Federal Liaison Committee met to primarily discuss the draft NACLA Memorandum of Understanding (MOU) and to determine what modifications would be required for Federal activities to be able to endorse the document.

3. DOE Metrology and NASA Metrology and Calibration. DOE Metrology and NASA Metrology and Calibration working groups have expressed interest in working with the Joint Logistics Command - Calibration Coordination Group on coordination of NIST measurement standards requirements. Future meetings with the DOE and NASA Metrology Programs will be scheduled to discuss mutual coordination and a future working relationship.

4. DOD Outsourcing Initiatives. DOD outsourcing initiatives within the Services that have been previously reported are continuing. Formal announcements published through the Commerce Business Daily contain pertinent point-of-contact information for particular outsourcing initiatives.

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NATIONAL ASSOCIATION FOR PROFICIENCY TESTING
Charles J. Ellis, Liaison Delegate

As part of our ongoing relationship with NCSL, I would like to share with the board current information & newsworthy items about NAPT.

We are very excited about the results we are seeing from the proficiency tests we are currently facilitating. Organizations are using the services provided by NAPT to identify areas needing improvement in their measurement processes. Many companies, which previously thought they had their uncertainties down to known values, were surprised to learn that further work was needed on their measurement uncertainty. Many of the same organizations have shared with us that without participating in proficiency testing, they would not have identified problem areas or areas for improvements. Due to all positive feedback we have been receiving, we are even more excited about the value this association provides to the metrology community.

NAPT held a Board of Directors meeting at the MSC Conference in Anaheim, CA. One of the items on the agenda was the addition of Board Members. We are pleased to announce that at that meeting two new Board Members were added to its Directors. Added to the Board of Directors were Chris Grachanen & Gaylord DeGroot. Mr. Grachanen is the Manager of Standards Engineering, Corporate Metrology Department for the Compaq Computer Corporation and Mr. DeGroot is the Quality Assurance Manager for MTS Systems Corporation.

One of the decisions facing the NAPT board was whether to raise the fee for enrollment or find additional resources to support the general operating budget. One of NAPT’s goals is to encourage key organizations that believe in the benefits of proficiency testing to step up and support the association. To meet this goal we need to get 100 organizations to commit to helping fund NAPT’s general operating budget by becoming corporate sponsors. Because NAPT has not been able to secure enough sponsorship to cover costs, it was decided by the board to raise the enrollment fee until additional funding can be secured from the metrology community.

Please check out NAPT’s web site for the current fee schedule. Also, on the web site is more information on how becoming a NAPT corporate sponsor will benefit your organization and the metrology community.

NAPT’s Current Activities

NAPT is currently working with other professional associations in this country and abroad to further define the requirements for competency in proficiency testing in the metrology community.

NAPT has submitted a request to NCSL to present results of completed proficiency tests at the NCSL’s 1999 Workshop & Symposium.

NAPT currently has eight sets of artifacts in distribution. Tests currently in distribution are Gage Blocks, Resistance, 5 + Digit DMM, Thread Set Plugs, Torque Wrenches, Micrometers, and two temperature tests, Thermistor & Glass Thermometer. Recently we have had additional artifacts donated to NAPT (long stem SPRT, glass grids for vision system testing, etc.). These artifacts are now being characterized and will be added to the list of available tests.

We are in the process of identifying instrument manufacturers who may provide artifacts for future proficiency tests. NAPT is also recruiting additional laboratories to assist with the characterization of the artifacts. We know NAPT needs to be prepared to assist laboratories when the need arises in a proactive mode. Any manufacturer or laboratory that would like to assist NAPT with the donation of artifacts or characterization of artifacts is encouraged to contact NAPT.

NAPT is in the process of developing a proficiency test for environmental testing labs. This test will be geared towards the competency in test results obtained from environmental chambers. Once this proficiency test becomes approved we will inform the board.

NAPT has updated/changed its website <http://www.proficiency.org> and over the course of the next year we plan to be able to allow all participants to enter their proficiency tests results via our web site and receive immediate feedback as to their performance in the test.

NAPT’s Metrology Discussion Forums

In response to your last email, What NAPT needs help in is developing the web site discussion forums. We need to make the metrology community aware that such a discussion forum group exists. <www.proficiency.org>
So what I am asking from professionals like yourself is twofold, one is to visit the site as often as possible and ask metrology related questions (at first a wide variety of questions to build and start the discussion threads), and also answer questions that are posted by other metrology professionals. Also, I would ask for your help in making others (at your work site and in the community) in our profession aware of the discussion forums and encourage them to use the discussion forums as well.

We will be adding two more forums to the discussion group in the very near future, these are: RF-Microwave & Uncertainty. If you feel that a topic should have its own heading please let me know. Please be sure to sign the guest book and give your comments about proficiency testing.

OIML
Charles D. Ehrlich, Liaison Delegate

The 33rd meeting of the International Committee of Legal Metrology (CIML) was held in Seoul, Korea, on October 29-30, 1998. Dr. Sam Chappell, Chief of the Technical Standards Activities Program at NIST, attended. Accompanying Dr. Chappell was Jim Truex of the State of Ohio, representing the National Conference on Weights and Measures (NCWM). Prior to the CIML meeting, from October 25-27, Dr. Chappell and Mr. Truex participated in the 5th meeting of the Asia Pacific Legal Metrology Forum (APLMF), also in Seoul. Highlights from these meetings follow.

Asia Pacific Legal Metrology Forum (APLMF)

The APLMF met on October 26-27 with representatives of 16 of the 22 member economies. Peru conveyed apologies for not attending. The following international and regional organizations were also present as observers: OIML, SALMEX, and WELMEC. The Forum meeting was preceded by meetings of six working groups.

