PRESIDENT'S MESSAGE

ALBUQUERQUE BOUND

This year's conference in Albuquerque promises to be another high point for the exchange of information and ideas critical to the success of our member organizations' endeavors. With five tracks and committee meetings in every specialized area, there will be information to address the full spectrum of conditions encountered in our profession. With this broad range of activity, we are providing a new tool to facilitate access to these sessions this year with the Conference Proceedings on a searchable CD-ROM. Paper abstracts will be available in hard copy for the attendees.

At the Boulder Board of Director's meeting two new publications were approved. These are: Recommended Standard Practice "Dead Weight Pressure Gage" and "The Catalog of Intrinsic and Derived Standards." These new products will be distributed to the membership in the near future. Another publication, "Guide to Laboratory Environments," is being reviewed and will be available later this year.

A continual source of information for our membership is the NCSL conference proceedings which contain information I believe no organization should be without. To promote the easy access and retrieval of this information NCSL will be offering the proceedings of the 1990 through 1997 conferences for sale on CD-ROM.

For the first time this year the proceedings of the conference will be distributed on CD-ROM with hard copy abstracts available. A bound version will be available for sale from the business office after the conference. This action is aligned with the NCSL goal of delivering products and tools to the membership in the most cost effective and usable form.

This quarter we had farewell to Don Dalton who is leaving the NCSL Board of Directors after six years of service as Vice President and most recently as Secretary. Don is moving to an international assignment with his company, Fluke Corp., and hopes to return to the board of NCSL at some time in the future. We look forward to that time, Don, and wish you continued success in your new assignment.

Don was a member and key facilitator of the NCSL vision 2000 team. This work continues to provide guidance and focus to our organization. Dave Agy, most recently Region 9 Coordinator, has accepted the assignment as Secretary and was confirmed by the NCSL Board of Directors at their meeting in Boulder, Colorado. Welcome Dave, let's hope you can improve the longevity of this assignment. Larry Warner of Fluke Corp. has agreed to replace Dave Agy as Region 9 Coordinator. Thanks Larry.

Jim Patterson of Southwest Research Institute, most recently the NCSL South Texas Section Coordinator, has accepted appointment to your Board of Directors as Vice President, Western Division. Jim is a representative of small business and will help insure continued focus in that sector.

1998 has been a dynamic year for the management of NCSL with the number of personnel changes approximately equal to the number of positions elected annually. I believe these changes reflect the nature of change in our industry and an opportunity to bring new perspective to the Board of Directors. It also dramatically demonstrates the need we have for a continuous line of new volunteers from our member ranks. If you haven't done it before, please consider calling the committee chairman or regional coordinator of your choice to offer your services. You will find that industrial volunteerism provides an interesting contrast to your own daily job, puts you in a position of learning the latest metrology processes, and offers a little travel and technical enrichment as well.

Welcome to all the new NCSL managers in their new positions.

William Quigley
NCsL President

VISIT OUR WEB SITE AT:
<http://www.ncs1-hq.org>
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Come to Albuquerque, in the
Land of Enchantment

THE 1998 NCSL WORKSHOP AND SYMPOSIUM
July 19-23, 1998
CONVENTION CENTER
ALBUQUERQUE, NM

THEME: METROLOGY, WHY NOT!!!

CONTACT: NCSL Business Office (303) 440-3339
<ncsl-staff@ncsl-hq.org>

EDITOR'S MESSAGE:

No BOD Report This Issue

The Board of Director's report this time is strictly pictorial (pages 4 & 5). When NCSL Secretary Don Dalton had to resign due to a new company business assignment, Dave Agy of Fluke Corp agreed to accept the Secretary's role. But time was too short for Dave to complete the minutes to meet my publishing deadline. So, instead we present pictures of the Board in their Boulder meeting to show they were there and accomplishing things.

The NCSL Regional System is Alive and Well

As I read through and edit all the regional meeting reports, I am so impressed with everything going on in the NCSL world. From relatively small meetings in Upper-State New York, to the superb attendances at the Twin Cities meetings, we also have International reports from a variety of countries such as our India colleagues.

It is instructive to read through these reports, because the speaker topics tell us what is important to our business these days. And even though it is transacted in one locality, other Regional Coordinators pick up presentation ideas and probably even go after those interesting speakers for their own agendas. Which fulfills one of the main purposes of NCSL—communications.

I do worry sometimes, when the Springtime meeting reports balloon up the page count of these Regional pages. But then I remember that somewhere in the world is one of you member delegates who picks up some kernel of information that solves a problem or gives them a lead of a person to call.

I hope that every member delegate feels free to just pick up the phone or FAX or Email to contact any other member to ask a question or request information. This is a friendly and open organization, and no one should be shy about using it for better process management.

(Continued on page 9)
THE 1998 NCSL WORKSHOP AND SYMPOSIUM

July 19-23, 1998
Conference Center
Albuquerque, New Mexico

METROLOGY, WHY NOT?!!

Conference Theme
Accreditation, Traceability, Calibration, Quality, Uncertainty, Tolerance and Automation are concepts that will be discussed, refined and further developed during the 1998 NCSL symposium. All are key concepts in understanding Metrology and in the education of those who practice it. In the final analysis, all metrology is in support of product. Among the key questions concerning each piece of product are the following. (1) Are the mechanical characteristics within design limits? (2) Are the electrical characteristics correct? (3) Are the required characteristics traceable? (4) Has the metrology been cost-effective in meeting the requirements of each piece of product and each customer?

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 Wednesday

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 on Monday, Tuesday and Wednesday, and in a general session Thursday morning:

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

Serving the World of Measurement

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

NCSL President Bill Quigley (r) presents a token gift to Don Dalton for last year's work, thanks him for taking over as Secretary, and then learns a month later that Don must resign to pursue an International project at Fluke Corp.

Two busy conference directors, Norm Belecki, NIST, manages CPEM, and Dave Braudaway, Conference Director for the 1998 Albuquerque Workshop.

Dave Nebel, V.P. for Conferences, reports on the Albuquerque arrangements.

Sharrill Dittmann, NIST, takes a long call from the office. I've done this, when transcribing some message long hand.

Finally, Springtime in the Rockies, the Board meeting at Boulder.
At lunch, (l to r) Dr. Peter Heydemann, NIST, Joan Wilshire, newly-appointed NCSL Office Manager, Charlie Motzko, Senie Group, and Gary Shuler, Duke Power.

Klaus Jaeger (l) and Peter Heydemann (c) discuss NVLAP with the NIST Boulder Labs Director, Dr. David Norcross.

The Lockheed-Martin Metrology group gets together for a group shot; Dick Pettit, Sandia, Mike Suraci, SWFAC, WA, Harry Moody, Idaho Lab, and Klaus Jaeger, Sunnyvale, CA. Over the decades, NCSL owes much to the Lockheed company support, starting with the founding committee.

Seems like they eat a lot at these Board meetings; Don Dalton, Fluke, Pauline and Tony Anderson, Guildline, and others converse.

The NCSL Boulder Business Office staff gets a free lunch following their staff meeting. (l to r) Gary Shuler, JoAnn Knowles, Mike Suraci, Charlie Motzko, Doris Schaffner, and Joan Wilshire, Office Manager. For a further thank-you, JoAnn, Doris and JoAnn get an all-expense-paid trip to Albuquerque to work their heads off at the annual conference. Kidding aside, we all do thank this hard-working gang at the business office for their dedication.

A typical Southern California couple, NCSL Treasurer Tom McGowan and wife Holly, enjoy dinner at the Denver Museum of Science. Tom from TRW picked up the slack when we needed a bean counter badly. But would you buy a used car from this guy?
METROLOGY CALENDAR

NCSL MEETINGS

July 19-23, 1998
NCSL Workshop & Symposium
Conference Center, Albuquerque, NM
CONTACT: NCSL Business Office, (303) 440-3339
FAX: (303) 440-3384
e-mail: <ncsl-staff@ncsl-hq.org>

INDUSTRY/GOVERNMENT MEETINGS

July 5-10, 1998
Conf. on Precision Electromagnetic Measurement (CPEM)
Renaissance Hotel, Washington, DC
CONTACT: Norm Belecki, (301) 975-4223
FAX: (301) 926-3972
e-mail: <nbelecki@nist.gov>

October 19-23, 1998
Precision Thermometry Workshop
NIST, Gaithersburg, MD
CONTACT: Andrea Swiger, (301) 975-4800

REGION MEETINGS

EASTERN DIV. WORKSHOP, September 10-11, 1998
Sponsored by Tenn., Atlanta, & North Carolina Sections
Holiday Inn Sunspree Resort, Asheville, NC
CONTACT: Ed Pritchard, (423) 574-4261
Fax: (423) 574-2802

Japan 7th Annual Meeting, October 29, 1998
CONTACT: Mitsuo Ishii, 3-3419-9832
Fax: 3-3419-3384

REGION 2

Philadelphia Section, June 23, 1998
Bailey Fischer & Porter Co., Warminster, PA
CONTACT: Joe Rainstein, (610) 798-0100 ext. 28
Fax: (610) 798-7710

REGION 4

Central Florida Section, October, 1998
Orlando, FL
CONTACT: David Hall, (407) 306-2269
Fax: (407) 306-2271

REGION 6

South Texas Section, August 12, 1998
San Antonio, TX
CONTACT: Keith Scoggins, (512) 972-7742
Fax: (512) 972-8368

REGION 8

LA/Valley Section, November, 1998
Calabasas Inn, Calabasas, CA
CONTACT: Miguel Cerezo, (805) 447-1128
Fax: (805) 499-9733

REGION 12

NCSL Canadian Region Workshop & Symposium,
October 15-16, 1998
Granby/Bromont, Quebec, Canada
CONTACT: Gilles Lefebvre, (514) 534-6604
Fax: (514) 534-7310
e-mail: <glefebvr@ca.ibm.com>

OR: Adrien Michaud, (514) 748-3000 ext. 4074
Fax: (514) 748-3149
e-mail: <amichaud@mtl.marconi.ca>

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
The Unified Approach to Measurement Systems

Videotaped Lectures by Peter Stein

The entire series of lectures on The Engineering and Dynamics of Measurement Systems for Test & Evaluation According to the Unified Approach is now available. This popular series of lectures was videotaped during an actual class, as presented on overhead and slide projectors. It is complete with the hardware demonstrations.

The results of all testing done by engineering organizations are data. But, bad data look just as believable as good data! This lecture series provides engineers, scientists and managers with the information to tell the difference.

The Unified Approach to measurement systems is the secret weapon to assure valid, uncontaminated and undistorted data from electrical measurements of mechanical and thermal quantities such as force, torque, temperature, pressure, flow, stress, strain, acceleration, pyroshock events, impact, crash, vibration, explosions, etc. The techniques covered by the lectures are applicable not only in the laboratory but especially in hostile environments in the field.

A complete time-based index is provided for each tape, listing all the cited references. Provided with one set of test material, the 27 VHS tapes cover 62 full hours of lectures. They correspond to over seventy-four 50-minute classes, equivalent to 5 credit hours of 15-week college courses.

The package consists of 27 VHS tapes and one set of text material; $1100. 10% discount for payment with order; Visa/MasterCard accepted; extra texts $200, other options available. Stein Engineering Services, Inc.; 5602 East Monte Rosa, Phoenix, AZ 85018. US Phone/PHAX (800)632-7797; outside US +602-945-4601; e-mail: <meas-sys@primenet.com; www.primenet.com/meas-sys/.

TRAINING AVAILABLE FROM NIST

Mass training is available from NIST, Office of Weights and Measures. For complete information including course descriptions, schedules and registration information use their FAX node at 1-800-925-2453 request document #301 and follow the instructions, or write to:

NIST Office of Weights and Measures
Bldg. 820 Room 232
Gaithersburg, MD 20899

Other training courses offered by NIST can be found at these URL's.

Time & frequency:
<http://www.bldrdoc.gov/timefreq/>

General:

This is in Chapter 11 of the fee schedule at
<http://ts.nist.gov/calibrations>

Undifferentiated listing of classes, workshops, seminars, etc. to be held at NIST:
<http://www.nist.gov/public_affairs/conference/>

PRECISION THERMOMETRY WORKSHOP
Gaithersburg, Maryland

Description: This workshop provides an integrated instruction in Resistance Thermometry (including platinum resistance, thermistor resistance, rhodium-iron resistance, and germanium resistance thermometry), Liquid-in-Glass Thermometry, Thermocouple Thermometry, Vapor Pressure and Gas Thermometry, and an overview of Radiation Thermometry (including optical fiber thermometry). Material to be covered includes the International Temperature Scale of 1990 and its use in the laboratory; thermometers and instrumentation, including automatic data acquisition; the treatment of calibration data; and innovations in thermometry. Time will be split between lecture and laboratory sessions.

Arrangements: Attendance will be limited to 16. Fee: $900.
Apply To: Lori Phillips, NIST, Administration Building, Room A807, Gaithersburg, MD 20899-0001, (301) 975-4513, Fax: (301) 948-2067.
Technical Questions: Andrea Swiger, (301) 975-4800.

SHORT COURSE IN LASER MEASUREMENTS
Boulder, Colorado

Description: The 3-1/2 day course will emphasize the concepts, techniques, and apparatus used in measuring laser parameters and will include a visit to the NIST laser measurement laboratories. The faculty will consist of laser experts from NIST, industry, and other government agencies. A degree in physics or electrical engineering or equivalent experience is recommended and some experience in the use of lasers is desirable.

Topics include: optics for laser measurements, attenuation techniques, laser operation, basic laser power/energy measurement techniques, pulse measurements, transfer standards, beam profile measurements, diode lasers, laser measurements for optical communications, statistics and error analysis, laser safety, and detectors.

Fee: $895.
Dates: August 11-14, 1998.
Apply to: Sara Tanner (303) 492-5151, Fax: (303) 492-5950.
Technical Contact: Thomas Scott, (303) 497-3651.

The courses listed below are for information only as their dates will have passed by press time. The web-site might be valuable to our readership and members as a source of training information.

WORKSHOP ON SYNCHRONIZATION IN TELECOMMUNICATION SYSTEMS
Easttown, New Jersey
Web-Site <www.boulder.nisi.gov/timefreq/seminar>
TIME AND FREQUENCY SEMINAR, Introduction - Level I  
Boulder CO  
Web-Site as above.

TIME AND FREQUENCY SEMINAR, Fundamental - Level II  
Boulder CO  
Web-Site as above.

Thanks to Sharrill Dittman of NIST Calibration Programs  
Office for compiling this information.

VIETNAM HARDWORK'98 CALL FOR PAPERS AND SPONSORS

Dear Colleagues,

A Regional Workshop (3 days) on Hardness Measurements (Vietnam HardWork'98), which is planned for the first week of December, 1998, in Hanoi, Vietnam, is in its planning stages at the Vietnam Metrology Institute.

The main topic of the workshop will primarily be the real situation of hardness measurement issue in the Asia-Pacific Region and future orientations. The workshop also highly appreciates the frank discussions involving the results of the so-called intercomparison programs of hardness not only under the APMP (Asia-Pacific Metrology Programme) program but under any others. Any paper related to above topics will be highly welcomed. The Vietnam HardWork'98 is also looking for sponsors. No matter how much you or your organization can sponsor, your name will also be listed openly in any of the workshop’s documentation and posters.

The APMP Intercomparison Program of Hardness has been launched since 1995 with the participation of 10 laboratories of 9 APMP member countries which include Australia, China, Hongkong, Japan, Korea, Pakistan, Philippines, Singapore and Vietnam. At this moment, the last measurements of artifact are being completed by VMI. With the position of the coordinator of program and artifact maker, VMI will try its best to finalize the program so that the final report will be available at this tentative workshop. The actual results of intercomparison reflected the real situation of hardness measurement in the region. It also revealed many issues which required further discussions by the experienced hardness experts who are looking for a certain unification of the scale of hardness or the like in the region.

(Please pass this message to your colleagues or friends who you think may be concerned or interested. Thank you.)

For any inquiry concerning “The Vietnam HardWork’98 “ please contact: 
Mr. Ngo Huy Van  
Managing Director  
Vietnam Metrology Institute (VMI)  
Add: Hoang Quoc Viet Rd., Cau giay, Hanoi, Vietnam  
Tel: +84.4.8361872  
Fax: +84.4.8344260  
Email: <VMI@ftt.vn>

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

Please refer to the NCSL Training Directory for more course information.

July 13-17, 1998, Albuquerque, NM, the week prior to the NCSL Workshop and Symposium there.

Feb. 1-5, 1999, 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. It involved the work of Rolf Schumacher, who has worked on its development, initially in cooperation with NIST, and who teaches this course. Schumacher has promoted this standard in the ISO after having been launched by the ANSI/ASQ Committee Z-1, from chairing the effort to write the first such standard, ANSI/ASQ M1.

Contact:  
COAST Quality Metrology Systems, Inc.  
35 Vista del Ponto  
San Clemente, CA 92672-3130  
714 492 6321

SYMPOSIUM ON OPTICAL FIBER MEASUREMENTS

Boulder, CO  
Sept 15-17, 1998

Purpose: To provide a forum for reporting the results of recent measurement research in the area of lightwave communications, including optical fibers.

Topics: Optical fiber metrology including attenuation, dispersion, geometry, reflectometry, connectors, integrated optic devices, laser diode sources and detectors, and system measurements.

Technical Contact:  
Paul Williams  
NIST  
303 497 3805  
FAX 303 497 3387  
Email: <pwilliam@boulder.nist.gov>

Electronic Registration:  
HEWLETT-PACKARD METROLOGY FORUM
URL CHANGES
Mike Hutchins

Please note that the URL for the "HP Metrology Forum" web site has recently changed. The tilde character (~) has been removed from the previous address to become:


Alternatively, go to the "Metrology Forum" from <www-uktm.external.hp.com

HP OFFERS FREE HELP ON THE WEB
Quality Digest, May 98.

Engineering educators and students will find creative help in overcoming limited time, budgets and resources at the Test and Measurement Educator’s Corner, Hewlett-Packard’s Web site located at <www.hp.com/info/college_lab103>.

Educator’s Corner offers interactive lab experiments, free software, tutorials and access to online publications. Experiments and tutorial topics include modulation, phase shift, radio frequency filters, distortion and amplifier characterization. All experiments and tutorials may be downloaded free of charge. The entire Web site also is available on CD-ROM. For a free copy, contact Hewlett-Packard at telephone (800) 452-4844.

NEW WEB SITE FOR DOE METROLOGY
Don Ragland, Sandia National Laboratories

Effective May 29, 1998, a new internet web site <http://www.doe.gov/metrology/mchome.html> was launched by the DOE Metrology Committee (the Committee) in an effort by DOE to provide a medium for exchange of metrology information across the complex and to keep visitors to the site abreast of the latest developments in metrology and metrology standards.

The Committee, which is sponsored by the DOE Technical Standards Program Office (TSPO), aims to enrich DOE’s metrology capabilities through increased contact and reduced cost, according to Bob Wayland, Chairman of the Committee working group that developed the site with the cooperation of the Office of Scientific and Technical Information at Oak Ridge. Wayland, Technical Standards Manager at Sandia National Laboratories in Albuquerque, NM, stated that growing global industrialization should make the new site one of interest not only within DOE but also to national and international customers.

Wayland noted that visitors to the web site will have facilitated access to metrology personnel and be able to research a DOE site matrix of metrology resources and capabilities that will network the entire DOE metrology complex, which can profit both government and private industry.

Although the site matrix is still under development and planned for introduction later this year, visitors to the site can currently contact any member of the Committee by simply accessing the "Member Database" search engine. Each search result produces an automatic email window for contacting that person. Besides locating Committee members, the search engine can produce the name of a person who has been designated by the Committee as the primary metrology contact for a particular site.

Among other offerings, the site will include position papers from the Committee on various topics concerning metrology and related subjects. The first paper, to be published this summer, is titled "The Adoption of Uniform Quality Standards for Metrology Laboratories." The Committee is encouraging comments and opinions by individuals or groups for publication on the site.

The new web site can also be accessed via the TSPO home page <http://apollo.osti.gov/html/techstds/techstds.html> Go to "Topical Committees" under "Program Overview and Guidance."

EDITORS MESSAGE
(continued from page 2)

Better yet, contact some committee or regional chairman and volunteer for some work on their group. You can put in as much time as you can afford. And I think you will find an organizationally-nurturing climate, and a personally-rewarding work experience.

Liaison Progress

Another area of increased activity as shown by the newsletter page space is our Liaison group. The last several newsletters have shown an interesting trend in the Asia-Pacific region with the APMP (Asia-Pacific Metrology Program). One of their country members is Vietnam, and I have included a conference call for a Hardness Seminar in Vietnam on page xx.

On the Home Front

I think many of you know that Jane, my wife of 42 years, had brain surgery in November. The operation was successful and she has been home since January 15, in recovery. Progress is slow, but continuous, and I am in awe of the human brain’s recuperative powers and resilience. I do want to thank everyone for their concern and prayers for her well being.

John Minck, Editor
DOCUMENTARY STANDARDS APPLICATION
Dave Abell, V.P.

Committee activities:

LAB EVALUATION RESOURCES
Leroy Britain


LABORATORY FACILITIES
David Braudaway and Doug Cooper

This committee has submitted “A Guide To Selecting Standard Laboratory Environments” to the Board for approval to publish. A vote will be taken at the Boulder meeting.

Committee Report:

The committee held a meeting in conjunction with MSC. We discussed draft revisions to the Sandia “Standards Laboratory Environments” document, and prepared a list of minor changes and corrections to the draft.

We made changes to the draft document, and changed the title to “A Guide to Selecting Standard Laboratory Environments.” An advanced electronic copy of the draft was delivered to the Boulder Office preparatory to adding the NCSL boilerplate and formatting after approval.

We distributed copies of the original document in Egypt during 1997, and supplied a copy to Dr. Steve Carpenter at the NIST on request. We requested that NIST delay plans to circulate copies to Central and South America until the NCSL version was published.

We continued to respond to inquiries on laboratory environment selection, at approximately monthly intervals by supplying copies of “Standards Laboratory Environments.” We also supplied copies of the IEEE Newsletter article, “Some Effects of Environment on Measurements” as necessary. Review indicates that over 500 copies (300 by Xerox) of “Standard Laboratory Environments” have been distributed, including those made available at the Sandia booth at the NCSL conference.

We prepared a short history on laboratory environments and the efforts of the Laboratory Facilities Committee on request from Dave Abell.

METROLOGY REQUIREMENTS
Dr. Howard Castrup

Howard’s committee met in January at the MSC and formed four subcommittees:

- Calibration Intervals: Chair - Don Wyatt, Diversified Data Systems

- Measurement Decision Risk Analysis: Chair - Dave Dever, Fluke
- SPC Methods: Chair - Jerry Everhart, JTI
- Decision Support: Chair - Derek Porter, Boeing Commercial Airplanes

Committee Report:

At the January meeting, we discussed these objectives for the subcommittees.

Calibration Intervals. The objectives of the Calibration Intervals Subcommittee are essentially the same as those of the former Calibration Intervals Committee. In addition to keeping RP-1 up to date, in a general way, the Subcommittee will focus on developing parameter calibration interval methods and interval analysis administrative guidelines.

Measurement Decision Risk Analysis. The objective of this subcommittee is to develop an RP for the analysis of decision risks accompanying calibration. Some of the topics that will be suggested for inclusion are: risk analysis methods, calibration feedback analysis, risk-based SPC control limits, calibration interval reliability targets, test guardbands and reporting guardbands. Dave Dever of Fluke Corp has agreed to chair this subcommittee. Chris Grachan of Compaq Computer will contribute.

SPC Methods. This Subcommittee will focus on developing an RP for implementing SPC and Bayesian analysis methods in metrology. Topics that have been suggested for inclusion are: adapting traditional SPC methods to metrology, applying new Bayesian methods, establishing risk-based SPC control limits (see above). Jerry Everhart of JTI will chair.

Decision Support. This Subcommittee will focus on developing an RP for managing calibration program decision variables. Topics that were discussed for inclusion in this RP are: cost modeling, setting reliability targets, identifying and managing significant out-of-tolerances, establishing cost-based risk criticality categories, optimizing calibration and servicing policies, managing interval extensions. Derek Porter of Boeing will chair this subcommittee.

ANSI/NCSL WRITING COMMITTEE
John Wehrmeyer

John held a committee meeting in January at the MSC. Jesse Morse of the Fluke Corporation was elected as Vice-Chairman. Of key importance to this committee is the selection of the ANSI Secretariat to replace Wilbur Anson. To support this, John has prepared a presentation for the Board of the primary responsibilities of this position.

Committee Report:

A committee meeting was held at the Measurement Science Conference in Pasadena.

Since less than 50% of the members were in attendance, we lacked a quorum to conduct official business. John Wehrmeyer conducted
the meeting as Chairman.

John introduced Jesse Morse of the Fluke Corporation as the newly elected Vice-Chairman. During this particular meeting, Jesse acted as Secretary in the absence of Kenneth Lund who was recovering from surgery.

The meeting was opened with introductions and some discussion about committee membership and the level of activity of the members. A roster of members was also passed around for review and updating.

A report was received on the latest draft of the ISO/IEC Guide 25 and discussion resulted in addition input to the US representatives.

Draft 4 of the APLAC-EAL Policy on Traceability of Measurements was discussed. Arman Havakian of the US Navy volunteered to collect input from the committee, put the comments of the NCSL website, and convey them to Peter Unger of A2LA.

John Wehrmeyer proposed that the ANSI/NCSL Z540-2:1997 document on measurement uncertainty be offered for adoption as an ISO International Standard. The committee supported this activity and John has sent a letter to ANSI to begin this process.

Later in the quarter, John had an opportunity to visit with the NCSL staff at the Boulder office in order to gather documentation relative to the committee and to assist with the transition of Wilbur Anson. The visit proved to be most beneficial.

In order to help the NCSL Board of Directors in the selection of a new ANSI/NCSL Secretariat, a brief presentation was prepared to highlight the many responsibilities of this position.

Due to personal commitments, John Wehrmeyer will not be able to attend the April Board of Directors meeting. Jesse Morse will represent the Z540 committee.

ACCREDITATION RESOURCES
Jack Burdick

Jack has moved quickly to form this new committee. With the help of Larry Nielsen also of Southern California Edison, they have set a meeting date for the upcoming NCSL Conference in July at Albuquerque. The agenda will include establishing the charter, goals and objectives and budget for the committee.

INDUSTRIAL PROGRAMS
Gary Shuler, V.P.

Activities:

It seems that every quarter anymore we can say - busy. I have not be able to find time to do some of the NCSL things I wanted to do this quarter. Otherwise the usual activities have been accomplished.

Attended meetings of the Utilities Committee, Equipment Management Forum, and met with the Airlines group in a formative meeting during MSC.

Pleased to announce that the Airlines members had a really good kickoff meeting the week of the Measurement Sciences Conference and are making future plans. They have asked to have their committee named and listed as “Airlines Metrology”, so this motion will be made at the Boulder meeting.

Had a long discussion with NIST on the Metrification issue and discovered that a 10 year extension was in the works. The assumption is that this will be finalized by the Board meeting. While this is good news, the problem has just been pushed out to the future. Read some of the testimony on this issue from the NIST home page as well. There are a lot of parts of this puzzle that we tend to not see when we keep our head inside our four walls.

Utilities Training and Qualifications were also discussed. Jack Burdick has accepted an NCSL committee on this subject and it was suggested that the committee interface with Jack as to head in the same direction. Ken Ralston is setting up a meeting in conjunction with the Albuquerque Conference.

Airlines: Held a formative meeting on Feb 4. Five major Airlines were represented. The meeting was very informative and open discussions were held on numerous areas of joint concern.

There were real expressions of the need to work together and in conjunction with the FAA on universal/systematic methods for maintenance and audits. This industry, like many others, has seen different “needs” from different audits, and would like to work toward some standardization.

Each Airline discussed their organization. Differences were seen from central calibration labs and control to calibrations by different sections within different groups and some in between. Sounded like a Utilities meeting in this respect. As an added comment, the Australian Airlines have contacted Carl with a request to join in these discussions.

Committee News

AIRLINE METROLOGY COMMITTEE
Carl Closmore

On Feb 4, 1998, aviation metrology entered a new era in aviation history. In Pasadena, CA, the representatives of five major airlines, Northwest, Delta, United, USAir and Continental, met to discuss the possibilities of forming a NCSL Industrial subcommittee on Airline Metrology. It was a unanimous decision by all representatives that the initiation of such a committee would not only benefit each of our airlines, but the entire aviation industry.

The committee was established on the principles of exchanging discreet non-proprietary information for the purpose of making better measurements, process and quality programs to meet existing and future regulatory criteria, and by doing so, will directly improve safety and efficiency in aircraft maintenance.

Our group discovered that many of the challenges we, as individual airlines, have encountered are very similar. These areas include centralization of calibration departments, test equipment procedures, vendor documentation, equipment certification and traceability.

As all industry has gone global, there has been a need for an accepted standard in quality programs and measurement accuracy. ANSI, NCSL developed a program in 1994, which was blessed
by NIST. ANSI/NCSL Z540 was created, replacing MIL STD 45662A, then used by the U.S. Armed Forces and their contractors. ANSI/NCSL Z540 is rapidly becoming not only the U.S. Government standard, but also, being derived from ISO Guide 25, is an internationally-accepted standard. The committee has begun looking at Z540 as a standard for the airline industry.

Airline calibration departments are continually getting either aircraft or aircraft test equipment with incomplete documentation, making it difficult for even the most simplified measurement to be accomplished without the assistance of an engineer. We would like to work with our vendors to remedy these issues.

These are examples of issues that were discussed at the Feb 4th meeting. Our first assignment as a committee is to read and understand ANSI/NCSL Z540, and determine its impact on our present calibration programs. A report will then be brought to the next committee meeting for discussion. We encourage all airlines, U.S. and International to join this committee and to share your ingenuity and expertise in all areas of quality measurement and processes.

UTILITIES COMMITTEE

Kenneth Ralston

The Utilities Committee meeting took place on Feb 3, 1998, at the Pasadena Conference Center. Ten members represented 7 utilities.

There was group discussion around several topics:

- Update on NRC Notice 96-22. Several options were discussed and are described below. (However, the first step must be to identify the temperature range for various locations in the plant.)

- Allow only the use of specially-identified instruments whose accuracy is unaffected by the environment where they are to be used.

- Calibrate some instruments at the temperature at which they will be used.

- Record environmental conditions at the time of test for future re-calculation if needed.

A question was raised by Doug Henry about the possible existence of a data base that lists accuracies and/or temperature coefficients for the most common types of M&TE used in our industry. If anyone knows of such a source, please contact Doug.

Gary noted that the European Community is requesting that U.S. equipment manufacturers now publish their manuals and documentation in metric-only formats. Sharrill Dittman at NIST is gathering feedback on costs for U.S. manufacturers to comply with these year-2000 requirements.

It was suggested that it would be beneficial for the Utilities Committee to have a web site to allow for exchange of information among members. The NCSL currently has a web site with links to each active committee. I am currently investigating what is required to create a Utilities page. Any offer of assistance will be greatly appreciated and graciously accepted.

Y2K Strategy. There does not seem to be a unified approach to identification of the type of equipment that may be impacted. Identifying make and model may not be sufficient, as test results may vary depending on date of manufacture. It was suggested that one possible approach is categorizing equipment into risk groups. Those instruments in the low risk category, which pose little or no impact to safety or operations if they fail, are probably not worth the expense of evaluating.

Training. In-house training and qualifications were discussed. It was generally agreed that “hands-on” (OJT) was relatively easy to accomplish. However, the academics are not. Jack Burdick has agreed to lead the group that is developing a training RP. Any suggestions should be forwarded to Jack.

The committee welcomes back Carolyn Hiller from her temporary assignment.

Attendees:

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<tr>
<th>Name</th>
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<tr>
<td>Ken Ralston</td>
<td>PECO Energy Co.</td>
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<td>Mike Lasseter</td>
<td>Georgia Power Co.</td>
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<td>Watson Gabriel</td>
<td>Duke Engineering &amp; Services</td>
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<td>Gary Shuler</td>
<td>Duke Engineering &amp; Services</td>
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<td>Doug Henry</td>
<td>APS/Palo Verde</td>
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<td>Don Kaufman</td>
<td>Pacific Gas &amp; Electric</td>
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<td>Carolyn Hiller</td>
<td>Pacific Gas &amp; Electric</td>
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<td>Jerry Moore</td>
<td>Tennessee Valley Authority</td>
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<td>John Ragsdale</td>
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PUBLICATIONS

John Ragsdale, V.P.

Activities:

- Reviewed the total cost of publishing and distributing all NCSL publications, and developed a proposal for increasing prices of all publications.

- Reviewed all costs associated with publication and distribution of the NCSL Newsletter.

- Approved expenses associated with producing a CD ROM containing all NCSL Proceedings from 1990 through 1997.

- Worked with the Oversight Committee (181) to develop a review schedule for all RPs and RISPs.

OVERSIGHT

Dr. Stuart Kupferman
Steven Stahley

The Oversight Committee held a meeting in conjunction with the January Board of Director’s meeting. The committee developed strategies to determine reorder quantities for NCSL publications, to establish a review cycle for all publications to ensure that they remain up to date, and discussed the benefits of employing a professional editor, on a per job basis, to edit NCSL publications and to standardize their format whenever possible.
GLOSSARY
Jesse Berlenga

The Acronym List will be completed by the end of April 1998. The Glossary is currently 25% complete. Claude Pourroux has volunteered to help Jesse Berlenga edit the Glossary.

ARCHIVAL
Don Dowell


EQUIPMENT DOCUMENTATION
Hugh Felger

Hugh is in the process of reorganizing the mission of this committee.

CALIBRATION/CERTIFICATION PROCEDURES
Harry Moody

A draft committee page has been created for the NCSL Home Page which will be a vehicle for NCSL members to access the procedure database, and to submit procedures. The database pages have been created and the committee is waiting for resolution of data base problems before implementing the committee pages.

Larry Waters resigned the committee due to job reassignment. Jim Bowman with Lockheed Martin Energy Systems has volunteered to replace Larry as a member of the committee.

EDUCATION AND TRAINING
William B. Sorrells, V.P.

Activities:

This has been a busy first quarter for me. I spent 1 month in the Asia-Pacific region giving customer seminars. One of the topics was calibration intervals and interval adjustment. I used our RP-1 to develop my presentation, which interested many of our customers.