The Forum was opened by Dr. Myung-Sai Chung, President of the Korean Institute of Standards and Science (KRISS), who also served as Chair for the Forum. John Birch, Convener, welcomed the participants and thanked the staff of the Korean National Institute for Technology and Quality (KNITI) for hosting the meeting. He indicated that Columbia had applied for membership which was endorsed by the members present.

Highlights of Birch’s report are as follows:

Since the establishment of the Forum in 1995, the technical programs have shown rapid expansion that was made possible by strong commitment of members. A written summary report itemizing the progress of the Forum work plan was provided. The Forum is now to begin a new phase by implementing a Memorandum of Understanding which is expected to be completed before and signed at the next Forum meeting in the fall of 1999. The MOU will call for a fee structure to support the Secretariat. A proposed budget of US$20,000 was developed that would be assessed from member economies in three categories depending on population and economic development. The U.S.A. and Japan would be assessed the largest amount of about US$4,700. Australia will relinquish the responsibility of Convener. The Convener in the future shall be referred to as the President of the Forum and may or may not provide the Secretariat.

Highlights of the Working Group reports are as follows:

Mutual recognition agreements
Sam Chappell provided a report on the activities of the OIML Task Group on “Accreditation.” (See the report below to CIML on this subject.)

Goods packed by measure
John Barker of New Zealand who Chaired this Group reported recommendations that (1) a survey should be conducted of member economies on prepackaged products with regard to standard sizes and loss of moisture content, (2) OIML should give priority for revising OIML R87 on “net content in prepackaged products” to include quality systems, statistical sampling, and accreditation and certification of packing facilities, and (3) consideration should be given to development of labeling prepackaged products with a quality mark which would be an extension of the current European E-mark system.

Intercomparison testing
John Birch, Chair of the Group, reported that the intercomparison of nonautomatic weighing instruments had been completed and a report is being developed. An intercomparison of load cells is now underway. A questionnaire will be distributed to members to determine their interest in participating in an intercomparison of standard masses and reference standard (ma&m) meters for flow measurements.

Rice moisture measurement
Kerry Marston of Australia reported that (1) a suitable expert (a U.S. expert had been recommended but was unavailable for the specified time period) will be sought to conduct studies of such measurements in Thailand and Vietnam and (2) specifications will be sought from manufacturers of the most commonly used instruments.

Utility meters
Rene Magnan of Canada reported that (1) a questionnaire would be finalized on the information on the performance requirements of heat meters and (2) OIML would be requested to give priority to developing a Recommendation on electricity meters and for developing statistical sampling plans as applied to utility meters.

Training
Kerry Marston of Australia reported on the well-received training courses on “high capacity weighing instruments” and “nonautomatic weighing instruments” provided by APLMF in Shanghai, China in September 1998. Six persons from the U.S.A. participated in these courses. It was further recommended that (1) a train-the-trainer course should be developed for drive-away petroleum and liquid petroleum gas, (2) a regional directory of training and a network of training providers should be developed, and (3) the training module developed on “nonautomatic weighing instruments” should be promoted for use in cooperation with OIML.

During the meeting, a discussion subject the effects of “temperature compensation” on the sale of gasoline was discussed. The current practices in various countries were discussed by Dr. Ki Won Lee (Korea), Jim Truex (NCWM, U.S.A.), Alan Johnston (Canada), and John Birch (Australia).

The location of the next meeting of the Forum in 1999 was to be decided later by the Convener.
International Committee of Legal Metrology (CIML)

Representatives of 43 of the 56 member nations participated in the CIML meeting from October 28 - 30.

Reports on the following items were presented:

Member States and Corresponding Members

- It was reported that the Republic of South Africa had just become a member and was officially represented at this meeting. Guatemala and Madagascar have recently joined as corresponding members. Croatia is in the process of accession as a member of the Convention.

- A report was presented by BIML regarding the possibility of corresponding members participating as observers in CIML meetings and in the work of some of the technical committees. The CIML approved this proposal and requested that the President and BIML draft appropriate rules for such participation that would take into consideration the positive comments expressed by CIML members.

Developing Countries

- A meeting of the Development Council took place before the CIML meeting.

- M. Kochsiek provided a report on the Symposium on the “Role of Metrology in Economic and Social Development” at PTB in Germany in June 1998 which was sponsored by PTB, OIML, BIPM, and IMEKO. A report was provided by BIML on the activities of the Development Council from its initiation in 1978 to the present. Mrs. Annabi, CIML member for Tunisia, was elected Chair of the Development Council. She presented a draft plan of action to CIML members for comment. An amended draft will be prepared by the Chair and Vice Chair with support from staff of BIML. Final approval of the plan by CIML will be carried out by correspondence.

Mutual Agreement on Mutual Acceptance of Test Reports

Sam Chappell presented a report on the activities of the ad hoc working group established to examine the issue of “accreditation” and related matters. In particular, he provided a report on the meeting at NIST in April of 1998 of representatives of ten OIML member countries and BIML at which a “Mutual Agreement to Recognize OIML Certificates and Associated Test Reports” was discussed. A timetable for action plans for this work was presented. It included a report for review and approval by CIML at its next meeting in October 1999 to include a program for establishing mutual agreements within OIML. It was recommended that the work of an ad hoc working group should be established under either an existing or new Technical Committee. Action will be taken to implement this recommendation.

Technical Activities

- Sam Chappell provided a report on the status of the projects in the various OIML Technical Committees and emphasized the importance of keeping the work current. Therefore, in the request for a report on the status of the work projects from the Secretariats of the various Technical Committees in their Annual Reports, requests will be made also to report plans for reaffirming or revising any projects that are greater than five years old.

- The CIML approved the following five draft Recommendations:

  PR-1 Addendum (test procedures and test report format) for R101 “Indicating and recording pressure gauges, vacuum gauges, and pressure-vacuum gauges with elastic sensing elements (ordinary instruments),” Pr-2 Addendum (test procedures and test report format) for R 109 “Pressure gauges and vacuum gauges with elastic sensing elements (standard instruments)” PR-3 “Radiometric film dosimetry system for ionizing radiation processing of materials and products” (prepared by the U.S.A.) PR-5 “Focimeters” (revision of OIML R93) PR-6 “Ergometers”

OIML Certificate System

M. Kochsiek provided a report on the Certificate System including the new recommendations to be added to the system and numbers of certificates issued for the various categories of instruments that are now a part of the System. The BIML prepares a notice in the Quarterly OIML Bulletin of the Certificates issued. The status of the System is reported to CIML by BIML annually that identifies the issuing authorities for certificates in member nations for pattern approval of instruments covered by recommendations currently part of the System.

Report on BIML Activities.

B. Athan provided a written report on BIML activities since the last CIML meeting. It was requested that this report be printed in the next OIML Bulletin in the proper format.

34th Meeting

It was announced that the next meeting of CIML will be held in Tunis, Tunisia in October 1999. The exact date will be determined after consideration of the dates of meetings of other international liaison organizations.

Editor's Note: Numerous status reports were presented on OIML Committees and Recommendations:

APLMF INTERCOMPARISONS

1. Nonautomatic Weighing Instruments. The intercomparison has been completed; however, no report has been distributed by the Convener.

2. Mass. The intercomparison has been delayed, pending information from Asian Pacific Metrology Program (APMP). The APMP has also conducted a mass intercomparison. The APLMF Convener wishes to view final results from that intercomparison before commencing an APLMF mass intercomparison.

3. Load Cells. The intercomparison comprised two pilot laboratories, the United States' National Institute of Standards and Technology (NIST) and Australia's National Standards Commission (NSC). NIST was responsible for the load cells to be tested by Germany, the United Kingdom, Russia, and Japan. The NSC was responsible for the Pacific Rim countries comprising China, Korea, Chinese Taipei, and Vietnam. The two pilot laboratories each tested the four load cells: two 250-kg capacity load cells, and two 20 000-kg capacity load cells. NIST sent one pair to Germany (Set A) and one pair to the Asian-Pacific countries (Set B).
Status: Load cell Set A is still currently at NRML in Japan. It was sent to them by NWML of the United Kingdom on September 23 of last year. According to the time allotment of 2 weeks for shipment and 4 weeks for testing, NRML should be about finished and ready to send them back to NIST.

NSC, NIST, PTB, NWML, and (presumably) NRML have tested set A. It spent several weeks in Russia before their national laboratory, VNIIM, concluded that they would not be able to conduct their tests. NWML, which had sent the set to Russia, arranged to have them returned to NWML so that they could forward them to Japan.

We have not been informed as to the progress of Set B. NSC and NIST tested this set, and it was sent by NIST to NIMTT of China, who acknowledged receipt. It was then scheduled to be sent to: KNITQ (Korea), JTRI (Taipei), VMI (Vietnam), and then back to NSC in Australia. It is not scheduled to be retested by NIST unless NIST and NSC decide to do a final exchange of load cells after everything else has been completed.

Data has been received for Set A from NSC, NIST (obviously), and PTB; NWML’s data should soon be available. Japan has just completed their tests and may need some time to complete their analysis. For Set B, NIST only has its data and the data from NSC. Since, the original scheme calls for NSC to prepare the report for Set B and NIST for Set A, there has been no inquiry of the test results for the other participants for Set B.

The curves showing linearity and hysteresis for the four temperature conditions depict very good agreement among NSC, NIST, and PTB. Tom Barrell (NIST) is currently working out a comparison analysis procedure. The procedure will have several parts. One part, of course, will be a comparison of the reported errors relative to the tolerances, for the various evaluation parameters. In addition, Tom would like to superimpose the load cell error curves for the different labs on the same plot in as clean a manner as possible. He plans to do this also for the creep curves. While this effort is now underway, there is a lot of work to do and it should get very interesting.

APLFM WORKSHOPS

Two workshops were organized by the Asian Pacific Legal Metrology Forum (APLMF) and held in Shanghai, Peoples Republic of China from August 31 through September 10, 1998. The first was to address High Capacity Weighing Apparatus and the second was on Non-Automatic Weighing Instruments. The workshops emphasized the basis of pattern (or type) evaluation and approval according to interpretations of the relevant International Organization of Legal Metrology (OIML) recommendations on weighing instruments and systems. Initial and subsequent verifications of such instruments and systems were also briefly discussed.

Workshop on High Capacity Weighing

In this workshop, the Recommendations addressed were:
1. OIML R 50-1 Continuous totalizing automatic weighing instruments (belt weighers). Part 1: Metrological and technical requirements - Tests;
2. OIML R 50-2 Continuous totalizing automatic weighing instruments (belt weighers). Part 2: test report format;
3. OIML R 106-1 Automatic rail weighbridges, Part 1: Metrological and technical requirements - Tests;
4. OIML R 106-2 Automatic rail weighbridges, Part 2: Test report format;
5. OIML R 107-1 Discontinuous totalizing automatic weighing instruments (totalizing hopper weighers). Part 1: Metrological and technical requirements - Tests;

A one day field trip was arranged to Baosteel, in the Baoshan District of Shanghai, to observe their operations from receipt of the iron ore from a tanker to the delivery of the final product to be sent to the end user. The group observed a hopper scale, their belt conveyor scale operations, a large truck scale, and an automatic rail weighbridge.