I promoted the NCSL at each seminar and provided the attendees with information on how to contact NCSL. In Malaysia, I had one man inquire about how to set up an NCSL Section. I forwarded this information to Ed Nemeroft.

There has not been much activity with Education and Training this quarter. I have been trying to recruit replacements for the Training Resources Committee and the Training Information Directory Committee.

Committee Reports:

TRAINING RESOURCES COMMITTEE
Bill Sorrells

I still perform most of the duties associated with this committee. During this quarter, Mike Hutchins discovered an interesting video, which we obtained, without cost, for the library. It is produced by Sira Test and Certification Limited, with support from DTI Focus Technical Initiative in conjunction with the Competing Precisely Program. The title is “Making Measurement Pay.” The run time is about 10 minutes and features individuals from NAMAS, UKAS, SIRA, NPL, and industry speaking about the importance of measurements, especially accredited measurements. The video is in PAL format and unfortunately Sira will not give us approval to convert to NTSC. We will make it available in the NCSL library.

Lyle Bagley reports that the library evaluation project is about 30% complete. He will motivate the other subcommittee members to get focused and complete their task.

TRAINING INFORMATION DIRECTORY
Dave Lorenzen

Dave Lorenzen would like to be replaced as the Chair for this committee. This committee functions as a committee of one (Dave). He has developed a process over the many years that he has performed this task, and with the desktop publishing software available today is able to perform this task easily. I have a few years to recruit his replacement, but the sooner, the better.

The person we need must be willing to take on this committee work for the long term. The processes are not difficult, but the same person must be in this job for a few years to insulate consistency of the process to produce the directory.

This quarter is one of the quiet quarters for this committee and there hasn’t been any activity to report.

PERSONNEL TRAINING REQUIREMENTS
Hong Rosson

No activity to report. Tom Kimbrell had scheduled a committee meeting during the MSC. Minutes were not available, but Tom described the meeting as an informal discussion of what this committee should be doing and how to proceed.

On 17 April, I received an e-mail from Tom tendering his resignation, due to work considerations. I accepted Tom’s resignation and asked him to recommend a replacement. He will gather and mail all pertinent material to me.

EDUCATION SYSTEM LIAISON
John Gerhard

John Gerhard completed the assessment of the schools that applied for the NCSL grants and scholarship funds. We were short-fused for this activity, in order to get this done by the April board meeting. There was some confusion with the transfer of the MS Word files between John and myself and our work commitments.
Committee News

The schools selected by the committee and recommended to receive the grants are:

Butler County Community College  
Metrology Center  
Center Rd., Oak Hills  
Butler, PA

Community College of Aurora  
Building 859  
9125 East 10th Drive  
Aurora, CO

Ridgewater College  
Hutchinson Campus  
2 Century Ave.  
Hutchinson, NM

Sir Sanford Fleming College  
Applied Computer and Information Technology  
Sutherland Campus-Bresley Bldg.  
Bresley Drive  
Peterborough, Ontario Canada.

The recommended award for each college is $3000.

CANADIAN EDUCATION SYSTEM LIAISON REPORT  
Graham Cameron

Taking the MSC 98 Information to Fleming College Measurement Science students:

I provided Fleming College with a summary of the topics addressed at the 1998 Measurement Science Conference and Professor Briones made the proceedings available electronically to those following or who could opt to take Measurement Science subjects. In the two-page document I prepared for bulletin board display, I described how metrological subjects are necessary and aid me in my career. The document, which I passed by Bill and John, pointed out the need for metrological competence in Canada and NCSL award and scholarship support from the NCSL.

Academic Achievement Awards and Scholarships

On June 18th, I will present NCSL awards of $150 to three Fleming College students who have demonstrated academic excellence in the course of Measurement Science in the Engineering Science Cluster.

At this occasion, I propose announcing six $800 scholarships to qualified students registering in the Fall 1998 program.

Monies previously provided to Fleming will be used for these purposes and a small amount of bursary support to assist needy students.

I have had a number of discussions/communications with the Fleming staff on alternate delivery methods which are of particular interest to Canadian NCSL member organizations. These include web-based delivery and modular self-paced, place-bound delivery. These will be pursued during my upcoming visit.

Communicating the Metrology Message to High Schools

I would welcome suggestions from others on successful ways of communication with high school students to illustrate careers in metrology and curry metrological interest in the year preceding their choice of college courses at the post-secondary level.

STANDARDS POLICY

Anthony Anderson, V.P.

Activities:

I attended the International Laboratory Accreditation Cooperation (ILAC) Laboratory Liaison Committee meeting in Paris in February. The proposal submitted last October at the General Assembly of ILAC for amendments to the Memorandum of Understanding (MOU) to incorporate the proposals of the Laboratory Liaison Committee for stakeholder members, has been accepted by the Executive.

Also accepted were the mandate, composition and operation of the Laboratory Liaison Committee. One of the main items in that mandate was for the committee to formulate the comments and positions, of the laboratory and laboratory practitioner association's stakeholder members of ILAC, on proposed ILAC documents and guides before they are submitted for approval by the General Assembly.

This would be when such documents and guides may affect the requirements, costs, use and implications for laboratories to obtain and maintain accreditation. In essence, ILAC has agreed to full cooperation with the committee with this regard. ILAC will be preparing invoices to prospective stakeholder members. To be able to participate in the Sydney ILAC General Assembly in September, a laboratory organization will have to be a fully paid member.

I have also attended two National Cooperation for Laboratory Accreditation (NACLA) Interim Board meetings and the Open Workshop on April 16, 1998, held at NIST. The Interim Board presented a status report to those attending the Workshop and the documents so far produced. These included a Quality Manual, Recognition Document and By-Laws, together with the proposed structure for the organization.

The structure will be a hybrid model, with the private sector set up as a 501[c](6) non-profit organization with a Federal Liaison Committee tied in through NIST, representing the Federal and Local Government Sector. Government organizations will also participate on all the NACLA committees and activities, except those of a fiduciary nature. At the closing of the workshop, the assembled delegates gave unanimous approval for NACLA to go forward and become a formal organization. The following day the Interim Board met to start the process of incorporation and the setting up of NACLA. Actions have been issued to various board members to implement this. NACLA will very soon be off and running.
UPDATE ON THE EU METRIC LABELING DIRECTIVE  
The “drawbridge” may remain open  

According to the American National Standards Institute (ANSI), the European Commission has agreed to propose to the European Parliament and Council of Ministers an amendment that would delay, for 10 years, implementation of the EU’s metric only product labeling directive. The present implementation date is January 1, 2000 as reported in the April NCSL Newsletter and the NIST Business Alert.  

Further discussion of the issue will take place both sides of the Atlantic within the business community. Reports that the Commission had already changed the deadline are incorrect; only the European Parliament and Council of Ministers have the power to make such a change. By delaying the deadline, the EU is likely to seek in return guarantees from the United States for a greater national commitment to metrication including an amendment to the Fair Packaging and Labeling Act to require metric only labeling. For the moment the directive still stands and will come into force on January 1, 2000. If the proposal is accepted and the deadline changed, an official announcement will be issued by the NIST Metric Program Office.  

Acknowledgment goes to the Construction Metrication Council of the National Institute of Building Sciences for some of the above content.  
Tony Anderson  

NATIONAL COOPERATION FOR LABORATORY ACCREDITATION (NACLA) BECOMES PERMANENT ORGANIZATION  

On April 16 at NIST, the interim board of the National Cooperation for Laboratory Accreditation held a workshop to report on the progress of the proposed organization. The purpose of NACLA as described in its Bylaws is “To develop and administer recognition procedures to be accepted by all NACLA parties to provide coordination and focus for laboratory accreditation programs in the United States (phase 1), and in North America [Canada, Mexico & the United States of America] (phase 2), and to serve national and international needs in laboratory accreditation.”  

Documents presented at the workshop were NACLA’s Structure, By-laws, Quality Manual, and Recognition Document. The organization will be set up as a 501(c)(6) non-profit organization with a board of directors from industry and private organizations with government participation in a liaison capacity with no fiduciary authority. There was overwhelming support from the attendees at the workshop for the interim board to go ahead and establish a permanent NACLA organization as soon as possible.  

On May 20, 1998, NACLA was incorporated in the District of Columbia. The majority of the private industry members of the interim board will serve for one year on the initial permanent board. The government members of the interim board become liaison members of NACLA. At a board meeting on May 29th, Fred Grunder of the American Industrial Hygiene Association (AIHA) was voted in as the first President of the NACLA permanent board. Lou Dixon of Ford Motor Company was voted in as Vice President and Tony Anderson, Vice President for Standards Policy for NCSL, was voted in as Treasurer. Other positions on the board will be appointed from the interim board members and approved at the next board meeting, which will be held prior to the NCSL Conference in Albuquerque.  

The most important immediate task for NACLA is to establish some sponsorship to help finance the organization in its infancy and to begin a membership drive. Following this recognition assessments will begin. To this end NCSL, at its April Board meeting in Boulder, voted to donate $5000 to NACLA from its 1998 budget with the option of an additional $5000 in the future when budgeted. The American Council of Independent Laboratories (ACIL) has pledged $5000 and NIST has made available $15,000 in funding and space for Secretariat activities.  

It is with a strong feeling of accomplishment by those who have participated in its realization that NACLA is finally born. No one deserves more credit than Dr. Belinda Collins of NIST, whose dedicated leadership and belief in the accreditation process brought the founding of NACLA to fruition. The goal of one assessment per laboratory in a given field of testing or calibration, using internationally accepted procedures, has taken a significant step towards its achievement.  

U.S. GOVERNMENT AFFAIRS  
Mike Suraci  

INTERNATIONAL MEASUREMENTS COORDINATION  
Graham Cameron  

U.S. MEASUREMENT REQUIREMENTS  
Laurie Baker  

A new chair is needed as Laurie Baker has decided to retire as Chairman. A special vote of thanks was extended to Laurie for all his many years of service of this very important committee. Since the last board meeting, it has been proposed that this committee move to the VP of Measurement Science & Technology.  

CANADIAN MEASUREMENT REQUIREMENTS  
Chairman TBA  

It is also proposed to move this committee to Measurement Science & Technology.  

ANSI SECRETARIAT  
Chairman TBA  

John Wehrmeyer, Chairman of the ANSI/NCSL Writing Committee, has been caretaking this situation until a new business manager is in place at the NCSL Business Office.
MEASUREMENT SCIENCE & TECHNOLOGY
Richard Pettit, V.P.

INTRINSIC AND DERIVED STANDARDS
John Ball

Committee will meet in conjunction with the Albuquerque NCSL Conference this summer: Monday, 20 July 1998, Pavilion A from 4:30 to 6:00 PM in the Hyatt Regency. We are looking forward to an exciting meeting of this active committee. Since the last meeting, a very significant RISP (Dead Weight Pressure Gages) and the Catalogue of Intrinsic / Derived Standards RISP have both been approved.

Active working groups on Two-Pressure Two-Temperature Humidity and Argon Triple point will report progress. The committee will discuss suggestions for new working groups, possible modifications to the RISP outline and the committee may even talk about a practical definition for "derived standard".

MEASUREMENT COMPARISON COMMITTEE
Jim Wheeler

Measurement Comparison Program (MCP) highlights can be found in the NCSL area of the GIDEP BBS and on the MCP website at <http://members.aol.com/ncslnmcp>.

The MCP website has 1130 hits now since August 1996 (Hopefully they were not all of my hits to the server!!!). I have had seven visitors to the MCP Guestpage and three people have updated laboratory intercomparisons using the MCP Update Page. I hope it has provided some information to those interested in laboratory intercomparisons. An up-to-date table of round robin coordinators and past meeting attendees is planned for the website.

A list of past MCP Committee Reports will be available in the near future too. I also plan a page of links to information on Youden Plots, Statistical Process Control (SPC) and methods of analysis. If you have any favorite links relating to those topics let me know and I will include them. The MCP URL is <http://members.aol.com/ncslnmcp>.

Woody Eicke (NIST Retired) is the sub-committee chair for the Recommended Practice (RP) for Interlaboratory Comparisons (ILC). Woody’s phone number is (301) 530-1337. His e-mail is <weicke@us.net>. The latest draft has been distributed by Woody to those on the writing group. He asks that draft corrections be completed by 20 June and returned to him.

The NCSL MCP Committee will be at Pavilion A at the Hyatt Regency Hotel on Tuesday, July 21, from 4:30 to 6:00 PM.

Access to a scanner with Adobe Acrobat is now available to me. I plan to begin compiling a reference for others on past round robins, useful tools and other information relative to laboratory intercomparisons. The CD will provide examples to people interested in conducting intercomparisons. Those interested in this project should contact me. I am looking for copies or sources of past reports on intercomparisons. Ten years of past NCSL and MSC Proceedings are in my bookshelf so far for my review.

I attended the NCSL San Diego Section meeting in May. The meeting was well attended thanks to our new San Diego Section Coordinator, Vicky Van Meter (Wavetek). I took the opportunity to explain what the MCP Committee did and invited those in attendance to participate in the committee. Much of the discussion during the day was on accreditation issues.

MCP News:

Richard W. Caron (Ford Motor Co.) reports on a Flow ILC with six participants. The artifact is a Tandem Critical Flow Venturi. The start date was June 1996 and it should be completed by December 1998. They are looking for more participants. The artifact is now at KRISS in Korea. It will then go to NIST. International laboratories include NEL, NRLM and KRISS. Dr. Mattingly is the point-of-contact (POC) at NIST (Phone 301-975-5939). Richard states that he is waiting for a status report from KRISS and has received preliminary test results from NRLM testing. Richard can be contacted by FAX at 313-337-0671 or e-mail <rcaron@ford.com>

Clark Hamilton (NIST Boulder) reports that Josephson Junction Standard ILC99 has 14 participants ready to begin approximately January 1999. The end date is June 1999. The artifacts are four Fluke Model 732B DC Reference Standards. International participants include NRC in Canada and CENAM in Mexico. Clark was the coordinator for JVS ILC97. He states that the ILC coordinator has not formally been decided on yet. Clark can be contacted at FAX 303-497-2740 or e-mail <hamilton@boulder.nist.gov>.

Jeff Gust (GET Electronic Repair Services) is getting ready to begin the Thomas 1 Ohm ILC. I prepared and sent Sharrill Dittmann a letter requesting NIST support for this round robin. Jeff is also interested in having the pressure coefficient tested at NIST. A tentative list of participating labs includes GTE ERS Fort Wayne, IN, GTE ERS Ontario, CA, Hart Scientific, Guildline Florida, Wavetek, Keithley, Lockheed Sunnyvale and Lockheed Idaho. Other tentative labs include Tektronix Beaverton, Detroit Edison, Measurements International, AGMC/Wiley Labs, Sandia National Lab and Navy Primary Standards Laboratory in San Diego. Jeff can be contacted by phone at 219-428-6504, FAX 219-424-1031 or e-mail at <jegust@aol.com>.

Dennis Plowman (Lockheed Martin Missiles and Space Sunnyvale, CA) reported on a past Low f Capacitance Round Robin. The artifact was a GenRad 1404A, 1000 pF @ 1 kHz. There were 5 participants. It began May 1997 and ended September 1997. Dennis can be contacted at 408-756-0293, FAX 408-756-0797 or e-mail <dennis.plowman@lmco.com>.

John Grajera (Lockheed Martin Missiles and Space Sunnyvale, CA) updated me on the Magnetic NMR Intrinsic Standard Comparison at 0.1 Tesla using a highly uniform transverse reference magnet as the artifact. The artifact is now at Navy Primary Standards Laboratory in San Diego. It will next go to Lockheed Martin Missiles and Space in Sunnyvale. The ILC began in October 1997 and will end in June 1998. There are five participating laboratories. For further information contact John at 408-742-2864, FAX 408-742-4435 or e-mail <john.grajera@lmco.com>.

ARFTG Verification Kits

The Automatic RF Techniques Group (ARFTG) MCP chairman is Bob Judish (NIST, Boulder). Bob can be reached at (303) 497-3380. I submitted a letter in January to Sharrill Dittmann (NIST Office of Calibration Services) requesting funding for NIST sup-
port of these efforts. ARFTG is continuing their round robin efforts with vector automatic network analyzers:

Phil Yates (JPL) is the coordinator for the 3.5 mm Verification Kit Round Robin. The kit consists of a 3.5 mm verification kit with shorts, opens, airline and Beatty Standard. There are 20 participants. This is a ongoing round robin and they are always looking for new labs to join in. The kit is now at USAF MetCal. It will then go to Allied Signal. Bob Judish is the POC at NIST Boulder. Phil states that “Participants acquire data on a VANA and collect data on disc (3.5 inch floppy). Data is delivered to NIST for comparison to the cumulative data set. Participants receive a report indicating their data versus the mean of the cumulative data set.” Phil can be contacted at (813) 354 - 2981. Phil prefers contacting him using E-mail: <pyates@jpl.nasa.gov>.

Connie Ondrejka (NIST, Boulder) is the coordinator for the 7 mm Verification Kit Round Robin. The kit consists of 20 dB and 50 dB Attenuators, 50 Ohm and 25 Ohm Mismatch Aircarines and a short. Connie can be contacted at (303) 497 - 3264 or FAX (303) 497-3970.

Pat Nolan (Lockheed Martin Missiles and Space) is the P.O.C. for the Type N Verification Kit Round Robin. The kit consists of a 20 dB Attenuator, a 50 dB Attenuator, a Beatty Standard Airline, a Headless Airline, and a set of Offset Shorts (M/F). There are 26 participating labs with 44 good data sets with duplicate and suspect data removed. This is a on-going ILC. The artifacts are now at NIST Boulder. They will next go to Spinner GmbH in Germany. International laboratories include the Netherlands (completed), Hong Kong (deleted) and Germany (pending). Pat reports that the airline standards and offset shorts should be replaced. Call Pat at (408) 756 - 2144, FAX (408) 742-4425 or e-mail <pat.nolan @lmc0.com> for more information. Congratulations to Pat for receiving a well-deserved 1998 Woodington Award at MSC in Pasadena, CA.

Ed Daws (Wiltron) is the P.O.C. for the 2.92-mm K Connector Verification Kit RR. The kit consists of a 20 dB Attenuator, a 40 dB Attenuator, a Beatty Standard Airline and an Airline. Ed is looking for more laboratories to participate. He can be reached at (408) 778 - 2000.

Ken Wong (Hewlett Packard) coordinates the 2.4 mm Verification Kit. Contact Ken at (707) 577-2616 for information.

For further information on the NCSL MCP committee call Jim Wheeler (Navy Primary Standards Laboratory) at (619) 545 - 9698, FAX (619) 545-9861 or E-mail at: <wheeler_j@al.nadc.navy.mil>.
Hart Scientific's 1998 Temperature Calibration Catalog is now available. This 148-page publication includes everything necessary for the calibration of RTDs, thermocouples, thermistors, and other temperature sensors. Four major product groups are covered: primary standards, thermometers, calibration baths, and dry-block calibrators.

The catalog also includes information on Hart's temperature calibration training courses, cal lab services, industry publications, calibration software, and the Hart Web Site.

For a free copy, contact:
Chris Juchau
Hart Scientific
799 E. Utah Valley Dr.
American Fork, UT 84003
800 438-4278
FAX: 801 763-1010

**ISOTECH INAUGURATES NEW PRIMARY THERMOMETRY LABORATORY**

**Cells Trace Directly to ITS-90**

Editor's Note: This information was furnished by Henry Sostmann, who spent his career measuring and standardizing temperatures. Although it has a commercial flavor, I think it is still newsworthy for the metrology community.

The International Temperature Scale of 1990 provides means to realize temperature calibrations directly to the ITS-90, independent of any other authority. In October 1997, Isothermal Technology Ltd (Isotech), of the United Kingdom, dedicated their Primary Lab traceable to ITS-90.

Although the International Temperature Scale of 1990 (ITS-90) is a consensus Scale, its defining temperatures are constants of nature, the temperatures at which ideally pure materials exist in two- or in three-phase equilibrium under which conditions, temperature is invariant, and to which numerical values have been assigned. These fixed temperatures can provide a calibration environment and permit any laboratory with necessary and considerable skills, equipment and sophistication to reproduce the Temperature Scale for itself.

In practical terms, it is important that legal and other official bodies approve and accredit this independent approach to traceability. Isotech has had preliminary approval and formal recognition of its primary relation to ITS-90 from UKAS, the United Kingdom Accreditation Service. Agreement upon uncertainty statements is in process.

The skills, techniques and apparatus required to realize fixed-point equilibria with assurance have until now been considered to exist only in National Laboratories. The general concept of traceability has, until now, been understood to mean traceability to those National Laboratory physical standards. Yet, the Scale contains no such restriction. ITS-90 traceability can mean traceability to the Scale itself, requiring no other authority if it is properly realized.

According to the Consultative Committee on Thermometry, the following steps are (all) necessary for assurance and for the determination of a Table of Uncertainties:

- A Riioldt's Law calculation based on the impurities reported in an analysis of the material.
- Examination of the melting curve of the material.
- Examination of the freezing curve of the material.
- Examination of the coincidence of the melting and freezing curves.
- Intercomparison of a cell with another cell; preferably with cells held by more than one National Standards Laboratory. (It has been suggested that no laboratory should claim smaller uncertainties than those claimed by, for example, NIST, U.S., NPL, National Physical Laboratory, UK, IMGC, Istituto "G. Colouetti", Italy, or PTB, Physikalisch-Technische Bundesanstalt, Germany).

In support of its scientific base, Isotech has established a new Primary Thermometry Laboratory (registered name: Northern Temperature Primary Laboratory, or NTPL). All of its fundamental temperature reference cells have been qualified to the CCT requirements and intercompared with appropriate National Laboratories. The reference artifacts are as follows:

1. The triple-point of mercury, Isotech 17724 cell in an Isotech 17725 apparatus, intercompared with NPL and previously with IMGC and PTB.

2. A bank of three water triple-point cells, two Jarrett-Isotech and one made by NMI (Nederlands Meettinstitute, The Netherlands), in an Isotech 18233 maintenance bath. Cells have been intercompared with NMI and NPL.
3. The gallium melt-point cell, Isotech 17402A, cell, intercompared with NPL and previously with IMGC and PTB, in an Isotech water-heat-pipe furnace.

4. The indium freeze-point cell, Isotech 17668, intercompared with PTB and previously with IMGC, NPL, and NIST, in an Isotech water-heat-pipe furnace.

5. The tin freeze-point cell, Isotech 17699, intercompared with PTB and previously with IMGC and NPL, in an Isotech water-heat-pipe dual furnace.

6. The zinc freeze-point cell, Isotech 17671, intercompared with PTB and previously with IMGC and NPL, in an Isotech potassium-heat-pipe dual furnace.

7. The aluminum freeze-point cell, Isotech 17672, intercompared with PTB and previously with IMGC and NPL, in an Isotech sodium-heat-pipe dual furnace.

8. The silver freeze-point cell, Isotech 17673, intercompared with PTB and previously with IMGC, in an Isotech sodium-heat-pipe dual furnace.

These standards are housed in a new building, which is itself a complete Faraday shield. Busses between equipment and measuring instruments are low-loss, separate-shielded and grounded. Heat-generating equipment is contained behind glass doors in a separately air conditioned area.

You can get more information, equipment lists, and a chart of uncertainties by contacting:

Isothermal Technology Ltd.
Pine Grove, Southport
Merseyside PR9 9AG,
England
Phone 44 1704 543 830
FAX 44 1704 544 799
Email: <sales@isotech.co.uk>
Web: <http://www.demon.co.uk/isotech/>
or: Henry Sostmann
Phone 505 275 2489
FAX 505 294 6153

NEW DOE ACCREDITATION COMMITTEE TARGETS ISSUES AND RESOLUTIONS FOR FIRST ANNUAL MEETING

Don Ragland, Sandia

The first annual meeting of the DOE Topical Committee on Laboratory Accreditation (Committee) will be held at NIST, Gaithersburg, MD on Sept 23 & 24, 1998. The purpose of the Committee is to educate and enhance awareness of DOE laboratory accreditation issues. It is not to form yet another accreditation activity. Instead, it will act as an information resource for DOE activities that can benefit from accreditation. This will be accomplished by:

- identifying accreditation issues for DOE,
- identifying how to facilitate resolution of DOE laboratory accreditation issues, and
- serving as a topical committee on accreditation for the Technical Standards Program (Tspo).

Sponsored by the TSPO, the Committee will promote a coordinated accreditation program for DOE by providing a network for sharing information and resources and encouraging high-quality, cost-effective accreditation services for DOE programs. Membership in this Committee is open to all DOE personnel and DOE contractors involved with accreditation.

One of the important considerations to be discussed at the first annual meeting will be the role of DOE in the recently formed National Cooperation for Laboratory Accreditation (NALC).

For more information, interested persons should contact:

Dr. Sal Scarpitta (BNL), 516-344-3630, <scarpitt@mail.sep.bnl.gov>
Bob Wayland (SNLA), 505-845-9771, <jrwlayla@sandia.gov>
Don Ragland (SNLA), 505-845-9623, <dcragla@sandia.gov>

This article is also available for viewing on the DOE/TSPO web site: <http://apollo.osti.gov/html/techstds/genframe.html>

DOE METROLOGY COMMITTEE SPOTLIGHTS ISO 25

Adherence to ISO Guide 25 for calibration and testing laboratories within the DOE complex was a focal point at the Second Annual Meeting of the DOE Metrology Committee, March 11 & 12, at Pacific Northwest National Laboratory (PNNL) in Richland, WA. Sponsored by DOE/TSPO, the members of the DOE Metrology Committee, which serves as a topical committee on metrology for the TSO, resolved to promote ISO Guide 25 for all of DOE as a means for helping to achieve a minimum, common set of guidelines, based on national and international standards, that is acceptable to all DOE programs.

According to Harry Moody (INEEL), chair of the metrology working group that researched ISO 25, adherence to ISO 25 should provide uniformity within DOE and bring DOE into alignment with national and international standards for testing and calibration laboratories. In the long run, this should prove beneficial to DOE as it implements the guidelines of the National Technology Transfer Act (PL 104-113) and OMB Circular A-119.

Dick Pettit (Sandia), DOE representative to the recently formed National Cooperations for Laboratory Accreditation (NALC), stated that adopting ISO Guide 25 within DOE is in agreement with the activities of NALC and with developing mutual recognition agreement between the US and other national accreditation organizations. The vision of NALC is "a test or calibration performed once and accepted worldwide," stated Pettit.

Sharrill Dittman, Chief of Calibration Services at NIST, was a featured speaker at the meeting. Dittman reported that ISO Guide 25 will become a standard: ISO 17025. She noted that even as a Guide it had achieved international recognition and acceptance, and it forms the basis for testing and calibration laboratory evaluation around the world. Dittman applauded DOE efforts to adopt a common standard and noted that their choice of ISO Guide 25 would be consistent with best practices.

Other matters covered at the annual meeting included announcement of the new DOE Metrology Committee web site (soon to be published), and the Committee's imminent release of topical position papers on various subjects: "Adopting a Single Standard," "Outsourcing," "Charge-Back," and "Lessons Learned."
NIST NEWS

NIST DIRECTOR RAYMOND G. KAMMER TAKES CHARGE

Mr. Kammer assumed his new duties as Director of NIST in November 1997. During the first several months in his new position Mr. Kammer devoted a major part of his time and attention to supporting the Administration's budget for FY 1999 on the Hill. This budget contains increases for NIST's laboratory and extramural programs. We also hope that the long standing request for construction funds for maintaining and renovating buildings, and for the construction of a new Advanced Measurement Laboratory will be answered.

For NIST, Mr. Kammer sees these five major challenges:

- Ensuring world leadership by NIST’s Measurement and Standards Laboratories,
- Assuring that measurement capabilities and standards are in place to support full U.S. participation in global markets,
- Building greater consensus on the Advanced Technology Program’s value,
- Expanding access to Manufacturing Extension Partnership services for more small and medium-sized companies and continuing federal support for MEP centers after the sixth year, and
- Promoting performance excellence in health care and education through the Baldrige National Quality Program.

Being the best in measurement science and services is certainly a challenge that the staff of the Measurement and Standards Laboratories take up with great enthusiasm.

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PRESIDENT’S FY 1999 BUDGET SEEKS $715 MILLION FOR NIST

President Clinton has submitted to Congress a fiscal year 1999 budget request for NIST of $715 million—a 6.3 percent increase above the FY 1998 appropriations of $672.9 million. The proposed budget will fund the operation in close partnership with the private sector of NIST’s civilian technology support programs that focus on the country’s technology infrastructure.

Included in the FY 1999 request are three separate appropriations: $291.6 million for Scientific and Technical Research and Services (including $286.3 million for the NIST Measurement and Standards Laboratories and $5.4 million for the National Quality Program); $366.7 million for Industrial Technology Services (including $239.9 million for the Advanced Technology program and $106.8 million for the Manufacturing Extension Partnership); and $56.7 million for Construction of Research Facilities (including $16.7 million to maintain and improve existing facilities and $40 million for the planned Advanced Measurement Laboratory) to help bring NIST’s 30- to 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.

The increase for the Measurement and Standards Laboratories would provide $16 million in additional funding to help address the nation’s multiplying needs for measurement-related services in four key areas: provide new measurement tools and services for the semiconductor device, equipment, and materials industries; improve measurements and data underpinning the next generation of climate change technologies; develop and disseminate the measurements and standards for next-generation disaster mitigation technologies; and create the comprehensive structure of technical measurements and standards needed for international trade and to promote the global use of U.S. measurement and standards.

The increase of $2.3 million for the National Quality Program would permit NIST to establish and manage Baldrige awards for performance excellence in health care and education. NIST already has conducted a successful pilot program, and the private Foundation for the Malcolm Baldrige National Quality Award has begun raising a $15 million endowment to help establish the awards, provided federal funding also is available.

An additional $67.4 million over FY 1998 ATP funding would enable the ATP to continue support for current projects and to conduct one general competition and several focused program competitions in FY 1999.

The requested funding for MEP would permit NIST to continue providing the federal share of funding needed to support the network of centers serving smaller manufacturers in all 50 states and Puerto Rico. The decrease of $7.8 million for FY 1998 appropriations reflects a lower federal share of the centers’ operating costs since the federal share decreases as centers mature; the number of centers is not expected to change.

The $56.7 million requested for Construction of Research Facilities would be used to ensure a safe working environment for NIST staff and continued capability to provide U.S. industry and science with the best possible measurement system. In FY 1998, Congress appropriated $95 million for construction, renovation, and maintenance of NIST facilities. Pending congressional review of NIST’s full facilities improvement plan and advanced appropriations from Congress, NIST plans to use $63 million to start construction of the Advanced Measurement Laboratory in Gaithersburg. To further fund that planned facility, the FY 1999 request includes $40 million. The remaining $16.7 million would be used to address the highest priority projects among a substantial backlog of critical safety and maintenance needs.

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NATIONAL COOPERATION FOR LABORATORY ACCREDITATION (NACLA)

On April 16, 1998, NIST hosted an open forum to give the Interim Board of Directors of NACLA an opportunity to present progress to date in developing the organization. Ray Kammer, Director of NIST, welcomed the participants in the meeting and promised strong support of NACLA by NIST, including the provision of secretarial support and office space during the formative period, participation of NIST staff on the Board of Directors in a liaison capacity, and formal recognition of NACLA by NIST through the National Voluntary Conformity Assessment System Evaluation Program (NVCASE). Members of the Interim Board discussed
documents on Accreditation Body Recognition Procedures and on NACLA by laws. The proposed organizational structure was thoroughly discussed. At the end of the day the assembly was challenged by one member of the Interim Board to take heart and move forward to establishing NACLA by creating a permanent Board of Directors, incorporating the organization, soliciting members, and beginning to conduct business. This proposal was met with enthusiastic applause and NACLA is on its way.

MUTUAL RECOGNITION AGREEMENT BETWEEN THE U.S. AND EU

On June 20, 1997, the United States and the European Union (EU) initiated an agreement to recognize each others' assurance of conformity of certain regulated products to applicable testing, inspection, and certification requirements of the other party. This agreement covers telecommunications equipment, electromagnetic compatibility (EMC), electrical safety, medical devices, pharmaceutical goods manufacturing practices, and recreational craft. The full text of the agreement (89 pages) is available on the International Trade Administration (ITA) home page at <http://www.icp.doc.gov/mra/mra.htm>. This Mutual Recognition Agreement (MRA) will enter into force upon ratification by EU member governments, the agreement will be phased in and fully implemented in two years for electronic products and three years for health products.

NIST’s responsibility under the MRA is to "designate, monitor, suspend, remove suspension of, or withdraw conformity assessment bodies as specified under this agreement." Two programs of the NIST-TS Office of Standard Services (OSS) are involved in the implementation of the MRA: the National Voluntary Laboratory Accreditation Program (NVLAP) and the National Voluntary Conformity Assessment Program Evaluation Program (NVCASE). Under NVCASE, NIST can evaluate U.S.-based conformity assessment bodies as a basis for providing assurances to a foreign government that qualifying bodies meet that government's requirements and can provide results that are acceptable to that government. OSS's Global Standards Program is handling oversight and coordination with ITA et al.

OSS staff have begun discussions with cognizant U.S. regulatory agencies and private sector representatives, as well as with EU Commission officials, on designation procedures, with the goal of providing an initial list of qualified test laboratories to the EU by the end of the year. The MRA also provides for a series of workshops intended to develop a full understanding of both U.S. and EU mandatory testing and approval procedures. These workshops will be an important component of the MRA transition phase, as both sides move from the exchange of test results to full delegation of product approvals.

FACILITIES PLAN SENT TO CONGRESS

Recently sent to Congress, the NIST Facilities Improvement Plan analyzes office and laboratory space requirements and details and prioritizes maintenance, new construction, and renovation projects.

NIST's current plans for new construction include completion of the Advanced Chemical Sciences Laboratory in Gaithersburg by early 1999 (fully funded with previous appropriations) and construction of an Advanced Measurement Laboratory (AML) in Gaithersburg. This state-of-the-art metrology facility will provide flexible, world-class research space for NIST programs requiring the most stringent environmental controls. Once the expenditure plan is approved by Congress, NIST plans to dedicate $63 million of the FY 1998 funds to the AML project. To complete the AML, the President's FY 1999 budget requests $40 million for each of FY 1999, FY 2000, and FY 2001 and $35 million in FY 2002. However, legislative language providing advanced appropriations is required to enable NIST to start construction in FY 1999.