Workshop on Nonautomatic Weighing Instruments

The second workshop was held during the second week, from Sept 3-10, 1998 and led by Kerry Marston and Keith Mann, NSC, Australia. It covered (1). OIML R 76-1 Nonautomatic weighing instruments, Part 1: Metrological and technical requirements - Tests; (2). Amendment No. 1 to OIML R 76-1; (3). OIML R 76-2 Nonautomatic weighing instruments, Part 2: Pattern evaluation report; and, (4). Amendment No. 1 to OIML R 76-2.

A one day field trip was arranged to visit the Shanghai Yamato Scale Co., LTD., AUDIX Technology (Shanghai) Co., Ltd. (Electromagnetic Compatibility (EMC) and safety laboratory) and Mettler-Toledo (Shanghai) Ltd. 

INSTITUTE OF ENVIRONMENTAL SCIENCES & TECHNOLOGY

Robert Mielke, Liaison Delegate

Meeting Schedule

IEST Annual Technical Meeting & Exposition
May 2-9, 1999
Ontario, California
Theme: "Today’s Training for Tomorrow’s World"

IEST Seminar on New International Standards
(ISO/IEC 14644, Application of IC/TC 209)
July 14-15, 1999
Omni Inner Harbor
Baltimore, MD

For information, contact:
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MEASUREMENT SCIENCE CONFERENCE

Chet Crane, Liaison Delegate

The 1999 Measurement Science Conference was held in Anaheim, CA at the Disneyland Hotel January 28 & 29. The technical program was strong and received a lot of favorable comment. There
there were five tracks available for most of the Conference. The New Product Session received better attendance than in past years.

There were four NIST instruction courses on Monday and Tuesday before the Conference began. The total number of people registering for these courses increased from last year and comments were from good to outstanding. The material for the courses was presented by Michael Lombardi - Time & Frequency, Ted Doiron - Dimensional, Carroll Croarkin - Statistical Methods, and Georgia Harris - Mass Measurements. These people are known by most of us and considered to be experts in their fields.

The Wednesday Tutorials program was attended by 130 registrants and the Mass Measurements attracted so much interest that it was necessary to move it to a larger room in the middle of the day. Several of the presentations on Wednesday were supplemental to the Monday and Tuesday subjects and then some of the same topics were carried into the sessions at the Conference.

The result of the election was announced and the new Board members are Dave Lorenzen of Boeing and Douglas Sugg of Naval Warfare Assessment Office who were elected as directors. The theme for the Conference this year was "A Century of Measurements" and the theme for next year's Conference was announced, carrying forward that thought as "A New Millennium of Measurements".

The Keynote address was by Dr. Dennis Friday, Chief of the NIST Radio-Frequency Technology Division. Dr. Friday provided an overview of NBS/NIST history and progress in a number of areas during this Century.

The Thursday luncheon speaker was Andre Bromanis. Mr. Bromanis is a technical advisor for science fiction movies and television shows. His task is to keep them believable while they appear to occur four hundred years in the future. He revealed some of the TV secrets for achieving that goal.

Registration for the Conference was near an all time high. The total count was 950. We rate this Conference a success by all standards we use to measure except financially, and that cannot be determined for a few days yet.

The WOODINGTON Award went to Dr. Chuck Ehrlich, a well recognized NIST scientist around both MSC and NCSL.

The JOE SIMMONS AWARD for best session is a new addition to the Conference initiated by this year's Board and Committee to honor the late Dr. Joe Simmons of NIST. The award this year was won by Mr. Dave Nebel. Dave supports several measurement related activities including NCSL. Dave doubled his chances by developing two sessions at the Conference. My congratulations to Dave.

The ALGIE LANCE BEST PAPER AWARD went to Pedro Espina of NIST for his paper titled "Tele-Calibration of Gas Flow Meters." The two runners up were also NIST people, J. Wayde Allen for a paper titled "NIST's Switched Coupler High Power Measurement Service" and Ron Ginley for "Microwave Network Analyzers: A Discussion of Verification Methods."

The Measurement Science Conference presented scholarships to five students from universities in Southern California. These scholarships, although not large, are directed only to students enrolled in metrology/quality programs and are part of the MSC commitment to encourage a new generation of measurements-oriented graduates.

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**EUROPEAN COOPERATION FOR ACCREDITATION (EA)**

Graham Cameron, Liaison Delegate

The European Cooperation for Accreditation held its General Assembly in Bratislava, Slovakia, on November 25-26, 1998.

One accreditation organization in the Asia Pacific region had asked for EA evaluation with the aim of signing a bilateral agreement.

It was decided to avoid bilateral agreements with bodies which are members of the Asia Pacific Laboratory Accreditation Cooperation (APLAC) and other mature regional groups, and try to speed up the process of signing an agreement between the EA and APLAC instead. EA will propose the evaluation of the subject organization be performed by a joint EA/APLAC team.

Full implementation of document EA-4/02, "Expression of the Uncertainty of Measurement in Calibration," was postponed one year, to the end of June 2000. An investigation of the effects that full implementation would have on the laboratories is being conducted.

EA accepted the Czech Accreditation Institute (CAI) and the Slovak National Accreditation System (SNAS) as full members.

The next EA General Assemblies are scheduled for:

- Venice, Italy 1999-06-2/3
- Athens, Greece 1999-11-22/26
- Paris, France 2000-06-05/09

A delegate (member) of the North American Calibration Cooperation (NACC) committee normally attends the EA General Assemblies, makes a presentation on its progress and responds to questions.
The Fall meeting of the New York City section of Region 2 was held at the GEC Marconi Hazeltine Headquarters facility in Wayne, New Jersey, on October 13, 1998. Region Coordinator Pete Mauro welcomed the group, and introduced the new Section Coordinator for the New York City Section, Anthony Yakovich of Conitech RTI. Anthony has volunteered to lead the Section since Pete has been promoted to Region 2 Coordinator.