With the remaining $32 million in FY 1998, NIST will address the highest priority projects among a substantial backlog of critical safety and maintenance needs. These projects have been prioritized based on multiple factors such as importance of the project to life safety, probability of imminent failure, compliance with applicable regulations, impact of the project on litigation exposure, and importance for meeting NIST's program needs. Topping the list of high-priority projects: site alarm system and fire safety upgrades (Gaithersburg), emissions control system replacement in the Fire Research Building (Gaithersburg), hazardous material removal (Gaithersburg), and HVAC replacement projects (Boulder).

Longer term goals for new construction include centralized utility services and a distribution system in Boulder as well as improved and expanded clean-room facilities in Boulder. Since no major renovation projects are included in the President's FY 1999 budget or outyear projections, all such projects also fall into the category of long-term goals. Among them: major renovations of NIST's General Purpose Laboratories in Gaithersburg and Building 1 in Boulder.

The facilities plan should be regarded as a planning guide. Annual Administration funding requests depend upon a continuing reassessment of priorities that balances NIST needs against other funding requirements. The plan is available on the NIST website at <http://www.nist.gov/public_affairs/facilities/faceplan.htm>.

NV L A P STATUS REPORT

NV L A P continues to accredit Calibration Laboratories, but as reported several times in the past, the numbers of laboratories seeking accreditation is very small in comparison with the needs of the country and the total population of testing and calibration laboratories. To date, NVLAP has accredited 22 calibration laboratories. Several of these have been through at least one renewal of their accredited status, and many have increased the scope of their accreditation by adding additional parameters to those for which they were originally accredited.

NVLAP has received some reports from some of its accredited laboratories that the signing of the Asia Pacific Laboratory Accreditation Cooperation (APLAC) Mutual Recognition Agreement (MRA) in Tokyo in November, 1997 has resulted in new opportunities for trade in the Asian countries included in the MRA.
Accreditation bodies in additional Asia Pacific countries are being assessed and will be added as the years continue.

NVLAP was informed by the European cooperation for Accreditation (EA) that work will continue toward recognition of NVLAP's program in the European countries that are signatories to the EA MRA. NVLAP accredited laboratories are currently participating in international laboratory measurement intercomparisons in four areas (Sound Pressure, HF Attenuation, Accelerometers, Liquid in Glass Thermometers) and by the end of this year will be involved in an additional four (Mass, Step Gages, Capacitance, Frequency). NVLAP will be seeking to schedule the final assessment visit from an EA team sometime in the next several months.

The lack of a sufficient number of calibration laboratories caused NVLAP to revise its policy on the use of accredited calibration laboratories to achieve traceability. NVLAP Policy Guide PG-1-1998 published on March 2, 1998 allows for testing or calibration laboratories to achieve traceability by direct submission of its reference standards to NIST, or through calibration laboratories accredited by NVLAP or our MRA partners, or through non accredited calibration laboratories providing that documentary evidence of the elements necessary to achieve traceability is provided to NVLAP. This last situation will be allowed on an interim basis until such time as NVLAP determines that there are sufficient calibration laboratories in the United States to handle the needs of the U.S. testing and calibration laboratories. A copy of NVLAP Policy Guide PG-1-1998 can be obtained from NVLAP or downloaded from the NVLAP website at <http://ts.nist.gov/nvlap>.

ISO/CASCO Working Group 10 met in Geneva in February to prepare the next revision draft of ISO Guide 25. ISO/CASCO has decided to convert ISO Guide 25 to a standard which is now identified as ISO 17025. Working Group 10 members (NVLAP is a member) expect the next draft before this newsletter goes to print. Comments on the draft document will be solicited for one final five month period. NVLAP will distribute the draft for comment and will, as in the past, consolidate comments for input to ISO/CASCO through the U.S. Representative, ANSI. When all comments are received and factored into the last draft of the document, it will go to the ISO/CASCO voting members (ANSI in the United States) for two months for ballots.

GOLD MICROINDENTATION HARDNESS STANDARD

The development of an electroformed gold microindentation hardness standard has been the subject of a two-year program supported by the Technology Services (TS) Standard Reference Materials and Materials Science and Engineering Laboratory (MSEL). The standard will be used to verify the calibration of microhardness instruments when used for measurement of soft materials at low applied forces.

The request for this standard has come mainly from the electronics industry where gold is electrodeposited on silicon to effect wire bonding and printed circuit board contacts. The general plating industry for precious metals also has requested a standard for process control of addition agents to gold electrolytes.

The electrochemical processing group, in collaboration with the Precision Machining Research Facility, has produced a 24K gold, low load microhardness standard prototype by incorporating two technologies, electroforming and single-point diamond turning. Two critical issues were recognized and resolved. First, the hardness of the electroformed gold was found to vary with the thickness of the deposit, so a method was developed to generate a uniform deposit of 200 micrometers thickness. Second, conventional metallographic polishing of such a soft material results in the imbedding of grinding and polishing media into the surface, so single point diamond turning was used to generate the required flat surface. Using these methods, prototype microhardness standards having the required hardness and surfacefinish characteristics have been produced.

This microindentation hardness standard is expected to fill a void in the low-hardness, low load standards presently offered by the Standard Reference Materials Program (SRMP). Production and sales are expected within one year following fabrication scale-up.

CONTACT: Christian E. Johnson, (301) 975-6409.

TENSILE TESTING OF THIN FILMS SHOWCASED IN REFERENCE SET

Since all microchips contain thin films, it is critical that manufacturers be able to assess their reliability. If the mechanical properties of the films themselves or their interfaces to other materials fail, then the electrical function of the devices they support will fail as well. Unfortunately, traditional mechanical test techniques
NIST recently published a collection of five technical papers about the development of a set of techniques for measuring the tensile properties of thin films. In this reference, thin films mean metal layers produced by physical vapor deposition or electrodeposition, with thicknesses around 1 um. The described apparatus tests specimens whose gauge section is typically 0.1 mm long and 50 to 200 um wide. Specimens with thickness ranging from 0.3 to 15 um have been tested.

Topics discussed in the papers include “A New Method for Measuring the Strength and Ductility of Thin Films,” “Mechanical Behavior of Aluminum and Copper Thin Films,” “Fatigue of Microlithographically Patterned Free-Standing Aluminum Thin Film Under Axial Stresses,” “Tension-Tension Fatigue of Copper Thin Films” and “Piezo-Actuated Microtensile Test Apparatus.” Also included are detailed mechanical drawings of the piezo-actuated microtensile test fixture and the current versions of the software used to control the tensile test and reduce the data. CONTACT: Fred McGehan, (301) 497-3246.

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PARTNERS FILL BIG NEED WITH BETTER SRM’S FOR SHRINKING CHIPS

In an effort to keep up with the galloping pace of technological change in the semiconductor industry, NIST has teamed with VLSI Standards Inc. of San Jose, California, to improve the availability of thin-film reference materials tailored for industry. Through a cooperative research and development agreement, NIST worked with VLSI Standards to establish a traceability pathway to NIST standards for the company’s new 4.5 nm (nanometer or billionth of a meter) and 7.5 nm thin-film reference materials.

Made of silicon dioxide, these thin films are needed by the semiconductor industry to calibrate ellipsometers used for process development and process quality control when making Very Large-Scale Integrated Circuits. NIST enabled the company to establish its measurement “traceability” by carefully characterizing the company’s current thinnest reference materials with NIST’s primary, high-accuracy ellipsometer. Currently, the thinnest silicon dioxide Standard Reference Materials available from NIST are 10 nm thick, provided on wafers with 71 mm (approximately 3 inch) diameters.

VLSI’s new reference materials will be provided in 150 mm (6 inch) and 200 mm (8 inch) diameter wafers, currently more common in industry. CONTACT: Michael E. Newman, (301) 975-3025.

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IMPROVED INFRARED SPECTRAL RESPONSIVITY SCALE REALIZED

An improved spectral responsivity scale covering infrared (IR) wavelengths from 2 um to 20 um with typical uncertainty better than 0.25 percent has been realized in the Optical Technology Division of the Physics Laboratory. The scale was realized with much greater sensitivity than previous scales in this spectral region by using a cryogenic bolometer developed in the division. The scale will be disseminated through spectral responsivity calibrations of IR detectors using a new detector comparator facility, substantially extending the spectral range of low uncertainty calibrations offered by the division.

The cryogenic bolometer accurately measures input powers in the 10 w to 20 pW range, much smaller than possible with the previous pyroelectric detectors used in this spectral range. The bolometer absolute spectral responsivity was calibrated at several wavelengths by intercomparison with the division’s high accuracy cryogenic radiometer (HACR), a NIST primary standard for optical power measurements. The relative responsivity of the bolometer was independently determined over the 2 um to 20 um spectral range and tied to the HACR absolute scale at the intercomparison wavelengths. The bolometer response is very flat over the entire range.

CONTACT: Alan Migdall, (301) 975-2331.

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RECHARACTERIZATION OF THE NIST THERMAL TRANSFER STANDARDS CARRIED OUT FOR CCEM INTERCOMPARISONS

During FY 1997 extensive recharacterizations of the frequency coefficients of NIST thermal converter standards for ac-dc difference have been carried out. Over frequencies ranging from a few Hertz to above 100 MHz, ac voltage is most accurately measured in terms of a known dc voltage by an ac-to-dc transfer process using thermal transfer standards having known ac-dc differences. The NIST thermal transfer standards of ac-dc difference rely on special, coaxially constructed thermal voltage converters (TVCs) to determine the frequency response in the range from 10 kHz to 1 MHz. EEL’s Electricity Division is currently participating in various international comparisons under the auspices of the Consultative Committee on Electrical and Magnetic (CCEM). One comparison concerns the ac-dc difference of thermal voltage converters at input signal levels of 3 V and 4 V rms. In order to submit the best results, rebuilt versions of these converters have been assembled and a complete redetermination performed on the NIST standards of ac-dc difference in this frequency range.

The special converters consist of vacuum thermoelements and series resistors mounted in a cylindrical structure. The series rod resistors are carefully assembled from carbon-coated ceramic rods and copper end caps. All dielectric material external to the resistor is removed to eliminate (essentially) dielectric loss effects. No magnetic material is used in the resistor, surrounding coaxial structure, or thermocouple leads in order to reduce errors due to skin effect. Ultra-high-frequency patterned thermoelements are chosen to maintain the coaxial geometry. The ac-dc differences of these special TVCs are nearly independent of frequency from 10 kHz to 1 MHz. By characterizing them at 10 kHz in terms of the NIST primary standards, the frequency responses of the reference and working standard TVCs can be determined.

The complete procedure to recharacterize several ranges of the NIST working and reference standard TVCs was carried out using three of the special converters. Uncertainties (coverage factor of two) ranged from a few parts in 10^6 at 100 kHz to about 20 parts in 10^6 at 1 MHz. Changes (since the last recharacterization effort) in the ac-dc difference of the NIST standards in this frequency range were well below the claimed uncertainties. CONTACT: Barry A. Bell, (301) 975-2419.

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INTERNATIONAL COMPARISON ORGANIZED OF
CHARPY IMPACT REFERENCE MACHINES AND
SPECIMENS

A comparison of the Charpy impact reference machines and specimens used to support international standards (ISO, JIS, ASTM, and EN) for material toughness evaluation has been organized by MSEL. Reference specimens for verifying the performance of Charpy impact machines are produced by the Laboratoire National d’Essais in France, the Institute for Reference Materials and Measurements in Belgium, the National Research Laboratory of Metrology in Japan, and NIST in the United States. Each laboratory will contribute 300 reference specimens for the comparison testing. These specimens will be tested by each laboratory using their reference machines. The data from the comparison will be used primarily to determine the bias among the reference machines and provide a horizontal link among the verification programs. The data also will be used to evaluate specimen-machine interactions, and the effects of striker geometry on the impact energy and lateral expansion of the specimens. The latter issue is important because ASTM specifies a striker with a 8 mm radius and ISO specifies a striker with a 2 mm radius. The results of the comparison will be published in the ASTM Symposium on Procedures and Specimens for Verification of Pendulum Impact Machines (May 1999). CONTACT: Chris McCowan, (303) 497-3753.

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NIST TBT AGREEMENT ACTIVITIES REPORT
PUBLISHED

This report on TBT Agreement Activities of the National Institute of Standards and Technology 1996 (NISTIR 6105) describes the role of NIST’s National Center for Standards and Certification Information (NCSCI) in support of the World Trade Organization (WTO) Agreement on Technical Barriers to Trade (TBT Agreement). NCSCI staff operate the U.S. WTO TBT inquiry point for information on standards, technical regulations, and conformity assessment procedures that might affect U.S. trade. Center staff also coordinate U.S. comments on proposed foreign regulations, arrange for translations of foreign technical regulations and standards, and maintain the WTO hotline (301) 975-4041 that provides the latest information on proposed foreign government technical regulations issued by the WTO Secretariat in Geneva. In 1996, NCSCI staff responded to 306 requests for TBT-related information, received 460 notifications of proposed technical regulations, and participated in numerous activities to strengthen implementation of the TBT Agreement. Copies of the annual report are available from NCSCI, Building 820, Room 164, (301) 975-4040, and will become available on the Internet at http://ts.nist.gov/oss. CONTACT: JoAnne Overman (301) 975-4037.

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IEEE STANDARD DEFINITIONS FOR TIME AND
FREQUENCY

Physics Laboratory (PL) staff in Boulder have played a key role in the revision of IEEE Standard 1139-1988, Standard Definitions of Physical Quantities for Fundamental Frequency and Time Metrology. Random Instabilities. The IEEE standards committee was led by Eva Ferre-Pikal of the Time and Frequency Division and included Fred Walls of the division as well as representatives from the Aerospace Corp., Hewlett-Packard Co., EG&G Inc., Timing Solutions Corp., the Army Communications-Electronics Command, the Jet Propulsion Laboratory, the Naval Research Laboratory, and BIPM. This revision incorporates recent NIST work on improving the confidence interval for measurements that are a substantial portion of the data length and on quantifying the confidence intervals for fully overlapped measurements.

IEEE Standard 1139-1997 provides the basis for specifications and acceptance testing for clocks, oscillators, and a range of other equipment used in timing applications and low-phase-noise systems such as are encountered in telecommunications, navigation, and high-performance radar systems. CONTACT: Fred L. Walls, (303) 497-3207.

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A MULTICHANNEL GPS RECEIVER FOR
COMMON VIEW TIME TRANSFER

Judah Levine of the Time and Frequency Division has developed a multichannel, common-view receiver based on a commercial GPS (Global Positioning System) “engine.” The system runs under the control of a simple personal computer with a commercial internal board used as a time-interval counter. One objective of this project is to replace the original (1985) NBS common-view receivers still used by a number of laboratories, since these are becoming increasingly difficult to maintain. A second objective is to move to multichannel technology and higher level of automation for data handling.

The increased volume of comparison data provided by the multichannel technology should somewhat improve the precision of comparisons, and the improved automation will facilitate handling of the larger volume of data. Since common-view time transfer continues to be the de facto standard for international time coordination and atomic-clock performance continues to improve, it is important to push the performance of this time-comparison method. In preliminary tests, two receivers in the same location have been referenced to the same clock. In this arrangement, the common-view differences provide a very good measure of the receiver performance. The resulting variance of 2.5 ns for these differences is indeed somewhat better than that observed with single-channel receivers. CONTACT: Judah Levine, (303) 497-3903.

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NIST HELPS LIGHT THE WAY TO SAFER FLYING

Air traffic controllers do an amazing job keeping aircraft safely separated. But with crowded skylanes there are bound to be mistakes or equipment failures. As a last line of defense, pilots rely on old-fashioned visual sighting to avoid collisions. To make planes more visible especially at night and in bad weather the Federal Aviation Administration requires planes to have red or white flashing anti-collision lights with minimum intensity of 400 candelas. Accurately measuring intensity for a flash that lasts only a split second, however, is fairly tricky. Field intensity measurements of anti-collision lights on commercial aircraft have differed by as much as 30 percent using accepted light intensity measuring instruments. This indicated a critical need to develop a calibration standard for flashing light intensity measurements.

The FAA asked the National Institute of Standards and Technology to develop this standard. NIST physicists came up with a system that uses two independent calibration methods to produce a primary standard photometer system with an uncertainty of only 0.6 percent. NIST now is using the system to provide calibrations for reference photometers used by instrument makers, aircraft manufacturers and the airlines. They hope the calibration service
and recently-agreed-on standard measurement methods will improve uncertainty for field measurements to less than 10 percent. CONTACT: Linda Joy (301) 975-4403.

NEW OPTICAL PROPERTIES CONSORTIUM LOOKING FOR MEMBERS

NIST’s Optical Technology Division is inviting companies to join a new consortium on optical properties of materials. The consortium, being organized in response to requests from industry, NASA and the Department of Defense, will address critical needs for high-accuracy optical measurements, new standards development and evaluation, and dissemination of optical properties of materials data.

Optical properties of materials, such as ultraviolet to infrared transmittance, reflectance, absorptance, light scattering and refractive index, are critical to producing and characterizing devices and materials. A wide range of industries, including pharmaceuticals, communications, semiconductor production and optical components manufacturing, could benefit from improved measurement accuracy, new standards and calibrations for optical properties of advanced materials currently under development.

The diverse industrial sectors interested in optical properties previously had no single source at NIST for assistance, explains consortium leader Raju Datla. The consortium’s goal is to provide information that will help reduce manufacturing costs and improve product quality for both military and civilian markets. The Optical Technology Division will interact closely with other parts of NIST as well where specific expertise exists to satisfy the needs of the consortium. CONTACT: Linda Joy, (301) 975-4403.

SRM AVAILABLE FOR OPTICAL FIBER METROLOGY

Optical fiber communication systems are becoming more complex as operators try to push ever more information down the same fibers. In particular, wavelength references are needed in the 1500 nm region to support current and future wavelength division multiplexed (WDM) optical fiber communication systems. In a WDM system, many wavelength channels are sent down the same fiber, thereby increasing the bandwidth of the system by the number of channels. If one channel’s wavelength were to shift, cross-talk could occur between it and a neighboring channel. Wavelength references are needed to calibrate optical instruments used to evaluate system components and measure the channels’ wavelengths.

NIST’s solution was to produce Standard Reference Materials with optical fiber coupled cells containing gases which have accurately measured absorption lines in the 1500 nm region, NIST ruled out establishing a calibration service because the instruments needed are large, fragile and could be offset during shipment. The first SRM, number 2517, is based on the fundamental absorptions of light by acetylene; another SRM based on hydrogen cyanide is being developed. CONTACT: Fred McGehan, (303) 975-3246.

NIST-DEVELOPED SHORT COURSE ON MICROWAVE MEASUREMENTS AIDS WIRELESS COMMUNICATIONS INDUSTRY

As the wireless communications industry continues its explosive growth, system and component designers are recognizing the need for measurements to verify their models and simulations. In response to this demand Robert M. Judish, of the Electronics and Electrical Engineering Laboratory (EEEL), Electromagnetic Fields Division, developed a two-day course entitled “RF and Microwave Measurements for Wireless Applications.” Co-sponsored by the Automatic Radio Frequency Techniques Group, the course was held in conjunction with their 50th Conference. Division members Dylan F. Williams, Don DeGroot, and John R. Juroshek presented tutorial lectures on basic microwave measurements, which covered microwave circuit theory, transmission lines, scattering parameter measurements, impedance, and time domain methods. Fred L. Walls, of Physics Laboratory (PL), Time and Frequency Division, spoke on phase noise. Speakers from Maury Microwave, Giga-tronics, Hewlett-Packard, JMS, ATN Microwave, and Cascade Microtech presented tutorial lectures on noise, digital modulation, spectrum analyzers, load-pull, circuit verification, and fixtures issues. The course met expectations, attracting 71 people from the microwave and wireless communications industry. CONTACT: Robert M. Judish, (303) 497-3380.

INDUSTRY-REQUESTED, NIST-LED BEAM PROFILE ROUND-ROBIN COMPLETED

The Optoelectronics Division of EEEL recently completed a laser beam characterization round-robin conducted in response to industry requests. This round-robin involved eight U.S. manufacturers of beam-profile measurement equipment and was conducted somewhat differently than typical round-robins in which a transfer standard or characterized artifact is sent around to the involved participants to indirectly compare measurement systems and techniques. In this instance, the companies brought their measurement equipment (beam profilers and fast light detectors) to a NIST laboratory where measurements were made on two NIST lasers. One was an intensity-stabilized helium-neon gas laser, which had a near-Gaussian irradiance distribution, and the other was a specially designed, mode-tunable, solid-state laser built by NIST scientists and a guest scientist from Germany. This tunable laser is capable of producing transverse modes ranging from the lowest order fundamental mode to mode order 40. For this round-robin, the first higher order mode was used because radiation along one axis propagates as a typical Gaussian beam whereas the radiation along the orthogonal axis has much greater divergence. This allowed a more rigorous test of the participants’ measurement equipment.

For the past six years, the ISO laser standard committee (ISO/TC 172/SC 9) has been developing standards on various aspects of laser radiation properties and associated measurements. A recently completed standard from this committee prescribes definitions and measurement procedures concerning the principal aspects of laser beam profile and propagation characteristics. At the request of several U.S. beam-profile system manufacturers, NIST conducted a round-robin several years ago that led to the identification of weaknesses in an earlier version of the ISO document and was instrumental in the development of the current standard. This new round-robin, requested by the U.S. Laser and Electro-Optics Manufacturers Association, showed a significant improvement in the ability of the participants to measure the required beam parameters. Except for one outlier (later found to be caused by an overcorrection by a participant for detector background levels), the results by all participants agreed within 2 to 5 percent, which is considered noteworthy for these types of measurements. CONTACT: Thomas R. Scott, (303) 497-3651.
NIST NEWS

NIST LAB UPGRADES SCIENTIFIC DATA ON THE WEB

NIST World Wide Web pages offering free and easy access to scientific data are among the Institute's most popular, getting thousands of "hits" per month from computer users around the world. Now NIST has improved, expanded and integrated the data offered on some of these pages into a new easy-to-use site:<http://physics.nist.gov/cuu>. This public resource provides in-depth information on the fundamental physical constants, the International System of Units (the modern metric system known as SI) and the expression of uncertainty in measurement. Any computer user with access to the Web can use this site to look up values of fundamental physical constants and conversion factors of physics and chemistry. These values are searchable in an easy-to-print form.

The metric information section contains a concise summary of the essential features of the SI, and the rules and style conventions for its use. In addition, the section details the seven SI base units and the 21 SI-derived units with special names and symbols. Electronic publications discussing use of the SI are also available.

The section concerning uncertainty covers evaluating and expressing the uncertainty associated with measurement results. A helpful publication from NIST and the citations of related publications of the ISO are posted in this section. CONTACT: Linda Joy, (301) 975-4403.

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NEW RADIATION DOSE CALIBRATION SERVICE

Physics Laboratory (PL) researchers in the Ionizing Radiation Division have developed an improved technique to measure absorbed dose in radiation therapy. Measurements of absorbed dose for the more than 600,000 U.S. patients per year undergoing external-beam radiation therapy for cancer treatment are traceable to NIST standards for *Co gamma rays. The ionization chambers used in such measurements are currently calibrated in terms of exposure (the ionization of air), and a series of calculations must be performed to convert the measured exposure in high-energy electron and photon therapy beams to absorbed-dose-water (the standard tissue substitute). The international trend is to calibrate ionization chambers directly for absorbed-dose-water, removing the much complexity in clinical dosimetry. The American Association of Physicists in Medicine (AAPM) is collaborating with NIST to implement a new North American protocol based on such calibrations.

PL has developed a water calorimeter which directly realizes the quantity of interest and which serves as NIST's primary standard for absorbed-dose-to-water. NIST and the AAPM have agreed that small ionization chambers, of the type currently in use at radiotherapy facilities, can be used as secondary standards to transfer primary standard measurements made in the NIST *Co beam at a depth of 5 cm in water. Such transfer standards will permit secondary dosimetry calibration laboratories (accredited by the AAPM) to offer NIST-traceable calibrations by summer 1998.

To confirm the accuracy of these methods, two ionization chambers were sent to the International Bureau of Weights and Measures (BIPM) for an indirect comparison with international absorbed-dose-water standards. Preliminary results indicate agreement between NIST and the BIPM to within 0.4 percent. Bilateral international comparisons are being planned with a number of national laboratories, including the National Research Council (Canada), National Physical Laboratory (Great Britain), and Physikalisch Technische Bundesanstalt (Germany). CONTACT: Jilee Shohe, (301) 975-5395.

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U.S. NEEDS NATIONAL STANDARDS STRATEGY, NIST OFFICIAL SAYS

"The United States needs an effective national standards strategy if we are to compete effectively in the global market," Raymond Kammer, director of the Commerce Department's National Institute of Standards and Technology, told a congressional subcommittee in testimony today.

Kammer told the House Science Subcommittee on Technology that international standards for products, processes and services are increasingly important to the U.S. economy due to the quickening pace of technological innovation and the globalization of trade. "At a time when science and technology are driving the design of new products and the improvement of already available products and services, cycle times for everything from jet engines to computers are being reduced dramatically," Kammer said.

"There is extreme pressure for standards to keep up with, and to permit the advancement of, products and services," he added.

"The globalization of trade has clearly changed the face of commerce... Standards that may serve as barriers to trade take on monumental importance," he told the subcommittee. "Unfortunately, we are beginning to hear more and more about instances in which American firms are finding the gates to trade being swung shut as compliance with standards developed overseas becomes the price of admission." Kammer told the panel that "of equal or even greater concern is the system by which conformity with these standards is determined, a system which too often puts U.S. firms in the position of having to demonstrate adherence through testing not just in the United States but by duplicate, costly and time-consuming testing overseas."

The implications are great for the economy, with the Commerce Department estimating that standards serve as barriers to trade for $20 billion to $40 billion in U.S. exports. Kammer cited several examples where U.S. companies had been put at a disadvantage through standards-related trade barriers.

"There has been a lot of talk about the New Economy. I think we had better start talking about the New Standards Economy, because whether or not this phenomenon receives public attention, it is here and it will only intensify," Kammer said. Such a strategy requires at least two critical steps, according to Kammer. First, it is crucial to achieve worldwide recognition of the technology incorporated into U.S. standards and conformity assessment procedures. Second, those U.S. standards and conformity assessment procedures need to be harmonized with those of our major trading partners through increased U.S. participation in the development and use of international standards.

"We must ensure that international standards contain strong U.S. technical input so that our products will face fewer technical barriers to trade. That's already true in some sectors, but it is the exception rather than the rule," Kammer said. He called the U.S. standards community to work together more effectively "to resolve our differences with one another to achieve a unified U.S. approach in the international standards setting. Our current do-
NIST is organizing a summit on the issue of international standards on Sept. 23 in Washington, D.C.

As a non-regulatory agency of the U.S. Commerce Department's Technology Administration, NIST promotes economic growth by working with industry to develop and apply technology, measurements and standards.


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**FQA FINAL RULE PUBLISHED; IMPLEMENTATION DATE EXTENDED**

The amended final rule for the Fastener Quality Act of 1990 - the national program to protect public health and safety by ensuring that certain nuts, bolts and other fasteners used in critical situations (such as attaching aircraft engines to fuselages) conform to specifications - has been published by NIST (see the Federal Register, April 14, 1998). In addition, the act’s implementation date is being extended 60 days until July 26, 1998. The final rule:

- Defines the procedures by which fastener manufacturers can use Quality Assurance Systems/Statistical Process Control - an in-process quality inspection of fasteners - after May 14, 1998, as evaluation by an accredited testing facility;

- Allows manufacturers to test fastener lots for FQA compliance starting May 14, 1998, in order for them to replace their non-FQA-compliant inventory with compliant stock;

- Continues the policy of allowing manufacturers to sell as non-FQA-compliant, any fasteners in inventory (all fasteners produced after July 26, 1998, must be tested by an accredited laboratory or produced by an approved QAS/SPC manufacturing facility); and

- Permits manufacturers who operate QAS/SPC fastener production lines that have not been completely certified by July 26, 1998, to list their operation as provisionally certified, as long as specific conditions are met; the official certification must be completed by May 25, 1999.

For more information on the FQA, contact Subhas G. Malghan, (301) 975-5120, <malghan@nist.gov>; or Jogindar S. Dhillon, (301) 975-5521, <dhillon@nist.gov>; fax for both (301) 975-2183. Additional information is available on the FQA page of NIST’s World Wide Web site at <http://www.nist.gov/fqa>.

**SATELLITE SIGNALS IMPROVE CLOCK SYNCHRONIZATION 100-FOLD**

Those who need to synchronize widely separated clock systems to better than a billionth of a second have only a few methods available, but a technique being developed at NIST’s Time and Frequency Division offers a new level of precision.

Tests between clocks separated by up to 2,000 kilometers have shown that they can be synchronized with an error as small as the clocks’ own timekeeping errors-in the case of the best clocks, as low as 50 to 80 picoseconds (one-trillionth of a second) over the course of a day. Such precision is needed by scientists in radio astronomy, deep-space tracking and guidance of spacecraft, and international coordination of timekeeping systems.

The new method uses signals from Global Positioning System satellites in a manner borrowed from the geodetic community (which is devoted to precise distance measurements on Earth). Instead of being based on the time code transmitted by the satellites, the technique used the carrier frequency by which the code is sent. The carrier frequency is about 1,000 times higher than that of the time code, and thus can be resolved up to 1,000 times better in theory. So far, in practice, results are about 100 times better than using the time code and seem to be limited by the accuracy of the clocks being compared.

Copies of two papers (nos. 10-98A and 10-98B) describing the work may be requested from Sarabeth Harris, MC 104, NIST, Boulder Colo. 80303-3328, (303) 497-3237, <sarabeth@boulder.nist.gov>.

**THE NEW SRM CATALOGS ARE IN!**

Manufacturers and analytical laboratories in nearly every industrial sector rely on NIST Standard Reference Materials as specialized measurement tools. So, for many in U.S. industry, the issuance of an updated NIST SRM Catalog is a significant event that parallels the eagerly awaited arrival of a department store catalog by a home shopper. After all, both are trusted sources for the items that keep things running smoothly.

The newest edition of the NIST SRM Catalog includes recently developed materials - such as those designed to validate analytical measurement results needed to ensure compliance with nutrition labeling laws - as well as long-relied-upon standards such as NIST’s Cast Iron SRM, which has changed little since the agency’s predecessor, the National Bureau of Standards, adopted it from the American Foundrymen’s Association in 1906.

Each SRM includes a physical sample that has been well characterized and analyzed by NIST scientists and a certificate that gives analytical values, handling instructions and other details about the SRM. One example of an ever-popular SRM is Lipids in Frozen Human Serum (SRM 195a), which helps medical laboratories report accurate values for cholesterol tests.

To request a copy of the new 180-page NIST Standard Reference Materials Catalog and price list, phone (301) 975-6776, fax a request to (301) 948-3730 or send e-mail to <srminfo@nist.gov>. Information about NIST SRMs also is available on the World Wide Web at <http://ts.nist.gov/srm>.

**DOCUMENT RECYCLES MULTIMODE OPTICAL FIBERS EXPERTISE**

Single-mode optical fibers have been preferred by the optical communications industry for some time because their wider bandwidth can transmit information faster. Multimode optical fibers, however, are staging a comeback, particularly in local area networks.
where their limited length/bandwidth product is not necessarily a drawback. Many younger optical fiber engineers have spent most of their careers dealing with single-mode fibers and are not as familiar with multimode fibers.

To help remedy this situation, NIST has published a Bibliography of NIST Publications on Multimode Optical Fibers. It is hoped that the publication will familiarize today's engineers with earlier NIST work on the metrology of multimode fibers and related components - much of which was carried out in collaboration with the Electronic Industries Association and its offshoot, the Telecommunications Industry Association.

What readers of the new bibliography will find is that many of the measurement problems facing today's users of multimode fibers are identical to those encountered 20 years ago.

For a copy of the bibliography, contact Sara Metz, MC 815, NIST, Boulder, Colo. 80303-3328, (303)497-5187, <smetz@boulder.nist.gov>.

NEW NIST CALIBRATION SERVICES USERS GUIDE AVAILABLE

As any manufacturer knows, accurate measurements are essential to producing a high-quality product. In order to help U.S. industry produce the best goods in the world, NIST provides a host of calibration services to assure that manufacturers have access to many of the best measurements in the world. NIST researchers perform a wide variety of calibrations ranging from dimensional measurements to time and frequency measurements. A newly updated Calibration Services Users Guide describes all NIST calibration services with additional information on policies and ordering procedures.

This revised NIST Special Publication 250 reflects significant changes since the last edition. The guide provides a detailed description of each measurement service and identifies a large number of NIST technical experts who can be contacted for information on services or measurement problems. A separate fee schedule, SP 250 Appendix, is available also.

To request a copy of the new Calibration Services Users Guide and fee schedule, phone (301) 975-2002, fax a request to (301) 869-3548 or send e-mail to <calibrations@nist.gov>. The guide is available soon on the World Wide Web at <http://ts.nist.gov/calibrations>.

TOLL-FREE WAY TO SEND METROLOGY-RELATED TRADE BARRIERS PACKING

As an initial step toward removing any measurement-related barriers to trade between the United States and the European Union - and eliminate "double testing" of each other's products - NIST has established a toll-free phone number, (888) 591-TEST (591-8378). The new number provides a simple means of reporting concerns with existing policies that determine how the two blocs accept or reject each other's measurements. Especially encouraged to call are American companies who have been required to repeat a measurement in the EU or have it conducted solely by an EU member laboratory because U.S. measurements were unacceptable.

While the new phone number allows for measurement discrepancies in any area to be reported, NIST is particularly interested in hearing about problems in five areas: avionics, environmental protection, pharmaceuticals and medical devices, electromagnetic compatibility and interference, and occupational health and safety.

The information collected will be evaluated to determine if acceptance decisions were based on significant differences in measurement capabilities between U.S. and EU labs. If differences are reported, NIST and the EU will conduct the necessary measurement comparisons to eliminate them. To keep new compatibility problems from occurring as technology advances, the results of all comparisons will be incorporated into an international comparison database. This database will provide an online expert system for answering inquiries on traceability to standards laboratories, international equivalency of measurements and other compatibility issues.