The day's first speaker was Ed Nemeroff, a past-President of the NCSL, who presented an excellent slide show pertaining to the function and responsibility of the NCSL. It was intended as an update on recent and current happenings within the organization. Ed noted that the NCSL presently has over 1500 member organizations in 51 countries, and is part of the Department of Commerce whose mission is to support both National and International trade.

Ed noted additional areas in which the NCSL actively engages, including promoting the science of Metrology through formal education, training, and scholarship funds. He then mentioned that he was preparing for another trip to Egypt and India on behalf of the U.S. State Department, in their efforts to standardize measurements to ease barriers to International trade.

Following Ed's presentation was Steve Griffin of the John Fluke Company, who led a lively group discussion pertaining to the evolution from the Military standard 45662A, to ISO-9000 and ANSI Z 540-1. Other topics discussed included guard-banding, test uncertainty ratios, and the seeming discrepancies between the various specifications.

Roxanne Robinson, Vice-President of A2LA, then gave an informational talk on their organization's function and its relationship to other accreditation bodies, such as NVLAP. She mentioned that A2LA can provide ISO-9000 registration services as well as ISO 25 accreditation. Roxanne stated that one of A2LA's current goals is to focus interpretation of all standards in effect by all member countries, and traceability agreements to accept each other's calibration data.

Ed Nemeroff then gave his second presentation of the day, on the topic of the WaveTek 7000-series DC voltage maintenance systems. He discussed the history of DC references, noting that the first solid-state device was designed in 1961. He then compared stability, accuracy, ruggedness and flexibility characteristics of original saturated cells with present-day models.

The last presentation of the day was given by Evan Meyerhoff, Vice-President of Engineering of the Bertan Corporation, on the topic of design considerations in developing a 10 KV Voltage reference standard. He related his experiences in solving problems related to arc protection, temperature control, accurate metering, ripple, and line regulation. Evan also noted that additional problems in designing items of this nature include shielding, and the criticality of parts layout.

Pete concluded the meeting by acknowledging all speakers for the time and effort spent preparing and delivering their presentations, and thanking Anthony Yakovich for his assuming the responsibilities of being the New York City Section Coordinator.

The next Section meeting is tentatively scheduled for April, 1999.

Atendees:

- Bob Baechi
- Don Bumsen
- Bob Clane
- Michael Daniels
- Margaret Demond
- Steve Griffin
- Dennis Jeanne
- Floyd Kaneaster
- Kenneth Ko
- Pete Mauro
- Evan Meyerhoff
- Ed Nemeroff
- Roxanne Robinson
- Pankaj Sheth
- Jack Witham
- Anthony Yakovich
- Conitech-RTI
- Dayton T. Brown
- GEC Marconi
- Datarepep
- GEC Marconi
- Fluke
- GEC Marconi
- Con Edison
- GEC Marconi
- Bertan
- WaveTek
- A2LA
- Spellman High Voltage
- GEC Marconi
- ConTech RTI

Peter Mauro brings the NCSL New Jersey contingent out to the lobby for the obligatory attendance photo.

The fall 1998 meeting of NCSL Region 3 was held at the National Institute of Standards and Technology (NIST), Gaithersburg, MD. Thanks to Georgia Harris for arranging the meeting accommodations and Tom Hettenhouser, Simee Electronics, for support for the refreshments.

The meeting began with a presentation by Paul Packebush, National Instruments, on "Using Virtual Instruments in the Metro-
Ted Doiron, NIST, discussed “Measurement Uncertainty in Dimensional Metrology.” He described the procedure to determine measurement uncertainty, listed measurement uncertainty sources, provided a generic budget, and reviewed artifact effects, instrument geometry effects and scale calibration. Ted presented his second law of dimensional metrology “On the scale of nanometers, everything is made of Jello.” He also discussed mechanical deformation, thermal effects and long-term reproducibility. He recommended the use of check standards, where practical, for process control.

Bernie Baird, Norfolk Software, described a software package they are developing for the U. S. Marine Corps (USMC). The software will integrate with the USMC Caltech Laboratory Management system, a universal engine to drive legacy automated calibration applications. The legacy applications take a variety of forms and are all using ten year old technology. The USMC needs the ability to automatically convert their procedures into new technology to take advantage of the Internet/intranet functions. The results of the project will be the ability to take existing automated procedures and run them from a Marine Corps wide platform.

After a group photo and lunch, the meeting resumed with Jim Erickson, Blue Mountain Quality Resources, giving a presentation on “Intranet Applications in the Metrology Laboratory.” Jim described intranet, its benefits, specific uses in the Metrology Laboratory, potential problems and possible future developments. Some of the specific uses for the intranet within the metrology laboratory are: improved communications, maintaining controlled documents current and available, providing controlled and current copies of calibration procedures, providing calibration management information to company management and possibly customers, and on-line training. The intranet is a very viable method to distribute key information.

The last presenter for the day was J. Lyle Bagley, Tidewater Community College. He described a study he performed at the Navy’s Mid-Atlantic Regional Calibration Center to model the amount of measurement variation and error in gage calibration as a function of environmental conditions. He illustrated how, using Taguchi Methods, equations were developed to model the process. The results of the study confirmed that the process was in control and nearly optimal.
A sizeable crowd turns out for the Region 3 meeting. Maybe it was the world-class NIST cafeteria.

February 12, 1999
University of Puerto Rico
Mayaguez, PR
Angel Pabellon
Puerto Rico
Section Coordinator

The most recent Puerto Rico Section meeting was held at the Mayaguez Campus of the University of Puerto Rico on February 12, 1999, as part of the week-long Regional Metrology meeting (CaMAP).