The NIST-led international database project is expected to take three years to complete. Concurrently, the standards organization EUROMET is developing the database's European portion by identifying and defining measurement differences between the standards bodies of its members.

Along with the toll-free phone number, those wishing to report measurement differences to NIST can send their correspondence by electronic mail to <cola@nist.gov>.

GET UP TO SPEED ON INTEGRATION OF MANUFACTURING APPLICATIONS

Providing managers, engineers, systems integrators, software developers and researchers with a coherent, up-to-date perspective on current and emerging approaches to integrating manufacturing software applications is the aim of a set of "tutorials" that NIST will offer on Sept. 9-10, 1998, at its Gaithersburg, Md., campus.

Featuring case studies and technology demonstrations, the two day program, "Information Technology for Manufacturing & Engineering: Integration Tutorials," will cover such topics as distributed design, integration frameworks, virtual prototyping, manufacturing simulation, information modeling, product data exchange and collaboration technology. In the opening session, Peter R. Sferro, senior staff technical specialist at the Ford Motor Co., will describe his company's growing emphasis on information technology and its expectations for suppliers. A special session will survey emerging information technologies, such as intelligent agents. Another will describe relevant research opportunity available through the National Science Foundation, NASA and the Defense Advanced Research Projects Agency as well as NIST's Small Business Innovation Research Program, Advanced Technology Program and Manufacturing Extension Partnership.

The tutorials are organized by NIST's Systems Integration for Manufacturing Applications Program. The five-year-old SIMA Program coordinates NIST's manufacturing-related participation in the federal government's computing, information and communications initiatives. Carried out with industry partners, SIMA projects develop prototype information exchange and interface standards that enable integration of manufacturing software applications and interoperability within and across enterprises.

For information on the technical content of the tutorials, contact
James Fowler, (301) 975-3180, <james.fowler@nist.gov> or Howard Moncarz, (301) 975-5070, <howard.moncarz@nist.gov>. Registration information is available from Lori Phillips, (301) 975-4513, <lori.phillips@nist.gov>.

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TINY BUBBLES MAY BE KEY TO FUTURE ELECTRONICS

The astounding cornucopia of electronic devices introduced over the past few years - from wonderfully complex toys to powerful home computers - owes much to industry's relentless push to make integrated circuits ever smaller. But physics eventually imposes limits. What's needed, say researchers at Texas Instruments of Dallas, is a better integrated circuit wire insulator.

As part of an Advanced Technology Program project, co-funded by the National Institute of Standards and Technology, TI researchers teamed with NanoPore Inc., a small New Mexico company, to learn how to make integrated circuits with a novel insulator made of a glassy material suffused with microscopic bubbles. "Xerogel" is mostly air, nature's ideal insulator, trapped in billions of tiny pores, so it has the same, nearly ideal, insulating properties. It's so effective that it could insulate a future computer chip with a mile of wire crammed into a space the size of a fingernail, according to TI.

TI recently combined xerogel technology with a new technique for replacing conventional aluminum wires in integrated circuits with copper, a better conductor. The result: a breakthrough microchip manufacturing technology that could mean a tenfold increase in microprocessor speed and vastly more powerful computers, cellular telephones, factory control systems and other products. Contact: Michael Baum, (301) 975-2763.

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NIST HELPS SLICE YEAR 2000 PROBLEMS DOWN TO SIZE

If you're looking for a handful of needles in a haystack it can really help to know where not to look. That's the basic idea behind a set of algorithms developed at the National Institute of Standards and Technology that have recently been incorporated into a commercial software product made by Blair and Associates, Inc. of Hanover, Md. The new product, called the BAI Slicer, is designed to help computer programmers find "Year 2000" problems in programs written in the C language.

Programs written in C - like those for controlling an automatic teller machine or a piece of manufacturing equipment - can contain tens of thousands to hundreds of thousands of lines of computer instructions. The NIST algorithm can be used to figure out which of these many lines of instructions are not related directly or indirectly to a specific function like the current date. In practice, this allows programmers to safely ignore up to 90 percent of a computer program and concentrate on the 10 percent that may contain commands that need changing to conform to four-digit year dates after the year 2000. Contact: Anne Enright Shephard, (301) 975-4858.

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TECH TRIVIA

In 1922, National Bureau of Standards (now NIST) scientists demonstrated the first radio receiver that could be plugged into an ordinary household electrical outlet. Based on a simple crystal detector set, the NBS work fueled a national craze for home radios. By 1923, such a large number and variety of sets were being built that NBS called for immediate standardization of radio apparatus and service.

In August 1959, scientists from the National Bureau of Standards (now NIST) helped preserve historical documents, including photographs, newspaper articles and construction records, which were sealed in the cornerstone of the east front of the U.S. Capitol building in Washington, D.C.

In 1959, researchers at the National Bureau of Standards (now NIST) worked with the Bureau of Engraving and Printing to develop a tougher, longer lasting type of paper for money. The NBS Paper Section tested paper for folding endurance, crumbling, air permeability, and resistance to abrasion and soiling.

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BENEFITS OF NIST DATA ARE WORTH 10 TIMES THE COSTS

The U.S. ceramics industry derives substantial economic benefits from NIST data evaluation services, according to an independent study by TASC Inc. The benefit-to-cost ratio of the Ceramic Phase Equilibria Program is estimated at 10 to 1, and the internal rate of return (commonly called the social rate of return when calculated for public-sector research) is estimated to be at least 33.5 percent. Both estimates are conservative. The results imply that the NIST program "is pursuing a socially valuable activity," the study concludes.

Phase equilibria diagrams help ceramic component manufacturers understand the effects of temperature, pressure and material concentrations on the processing and properties of ceramic products. In the CPEP, various data are evaluated to ensure accurate diagrams and that the overall data meet all industry R&D needs. The evaluated databases help manufacturers avoid duplicative research costs and efficiently overcome production difficulties.

For example, the study notes that accurate phase diagrams were essential in developing the most durable material composition for a component of the catalytic converters that now control emissions in 500 million cars and trucks worldwide.

The TASC study focused on phase diagrams for advanced ceramics used in structural applications, such as cutting tools and heat engines. The benefit data were collected in telephone interviews with representatives of 28 companies ranging from large corporations to smaller specialty ceramic firms.

To request a single copy of Economic Assessment of the NIST Ceramic Phase Diagram Program, contact Denise Herbert, A1005 Administration Bldg., NIST, Gaithersburg, MD 20899-0001, <denise.herbert@nist.gov>. The study also is available on the World Wide Web (as an Adobe Acrobat file) at <http://www.nist.gov/director/programo/report98-3.pdf>.

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SEVEN TRAPPED IONS MAKE A BETTER CLOCK

The key to improving atomic timekeeping is the ability to better determine the frequency of the atoms involved. The more atoms that you have and the longer you can observe them, the better that
ability grows. Currently, the best cesium-beam clocks are limited by the fact that atoms speed through the apparatus at bullet-like velocities, giving the scientist only a fleeting glance at each one. A new technique called the atomic fountain gently tosses the atoms straight up and lets them fall back through the measuring apparatus. This extends the observation time and greatly improves the clock's performance.

NIST’s Time and Frequency Division in Boulder, Colo., is studying a promising alternative: trapping the atoms in a nest of electromagnetic waves and then laser cooling them to near absolute zero. This would allow the atoms to be scrutinized for much longer periods than are currently achievable. In addition, trapping and cooling many atoms instead of just a few will greatly strengthen the signal.

NIST researchers have succeeded in trapping seven mercury atomic ions and examining them for up to 100 seconds at a time. This allows their characteristic frequency to be determined with an accuracy and precision that approaches the best results yet obtained from atomic fountains. Hopefully, the technique can be extended to collections of several dozen ions, so that the next generation mercury ion clock may surpass even the cesium fountain's performance.

A paper, no. 12-98, describing the work is available from Sarabeth Harris, MC 104, NIST, Boulder, Colo. 80303-3328, (303) 497-3237, <sarabeth@boulder.nist.gov>.

PARTNERS CREATE NEW DETECTOR FOR FIBER POWER MEASUREMENTS

Scientists at NIST, Motorola Inc., and Boulder Metric Inc., have designed and built an optical detector that can be used for the calibration of optical fiber power meters that incorporate various types of fibers and fiber connectors. The new device provides a convenient means for high-accuracy optical radiation measurements where a large numerical aperture is needed.

The detector was evaluated at NIST’s calibration facility and then tested by Motorola in a production measurement environment. The three partners believe the detector could serve as a viable commercial product for many U.S. businesses that manufacture and measure fiber optic/optical communication test equipment.

Technical information is available from John H. Lehman, MC 815.01 NIST, Boulder, Colo. 80303-3328, (303) 497-3654, <lehman@boulder.nist.gov>. A paper, no. 11-98, explaining the detector is available from Sarabeth Harris, MS 104, NIST, Boulder, Colo. 80303-3328, (303) 497-3237, <sarabeth@boulder.nist.gov>.

NIST AND ASTRALUX EXTEND CRADE ON GALLIUM NITRIDE FILMS

NIST and Astralux Inc., of Boulder, Colo., recently signed a document extending their cooperative research and development agreement to process gallium nitride films on silicon carbide and sapphire substrates for use in industrial devices. Gallium nitride and its alloys are important to NIST because they can be made into light-emitting diodes and diode lasers in the green-to-ultraviolet range of the spectrum. Industrial interest is high because of applications in display technology, optical memory and specialty detectors and transistors.

Building upon work conducted under the original NIST/Astralux partnership, the CRADA extension will enable NIST personnel to develop a basic understanding of gallium nitride processing and device development. The new project will focus on the development of transistors designed for high temperature operation and solar-blind ultraviolet detectors. The CRADA partners hope to take these devices from the current exploratory stage to a successful demonstration.

For more information, contact Kris Bertness, NIST, MS 815.04, Boulder, Colo. 80303-3328, (303) 497-5069, <bertness@boulder.nist.gov>; or Jacques Pankove, Astralux Inc., 2500 Central Ave., Boulder, Colo. 80301-2845, (303) 413-1440, <pankove@boulder.colorado.edu>.

NEW REPORT HIGHLIGHTS NIST’S 1997 IT ACCOMPLISHMENTS

Measurement science, or metrology, has been an important factor in the advancement of commerce and the development of useful, standard products in almost all technical areas. Mastering measurements for information technology is necessary before a technical infrastructure for IT will be complete. A new report, Information Technology Laboratory Technical Accomplishments 1997, describes some of the areas in which NIST’s Information Technology Laboratory is working with industry to develop this much needed technical infrastructure.

Among other goals, ITL works to improve the quality of software, overcome barriers to the interoperability of emerging network technologies and develop ways to measure the performance of high performance computing and communications systems. ITL researchers also strive to develop safeguards for the integrity, confidentiality, reliability and availability of information resources by providing leadership, for example, in areas of emerging standards, such as public key infrastructure, role-based access control and advanced encryption.

In addition to descriptions of active programs and projects, the report highlights industry interactions and collaborations, discusses international activities and lists patents, publications and electronic resources.

The information in this publication is available on the Web at <http://www.itl.nist.gov> under “ITL Presents.” For a printed copy, send a self addressed mailing label to Elizabeth Lennon, B263 Technology Bldg., NIST, Gaithersburg, Md. 20899-0001, or email your address as it would appear on a mailing label to <elizabeth.lennon@nist.gov>.

MEASUREMENTS GO “DOWN THE TUBES”

Measurement science has gone down the tubes. But the descent is only temporary - just long enough for National Institute of Standards and Technology researchers to help the U.S. Navy measure the missile tubes encased in the hulls of its submarines.
Preparing for a major upgrade of the vessels’ ship-to-shore missile systems, Navy engineers called on NIST measurement experts to evaluate methods for measuring the bore size of existing tubes, which are 7.2 meters (24 feet) long and 0.6 meter (2 feet) in diameter. The upgrade entails removing retaining rings that had been inserted into the tubes for holding Tomahawk missile capsules. The additional space is needed to accommodate the metal capsules that will house the Tomahawk’s replacement, the NTACMS, a significantly larger missile.

Accurate measurements of the bare missile tubes, explains NIST precision engineer Steven Phillips, are key to setting the capsule’s manufacturing specifications and dimensional tolerances. A mismatch might necessitate dry docking a submarine and reboring its missile tubes - a costly process that the Navy aims to avoid.

Phillips and other members of his team made several suggestions for ensuring the reliability of the Navy’s measurement process. To account for uncontrollable influences on accuracy, NIST mathematician Craig Shakarji ran thousands of simulations, resulting in a Navy adopted procedure for determining the level of uncertainty in bore size measurements. Contact: Mark Bello, (301) 975-3776.

HOT OFF THE PRESS! GET YOUR METRIC POSTER HERE!

Four new publications from the Metric Program at the National Institute of Standards and Technology offer lots of fun and useful metric tidbits, from a recipe for metric cookies to definitions of all the fundamental metric units. The NIST Metric Program, which coordinates metric transition activities of all federal agencies, is offering a new poster and three brochures to help educate Americans about the metric system.

A large colorful wall poster defines each of the seven metric based units with information on related metric units and all the metric prefixes from “yocto” to “yotta,” plus many common conversions. A color brochure, titled “A Brief History of Measurement Systems,” includes a smaller version of the wall poster and tells how measurement systems evolved in early cultures.

The second brochure, “The United States and the Metric System,” includes frequently asked questions and answers. A subsection, “Metric in the Kitchen,” covers conversions for cooking and includes a metric recipe for chocolate chip cookies. Also available is a style guide on the metric system. Designed for the news media, it is also useful for teachers and others who express metric units in writing. To request copies of these publications, fax your request to the NIST Metric Program, (301) 948-1416. Two of the brochures also are available on the World Wide Web at <www.nist.gov/metric>. Contact: Linda Joy, (301) 975-4403.
SUMMARY REPORT OF NIST/MSC WORKSHOP ON
TRACEABILITY IN LENGTH

Dennis A. Swyt, Chief
Precision Engineering Division
National Institute of Standards and Technology

Abstract: The National Institute of Standards and Technology (NIST) conducted a workshop on Feb. 4, 1998, on U.S. industry needs in the area of traceability in length measurements. The workshop focused on issues which U.S. manufacturing companies, particularly smaller ones, may have in meeting their need to demonstrate traceability of their dimensional measurements to the international and national standard of length. The workshop was attended by nineteen persons representing a cross-section of organizations of the type with strong institutional interests in the issue; ten were from various organizations in the private sector and nine from various units of NIST. The conclusion of the workshop was that there is a need for education, training, and dissemination of information about the new requirement in traceability for statements of uncertainty. In addition, there is a role for NIST in facilitating, leading, or providing an element of the education, training, or dissemination of information regarding traceability and measurement uncertainty associated with that need.

Editor’s Note: The full meeting report is available by contacting Dennis Swyt at the address shown below.

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QUESTIONNAIRE ON ISSUE OF U.S. INDUSTRY NEEDS FOR TRACEABILITY IN LENGTH

The National Institute of Standards and Technology (NIST) conducted a workshop on Feb. 4, 1998 on U.S. industry needs in the area of traceability in length measurements with the NIST summary report of that workshop appearing here.

The workshop was in response to a panel of the National Academy of Sciences which reviews the technical programs of NIST and which had recommended that NIST’s Precision Engineering Division examine the mechanisms by which American companies currently establish the traceability of length measurements and whether such companies might have issues and problems in doing so that NIST might contribute to resolving.

Workshop attendees addressed three issues: Is there a problem of U.S. companies, particularly small- and medium-size companies, attaining traceability in their length dimensional measurements? What is the problem? Is there a role for NIST in the solution of the problem?

As further input to NIST’s examination of the issue of U.S. companies attaining traceability, this questionnaire allows you an opportunity to respond, if you wish, to those same questions. We invite you to do so by completing the questionnaire, either electronically by logging in to the NIST website (URL address: <http://www.mel.nist.gov/div821>); or sending a hard-copy of the completed questionnaire by post-office mail to Dennis Swyt, NIST, Room A109 Building 220, Gaithersburg, MD 20899 or by FAX to Dennis Swyt at 301-869-0822).

Name: ____________________________
Organization: ______________________
Street: ______________________________
City/State/Zip _______________________
Phone/FAX/Email Address ____________

Is there a problem? □ YES □ NO
The most significant aspect of the problem as I see it:
Is there a role for NIST in solving the problem?
□ YES □ NO
The part that NIST might play in helping solve this problem:

Other comments: ______________________
______________________________
______________________________
______________________________

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AMERICAN PHYSICAL SOCIETY
Klaus Jaeger, Liaison Delegate

The March, 1998, meeting of the American Physical Society took place in Los Angeles, CA from March 16 to 20. Once again, over 5000 people attended the conference with over 30 parallel sessions scheduled from Monday through Friday. Several informative sessions were organized for people interested in measurement science and related topics.

The April meeting was scheduled for Columbus, OH, and ran through the weekend for cost reduction reasons.

Both conferences offered complimentary audio visual equipment with an overhead projector and an additional slide projector for invited sessions. Costs for additional audio-visual equipment sometimes have to be carried by the speaker, another way of reducing conference costs.