Georgia Harris from the Office of Weights and Measures (OWM) of NIST introduced NCSL for first time guests, and made a presentation of the history of weights and measures in the U.S. Angel Pabellon made a presentation about the United States Pharmacopoeia (USP) Weight and Measures Guidelines, and their implications to the industry. He also conducted a brainstorming session to obtain ideas to improve the annual meetings and magnify the presence of NCSL to other manufacturing businesses in Puerto Rico and the Caribbean.

An "Action Team" was named voluntarily to act on the brainstorming results, and to implement and follow up on those activities.

Attendees:
Bill Sanchez  Caribbean Metrology Center
Angel Pabellon  Caribbean Metrology Center
Pedro Flores  National Standard of P.R., Inc
Axel Agoslo  National Standard of P.R., Inc
Edmundo Rosario  National Standard of P.R., Inc
Jose A. Torres  Puerto Rico Dept of Consumer Affairs
Archie Corbitt  U.S. Virgin Islands Dept of Consumer Affairs
Georgia Harris  NIST
Jose Jaime  Sinto Domingo Petrochemical
Jerry Everhart  JTL, Inc.
Walter Kupper  ASTM

The Puerto Rico Section meets at the University facilities.

January 21, 1999
Compaq Computer Corp.
Houston, Texas
Keith Scoggins
South Texas
Section Coordinator

The NCSL Region 6 South Section winter meeting was held on January 21, 1999 at the Compaq Computer Center in Houston, Texas. The meeting was hosted by Dave Shumway from Compaq Computer Corporation and was conducted by Keith Scoggins, the South Section Coordinator and Supervisor of the metrology laboratory at the South Texas Project Nuclear Operating Company.

Opening comments were made by Keith Scoggins to welcome everyone to the meeting and to also request feedback on what types of presentations attendees would like to see in future section meetings.

The first presentation of the morning was from Chris Graehnen, from Compaq Computer Corporation. Chris demonstrated his latest version of "Uncertainty Calculator", a shareware program developed by Chris to determine calibration system uncertainties. The software is available from Chris at no charge and can also be
downloaded from the internet.

The second speaker of the morning was Randy Falower, from Waveletk Corporation. Randy gave a very interesting and informative presentation on “DC Voltage Maintenance.” He described a new DC Voltage maintenance system that is totally self-contained; all the components of the DC measurement analysis are in one system.

After Randy’s presentation, Chuck Ellis talked about the National Association of Proficiency Testing, a nonprofit organization that provides information and assistance to laboratories in determining measurement proficiency.

Lunch was provided by our host, Compaq Computer Corporation.

After lunch, Doug Lynde, from On Time Support, provided the group with fascinating information about how the Internet could be used by metrology service providers. Doug’s presentation described how calibration suppliers could provide online calibration status to their customers using the Internet.

The next speaker was Bernard Morris, from ASL Incorporated. He gave a presentation on new high-accuracy temperature devices. Bernard described digital temperature-measuring devices that are now available with uncertainties near 0.001 degrees Kelvin.

The last speaker was Joe Cook, self-employed at the Johnson Space Center in Houston, Texas. Joe gave an overview of the development of turbulence in sonic nozzle flow measurements.

The meeting concluded with a general discussion on the desire to start two laboratory inter-comparison measurement programs. One for a 10 volt electronic cell and another for temperature device. Wayne Cummings, from the Fluke Corporation, will coordinate the 10 volt electronic cell and Bernard Morris, from ASL Incorporated, will be working with Dave Upton, from EMA, to coordinate the temperature device.

A tour of the Compaq Computer Corporation facilities was provided to attendees wishing to see their operation.

Attendees:

- Keith Scoggins STPNOC
- Dave Shinnway Compaq
- Bob Cummings Compaq
- Chris Grachanen Compaq
- Terry McCoy Compaq
- Mary Ann Jusen Compaq
- Harold Foster Compaq
- Rebecca Nisto Compaq
- K. C. Kim Compaq
- W. P. Moran STPNOC
- William Kirkpatrick STPNOC
- Ken Joach STPNOC
- Ted Beckiani Southwest Cal Service
- Dave Upton EMA
- Doug Lynde On Time Support
- Matthew Soll On Time Support
- Wayne Cummings Fluke
- Bill Smith Tadiran Microwave
- Paul Neilton Mentor Corp.
- Warren Gilehrst TU Electric
- Keith Bennett Metermaster
- Albert Feria Mentor Corp.
- Bernard Morris ASL Inc.
- Bill Gibbons Greatland Eng.
- Walter Cook Greatland Eng.
- Joe Dugan Texas Instruments
- Lai Nguyen Suhler Intermedics
- Steve Shockey Suhler Intermedics

Everyone listens intently, while the foreground table seems to be abandoned in a hurry.

General Electric will host the next South Texas Section meeting at Kelly Air Force Base in San Antonio, Texas on August 5, 1999. Contact Keith Scoggins for details at 512 972 7742.
January 19, 1999
Minnetonka Community Center
Minnetonka, MN
Chuck Rheaual
Section Coordinator

On January 19, 1999 the Twin Cities Section of Region 11 held its winter meeting at the Minnetonka Community Center in Minnetonka, Minnesota. Our host was National Calibration Inc.

The main theme of this meeting was accreditation. We had over 34 companies represented. We had three presentations on accreditation and a four-hour panel discussion on accreditation.

Our guest speakers were:

Roxanne Robinson of A2LA
Roxanne’s presentation was on A2LA’s Approach to Accreditation. She went through the steps to get accredited and the main difference between ISO-9000 and A2LA approach. It was well received and Roxanne answered questions for over one hour after the presentation.

Tom Smith of Nation Calibration
Tom’s presentation was on Fast Track to Accreditation. Tom went into depth on how to change his operation to meet accreditation requirements. He also displayed the many forms he used to track and record his quality plans.

Gaylord Degroot of MTS Systems
Gaylord’s presentation was on MTS Systems Approach to Accreditation. Gaylord went through the 18-month process he took to get accredited. He was willing to share his improvement plan with everyone at the meeting. He especially thanked his staff for all of their hard work.

Our accreditation members were:
Bruce Adams, State of Minnesota Weights and Measures
Bill Sealy, 3M
Roxanne Robinson, A2LA
Tom Smith, National Calibration
Gaylord Degroot, MTS Systems

Our panel discussion was well received by everyone. It answered many questions and concerns people had.

Our next meeting will be May 5 1999 at Lockheed Martin in Eagan, Minnesota.

Attendees:

Larry Roden
Adrian Novak
Ralph Brandenburg
Willy Feulner
Chuck Rheaual
Gaylord Degroot
Mark Tibor
Tom Smith
Chuck Blank
Cindy Schiller
Rex Skoglund
Terry Stenzel
Dave Ludvig
Chuck Hugstad
Cerid Schible
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Todd Elliott
Ildi Wetternstrom
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Herb O’Neill
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M Berg
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Larry Vollmann
Nat Hudson
Bruce Adams
Roger Bodin
Ian Goeurn
Carol Hockett
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INDIA REPORT
Dr.(Mrs.) P. Bhama Iyer
Mumbai Area Co-ordinator

NABL conducts 50th training course in Mumbai

National Accreditation Board for Testing and Calibration Laboratories (NABL), is the National body in India that accredits both testing and calibration laboratories. The quality criteria stipulated by NABL for laboratory accreditation (NABL criteria, 101 1994) is in line with ISO/IEC Guide 25.

In order to assist laboratories, that take up testing and calibration on a commercial scale, in setting up a quality system based on NABL criteria and to make them aware of the benefits of maintaining such a quality system, NABL organizes periodic training programs covering various facets of the requirements of the stipulated quality criteria. These training programs basically fall into three categories:
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1. Laboratory Quality System and Management (Three day residential course): This course is designed for middle and senior level laboratory personnel who are involved in the establishment and management of a laboratory quality system and includes: (i) documentation of the quality system; (ii) maintaining the quality system through internal audits, system reviews and corrective actions; and (iii) matters related to NABL criteria for laboratory accreditation.

2. Laboratory Internal Audits: This course is intended for senior level laboratory personnel responsible for establishing and managing internal audit program for laboratories as required by NABL-101 and ISO/IEC Guide-25. The thrust of this course is in planning and conducting the internal audit.

3. Assessor Training: This is a five-day residential course. The course content is based on EAL-G7 "Guidelines for Training Courses for Assessors used by Laboratory Accreditation Schemes", the European standard on training assessors. For this training, NABL has established its own norms for selection of candidates and the basic requirements are:

   (a) A Bachelor Degree in Engineering/Technology or Masters Degree in Science in relevant field, and
   (b) at least five years experience in the field of testing or calibration.

For more details of these training programs please contact: D.S. Tewari, Joint Advisor, NABL Technology Bhavan, Department of Science and Technology, New Mehrauli Road, New Delhi 110 016.

During December 21-25, 1998 NABL organized its 50th training course, thus completing a milestone in the history of NABL training programs. The course was arranged in the premises of Institute for Design of Electrical Measuring Instruments (IDEMI), an NCSL member organization. Dr. K. Ramani, Director of IDEMI extended full co-operation for the successful conduct of this training course, in which 20 candidates from different organizations and disciplines hailing from various regions of the country participated.

NABL utilized this opportunity to honor some of the very devoted faculty members connected with the training course, who, in spite of their other busy engagements, always rendered their services to make sure that the NABL training program remains on par with such courses conducted elsewhere in the world.

Mr. D.S. Tewari, Jr. Director, NABL (in-charge of Training) being honored by Prof. V.S. Ramanamurthy, Secretary, DST.

National Seminar on POWER QUALITY

Institute for Design of Electrical Measuring Instruments (IDEMI), Mumbai, a member of NCSL, in association with Veeramata Jeejabai Technological Institute (VJTI), Mumbai; IEEE-Power Engineering Society (Indian Council), Baroda; ISA Maharashtra Section-India Region; and Society of Power Engineering India (Mumbai Chapter), organized a two-day National Seminar on POWER QUALITY-The Problems and Solutions on 19th and 20th Nov., 1998 at VJTI, Mumbai.

The Seminar addressed various problems on power quality in six different technical sessions. The first two sessions focused on power quality from utilities and consumers' perspectives. The third session was exclusively devoted to various measurements, monitoring and data acquisition systems needed to ensure supply of high quality power. Papers presented in the next three sessions dealt with probable causes that affect power quality and remedial measures and strategies needed to ensure quality of power.

Speakers hailed from various sectors of production, transmission and consumption of power, in addition to academicians. About 120 delegates participated in the Seminar which ended with an open-house.

Calendar of Training Courses at IDEMI, Mumbai for 1999-2000

- Calibration of Electrical Measuring Instruments & Electronic Multi-meters
  - April 5-7 and Sept.6-8 1999
- ISO 9000 Innovative Revision for New Millennium*
  - April 16, 1999
- Laboratory Quality System and Management**
  - April 21-23, 1999
- Internal Audit for Laboratories**
  - May 12-14, 1999
- Harmonic Causes, Effects and Remedies
  - June 10-11, 1999
- Internal Quality Audit for ISO 9000**
  - June 24-25, 1999
- Calibration of Pressure Gauges and Related Instruments
  - July 8-9, 1999 and March 9-10, 2000
- Maintenance of Electronic Process Control Instruments
  - August 2-6, 1999
- Environmental Management System ISO 14000*
  - Sep 23 -24, 1999
- Calibration and Testing of Temperature Related Instruments
  - Oct 7-8, 1999
- Metering and Calibration of Flow Instrumentation
  - Oct. 21-22, 1999
- Electrical Maintenance- A Systematic Approach
  - Nov. 1 - 5, 1999
- ISO 9000 and Calibration Systems
  - Nov. 24-26, 1999
- Total Quality Management*
  - Dec. 9 - 10, 1999
- Dimensional and Optical Metrology
  - Dec. 15-17, 1999
- Analysis Instrumentation
  - Jan. 5 - 7, 2000
- PC Based Automated Calibration System
  - Feb. 10-11, 2000

*In association with ETDC, Goa.  
**In association with NABL, New Delhi.
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For further details about the training programs please contact

Joint Director (Trg.)
Tel: (022) 522 0301 Fax: (022) 522 9016
IDEMI, S.T.Tope Marg,
Chunabhatti, P.O.,
Mumbai 400 022

IDEMI is also planning to organise a two day National Seminar on Metrology for the Millenium and its Challenges in association with NCSL, Mumbai Area shortly.

Report on the National Conference of Test Engineering and Metrology—Team 99
January 6-8, 1999
Bangalore, India
By Ed Nemeroff - NCSL VP
International Division

Bangalore, India - Situated in the south west of India played host to over 150 delegates and guest from industry and government for a 3-day conference on test engineering and metrology. The theme of this year’s conference was “Test & Measurement for Global Competitiveness”

The National Conference of Standards Laboratories and VDE, Germany were co-sponsors of the conference, which was organized by the Standardization Testing and Quality Certification Directorate, (STQC) Department of Electronics, Government of India.

I served on the Advisory Committee and was an invited speaker to the conference. I had the opportunity make a presentation to all attendees giving them an insight to NCSL and the benefits of membership. I used the new slide presentation that is shown in this issue.

The conference gave me a chance to meet again, with long time friend of NCSL Dr. Joseph Raju, former Director General of STQC and NCSL Regional Coordinator. In addition together with new NCSL Regional Coordinator, Mr. S. Mukhopadhyay, Dr. Murali Kumar and other section coordinators as well as other interested parties we had a meeting on future NCSL activities in India.

The 3-day program which include a small exhibition and a technical program the included sessions on the following topics:

- Metrology - Reference Standards and Systems
- Calibration and Traceability
- Test and Evaluation
- EMC Standards and Measurements
- Components and Products
- Reliability and Failure analysis
- Automation in Test and Measurement
- Quality Management
- Statistics in Measurement

The conference was an overall success and in many cases was similar to the NCSL annual Workshop. I found the formal opening ceremony unique and interesting. It included lighting of ceremonial candles and formal opening of the conference proceedings.

My thanks and congratulations to the organizing committee for a job well done.
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<tr>
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<tbody>
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<td>Jeff Gust</td>
<td>GTE ERS</td>
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<td>MC: INIFG3G</td>
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<tr>
<td></td>
<td>3301 Wayne Trace</td>
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<tr>
<td></td>
<td>Ft. Wayne, IN 46806</td>
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<td></td>
<td>(219) 428-8504 FAX(219) 424-1031 e-mail: <a href="mailto:jeff.gust@gtes.com">jeff.gust@gtes.com</a></td>
</tr>
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<table>
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<tr>
<th>REGION 5 Northern Ohio Section (251)</th>
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<tbody>
<tr>
<td>James A. Crane</td>
<td>Keithley Instruments, Inc.</td>
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<tr>
<td></td>
<td>28775 Aurora Rd.</td>
</tr>
<tr>
<td></td>
<td>Cleveland, OH 44139-1891</td>
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<tr>
<td></td>
<td>(440) 498-2904 FAX(440) 248-0168 e-mail: <a href="mailto:JCRANE@KEITHLEY.COM">JCRANE@KEITHLEY.COM</a></td>
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<th>REGION 5 S. Ohio/Kentucky Section (252)</th>
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<tr>
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<td>Eaton Corp.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>26201 Northwestern Hwy.</td>
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<tr>
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<td>Southfield, MI 48037</td>
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<tr>
<td></td>
<td>(248) 354-6824 FAX(248) 208-2018</td>
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<th>REGION 6 (310)</th>
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<tr>
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<tr>
<td></td>
<td>Primary Standards Laboratory</td>
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<td></td>
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<tr>
<th>REGION 6 Central Texas Section (311)</th>
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<tbody>
<tr>
<td>Allen Todd</td>
<td>Fluke Corporation</td>
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<tr>
<td></td>
<td>2104 Hutton Dr., Suite 112</td>
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<tr>
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<thead>
<tr>
<th>REGION 6 South Texas Section (312)</th>
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<tbody>
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<tbody>
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<tr>
<th>REGION 7 (410)</th>
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<tbody>
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<tr>
<td></td>
<td>3885 Bohannon Dr.</td>
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<tr>
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<tbody>
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<td>Wayne Benda</td>
<td>Raytheon Systems Company</td>
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<tr>
<td></td>
<td>Bldg. 811</td>
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<td>P. O. Box 11337</td>
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<thead>
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<tbody>
<tr>
<td>Miguel Cerezo</td>
<td>Amgen, Inc.</td>
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<tr>
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<tr>
<th>REGION 8 San Diego Section (423)</th>
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<tbody>
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</tr>
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<tr>
<th>REGION 8 Phoenix-Tucson Section (424)</th>
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<th>REGION 8 Utah Section (425)</th>
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