IEEE I&M
D. W. Braudaway, Liaison Delegate

THE MAY IMTC CONFERENCE

The 1998 IMTC (Instrumentation and Measurements Technology Conference) was held in St. Paul, MN, May 18-21, 1998. The conference proceedings fill 1410 pages. The plan for issuing a CD rather than printed proceedings was not realized, principally because of requirements for paper copies by the IEEE Institute for sale. This requirement is causing some delay in using CD publications but is being worked on.

Registration for the conference only was 308; 100 attended the Tutorials held the day before the conference and 37 attended an associated advance workshop. The number attending the conference had not been finalized but is approximately 350 and fewer no-shows than usual occurred. Well over 150 papers were submitted for transactions review. Various aspects of metrology and sensors were covered. Attracted by the St. paul area, a number of papers on medical measurement papers were presented.

The conference offers opportunity for the I&M Society Awards Ceremony. This year, two were honored:

Ed Richter, Society Service Award for his years as Transactions Editor and Service to the I&M Society.

David W. Braudaway, Society Award with citation “For contribution to the field of electrical engineering in the development of primary standards, techniques and equipment to provide and improve precision measurements.”

The Society Service Award has regularly been given, but the Society Award has been made only a few times in the past 20 years.

I&M Society AdCom Meeting

Discussion of improved liaison with NCSL was discussed. Covering of meeting announcements in each other’s newsletter/magazine was well received. both I&M and NCSL now have the obligation of insure the editors receive timely meeting and call for paper information. The following Call for Papers for the 1999 Conference in Italy is submitted.

CALL FOR PAPERS

The 16th IEEE Instrumentation & Measurement Society Technology Conference

Vencie, Italy
May 24-26, 1999

“Measurements for the New Millennium”

The conference will cover all aspects of theory and practice of metrology, measurement technologies, instrumentation and related applications. Prospective authors should submit an extended abstract to arrive no later than October 9, 1998.

In addition to the formal paper presentations, a competition of crafts and demonstrations will be held during the meeting concerning possible applications and technological solutions for all manner of conference topics. It is intended to show the use of measurement technologies, and to entertain visitors in any application area, such as robotics, feature recognition, and so forth. Different prizes will recognize excellence in various categories, including the funniest.

Email or FAX demonstrations by October 9, 1998 to:

Prof. Vincenzo Piuri
IMTC/99 Program Co-Chair
Dept. of Electronics and Information
Politecnico di Milano
Piazza L. da Vinci 32
Milano, Italy 20133
+39 2 2399 3606
FAX +39 2 2399 3411
Email: <piuri@elet.polimi.it>

For conference information and paper submission forms, contact:

Robert Myers
IMTC/99 Conference Coordinator
3685 Motor Ave., Suite 240
Los Angeles, CA, USA 90034-5750
310 287 1463
FAX 310 287 1851
Email: <bob.myers@ieee.org>
Website: <http://www.ims.unico.it/conferences/conferenze/1999/imtc>

I&M MAGAZINE DEBUTS

The winter 1997 I&M Newsletter, final issue, arrived in February and was followed shortly by Volume 1, No. 1, March 1998 I&M Magazine, its initial issue. The transition to Magazine is the result of several years of effort. As has been the practice towards the change, both of these contain a couple of technical papers:
Liaison News

Newsletter:
Having Trouble Receiving WWV? Try an All-Wave Antenna -
from 1936.
The World Wide Web Leads a Revolution in ATE Programming
Environments.

Magazine:
Your Successor to the Wheatstone Bridge? NASA's Anderson
Loop.
Robotic Assistants for Aircraft Inspectors.

Other features of the two are similar; advertising for future con-
ferences and news of interest, but a full color magazine format
instead of black/white is featured. The magazine is planned to
grow.

NEWSWORTHY IEEE INSTITUTE

For several years, the IEEE Institute has had some difficulty mat-
ing obligations with income and has relied on some draw from
reserve to maintain operations. For the year past, however, the
income has been above that needed for obligations, a good sign.
In achieving this, a considerable streamlining of the operation,
with a goal of highest quality, has been achieved.

MSC
Chet Crane, Liaison Delegate

The twenty-seventh Measurement Science Conference held in the
Pasadena Convention Center in Pasadena, California, February 4-
6 this year was very successful. The two day seminars that were
presented by the NIST on Monday and Tuesday before the Con-
ference were well attended although one of those scheduled was
canceled due to low preregistration.

The Keynote address was presented by a recent retiree from the
NIST and a friend of NCSL as well as MSC, Stanley D. Rasberry.
Stan's appropriate talk to kick off the "Measurements in the ISO
Environment" technical program was titled "What does ISO Re-
ally Mean?".

There were multiple tracks with many excellent papers presented.
The "Algie Lance Best Paper Award" was presented to John Barr
of Hughes Aircraft for his paper titled "Capturing A Sub Micro-
Radian".

The Thursday luncheon speaker was Steve Ford, son of President
G. Ford. He provided an interesting look "Inside the White House".
The Friday speaker was James McCormick whose interesting pre-
sentation ended with the exciting accomplishment of landing on
the North pole by parachute.

A highlight of the Conference was the awarding of the "Andrew
Woodington Award". This award is presented to an individual
who in the opinion of the Woodington awards committee, made
up of members of the measurement community not affiliated with
the MSC, truly represents the highest level of professionalism
in the field of measurements. This year the award was presented
to Mr. Patrick Nolan. Patrick Nolan received his electrical engin-
neering degree in 1960 from Gonzaga University. He joined the Boeing
Development Center near Seattle at that time, as an Associate
Engineer. While at Boeing, Pat continued his studies and received
his MSEE from the University of Washington in 1963. In 1963 he
left Boeing and joined Lockheed Company in Sunnyvale, Califor-
nia as an Instrumentation Engineer for RF and Microwave Cali-
bration services. Pat has stayed with this department and is pres-
ently a Senior Staff Engineer in that department. Pat is active in
several professional societies including MSC, NCSL, and ARPTG.
With a solid 35 year experience in RF and Microwave calibration
technologies, Pat has grown into a national resource for that
technology. He has served on a number of NCSL committees.

This year there were five deserving applicants for the MSC schol-
arship awards and the Board was unable to decide on a least de-
serving so all were presented with equal awards. The ballots
were counted and the 1999 Board members are John Bowman, John
Schultz, Steve Phileger, Mike Magin, Nidal Kerdinya, Alan Ho, and
Roger Hickey. Nidal Kerdinya is the President, Alan Ho the Ex-
ecutive Vice President, and John Schultz the recording Secretary.

The MSC has voted to establish a best session award, this will be
called the "Joe D. Simmons Best Session Award" and is intended
to honor Joe for the work he accomplished and for the outstand-
ing person that he was. The first award is to be made at the 1999
MSC Conference to be held at the Disneyland Hotel in Anaheim,
California next January 28 & 29. This award is the equivalent to
the "Algie Lance Best Paper Award" and will have some mon-
etary value in addition to the respect due the winner.

The theme for the 1999 Conference is "A Century of Measure-
ments". The program is nearly filled. If anyone would like to be
a part of the technical presentations please contact John Gerhard,
Programs Committee Chair, at (562)922-3206 or E-mail at
<joh.f.gerhard@boeing.com>.

A2LA
Ramona Saar, Liaison Delegate

Growth of A2LA's Calibration Program

The A2LA accreditation programs continue to experience steady
growth. This growth is particularly rapid in the calibration area.
The increase in applications in the calibration field is keeping
A2LA Laboratory Services Officer, Thomas Adams, very busy.

Mr. Adams reports that as of April 8, 1998, there are seventeen
(17) accredited calibration laboratories and an additional forty-
three (43) calibration laboratories enrolled in the process.

As the field manager for the calibration laboratories, Mr. Adams
has primary responsibility for processing incoming calibration
applications and guiding the laboratories through the accredita-
tion process. Mr. Adams also tracks all national and internal mea-
surement audit activities conducted by A2LA, reviews all requests
for waiver of the A2LA Calibration Accreditation Policy submitted
by all laboratories, coordinates the revisions of A2LA's cali-
bration-specific requirements documents, and attends metrology
community's conferences. A significant amount Mr. Adams's time
is also dedicated to answering the many calibration questions
A2LA receives on a daily basis.

In Search of Qualified Calibration Assessors...

As always, A2LA is interested in recruiting assessors in all fields
of calibration as part of our continuing effort to meet the demands
of the rapid growth in the calibration field. Calibration assessors
must be peer experts knowledgeable about the laboratory busi-
ness 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.

**News on A2LA’s Testing Laboratory Accreditation Programs**

As of April 8, 1998, A2LA has accredited 1002 testing laboratories. A2LA has signed an MOU with Ford, Chrysler and GM to accredit testing laboratories under a new Electrical Automotive EMC program. This program complements our already existing EMC accreditation program recognized by the FCC.

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**NATIONAL ASSOCIATION FOR PROFICIENCY TESTING**

Chuck Ellis, Liaison Delegate

Fellow Metrologist, please review the following.

Hopefully by now you have heard about the National Association of Proficiency Testing / NAPT. For the last several months we have been busy putting together the framework to provide you with professional administration for proficiency tests. You can be assured that by participating in a NAPT-sponsored Round Robin, you will receive the utmost professionalism, insure your confidentiality, while providing you with the expertise you expect from a well-managed Round Robin. If you would like more information about NAPT please visit our website <www.proficiency.org>. Feel free to call or fax your request for prompt information about the status of NAPT-sponsored round robins or other information relative to Metrology Proficiency Testing.

One particular area new to NAPT’s website, that we are very excited about, is our metrology discussion forum. In the next couple of days we will have all the bugs worked out where fellow metrologists can ask questions related to their particular concerns in the field of metrology. NAPT has sought experts from around the country who will be monitoring the discussion forum and answering questions online. Be sure in the upcoming days to checkout our online Metrology Discussion Forum.

**Invitation to Participate in Upcoming Proficiency Tests**

NAPT is proud to announce the following proficiency tests are now available and will be put into distribution in the very near future.

You are invited to participate in any of the following round robins.

- Thread Set plugs
- Thread Rings
- Micrometer Set
- Digital Multimeter
- Torque Wrench
- Gage Block
- Drop Indicators
- Radius Gage Set
- Pressure

In the next couple of months NAPT will be distributing the following artifacts.

- Load Cell
- Temperature
- Inductance
- Resistance
- Calipers
- Vacuum

Costs for participating in a NAPT proficiency test are $250.00 per test. An additional $100.00 is required for each additional person from your location that you would like to be included in the data analysis. Any organization that has an interest in improving their metrology methods is welcome to join a NAPT proficiency test. Remember, NAPT members receive 15% off on all fees when participating in NAPT sponsored proficiency tests.

If you would like to participate in a proficiency test not listed, please let us know, so we can put together a proficiency test that will fill your needs. If we do not have your capability information on hand, we will need this before any artifact can be sent to your organization. Please note, fees for enrollment in a proficiency test must be received before artifacts can be sent to your location. Call, write, fax, or email NAPT for more information.

Visit NAPT Web-Site for the latest schedule, upcoming proficiency tests and distribution information about all of NAPT’s proficiency tests & artifacts. NAPT address is www.proficiency.org

National Association for Proficiency Testing
NAPT
8014 Olson Memorial Highway -
Suite 167
Minneapolis, MN
(612)542-8872
Fax (612)525-1566

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**ASIA-PACIFIC METROLOGY PROGRAMME (APMP)**

Dr. A. E. Samuel, Liaison Delegate

The Asia-Pacific Metrology Programme primary goal is to develop international recognition of the region’s national and territorial measurement laboratories measurement capabilities. The past 12 months have been marked by two milestones for the Programme.

Firstly, in August 1997, APMP members formalized their commitment to achieving the objectives of the Programme through the establishment of the APMP Memorandum of Understanding. Currently, 21 national and territorial measurement laboratories have signed onto the MoU as full members, and another three laboratories have signed on as Associate members (see Table 1).

The second milestone was commemorated at the 13th APMP Committee Meeting held in Sydney, Australia, in December 1997, when APMP celebrated its 20th anniversary. As such, it is the longest
continuously-operating regional metrological group.

In October 1996, APMP took the initiative in drafting the first regional Mutual Recognition Agreement in Metrology. This initiative was subsequently taken up by the International Bureau of Weights and Measures (BIPM), and has led to the drafting of a global MRA in measurement standards, more specifically entitled "Mutual recognition of national measurement standards and calibration certificates issued by national metrology institutes." The purpose of this document is to "open the way to, and provide the technical basis for, wider Agreements related to trade and commerce."

The technical basis for the Agreement is largely the results of "key" comparisons of measurement standards maintained by national metrology institutes. As only the peak national metrology institutes around the world will be in a position to participate in the key comparisons coordinated by the BIPM, regional metrology organizations like APMP will play an important role in extending the metrological equivalence established by the BIPM key comparisons to a greater number of national metrology institutes. This will assist their memberships to participate in the global MRA in measurement. APMP strongly supports the establishment of the global MRA, which may in fact replace the need for a separate APMP agreement. The global MRA is expected to be finalized for signature by October 1999.

APMP members continue to put considerable effort into the APMP comparison program which currently covers 21 measurement areas (Table 2). Six of these comparisons have now been completed and the results are being prepared for publication in the international literature. APMP members have agreed to link future APMP comparisons by October 1999.

Another initiative was raised at the 13th Committee meeting, the establishment of a second APMP Working Group, the APMP Working Group on Metrology in Chemistry. (The first APMP Working Group covers the area of "Lasers and Dimensional Metrology"). The objective of the APMP Working Group on Metrology in Chemistry is to coordinate activities within member economies which deal with the increasingly important issue of traceability of chemical measurement. Japan has agreed to chair this Working Group.

APMP maintains close linkages with the other Regional Metrology Organizations, such as the European collaboration in Measurement Standards (EUROMET), the North American Metrology Cooperations (NORAMET), the Inter-American Metrology System (SIM), and the recently established Southern African Development Community Cooperation in Measurement Traceability (SADC MET). The Programme is also developing links into Africa and the Middle East through its new Associate Members, South Africa, Egypt and Syria.

APMP continues to work closely with the other Specialist Regional Bodies (SRBs) identified by APEC (Asia Pacific Economic Cooperation). (Note: the other SRBs are APLAC: Asia Pacific Laboratory Accreditation Cooperation; APLMIF: Asia Pacific Legal Metrology Forum; PAC: Pacific Accreditation Cooperation; and PASC: Pacific Area Standards Congress). In July 1997, together with the other SRBs, APMP participated in the 1st APEC Round Table on Standards and Conformance, convened by the APEC Sub-Committee on Standards and Conformances (SCSC). It will also be participating in the 2nd APEC Conference on Standards and Conformance being organized by the APEC SCSC and to be held in Malaysia in September 1998.

In conclusion, as in each area of standards and conformance, the priorities of trade between economies have quickened the pace of progress in metrology over the past year. APMP is committed to ensuring that its membership actively participates in this process.

Table 1: APMP Membership (April 1998)
Full Members

<table>
<thead>
<tr>
<th>Country</th>
<th>Current Organization</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>National Measurement Laboratory, CSTRO</td>
<td>NMI, CSTRO</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Bangladesh Standards and Testing Institution</td>
<td>BSTI</td>
</tr>
<tr>
<td>People's Republic of China</td>
<td>National Institute of Metrology</td>
<td>NIM</td>
</tr>
<tr>
<td>Chinese Taipei Center for Measurement Standards, Industrial Technology Research Institute</td>
<td>CMS/ITRI</td>
<td></td>
</tr>
<tr>
<td>Fiji</td>
<td>Fiji Measurement Laboratory, Ministry of Commerce, Industry, Trade &amp; Public Enterprises</td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>Standards and Calibration Laboratory</td>
<td>HKSCCL</td>
</tr>
<tr>
<td>India</td>
<td>National Physical Laboratory</td>
<td>NPL</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Puslitbang Kalibrasi Instrumenlasi Dan Metrologi, Lembaga Ilmu Pusat Bangsa Pengetahuan Indonesia KIM-LIPI</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>National Research Laboratory of Metrology</td>
<td>NRLM</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>Korean Research Institute of Standards and Science</td>
<td>KRISS</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Standards and Industrial Research Institute of Malaysia Berhad</td>
<td>SIRIM Berhad</td>
</tr>
<tr>
<td>Nepal</td>
<td>Nepal Bureau of Standards and Metrology</td>
<td>NBSM</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Measurement Standards Laboratory, Industrial Research Laboratory</td>
<td>NSL, IRL</td>
</tr>
<tr>
<td>Pakistan</td>
<td>National Physical &amp; Standards Laboratory</td>
<td>NPSL</td>
</tr>
<tr>
<td>Papua, New Guinea</td>
<td>National Institute of Standards &amp; Industrial Technology</td>
<td>NISIT</td>
</tr>
<tr>
<td>Philippines</td>
<td>Industrial Technology Development Institute, Department of Science &amp; Technology</td>
<td>ITDI, DOST</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Singapore</td>
<td>Singapore Productivity &amp; Standards Board</td>
<td>PSB</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Measurement Unit, Standards and Services Department</td>
<td>MUSSD</td>
</tr>
<tr>
<td>Thailand</td>
<td>Department of Science Service Thailand Institute of Scientific and Technological Research</td>
<td>DSS TISTR</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Vietnam Metrology Institute</td>
<td>VMJ</td>
</tr>
</tbody>
</table>

**Associate Members**

| Egypt       | National Institute for Standards NIS                                           |           |
| South Africa| National Metrology Laboratory, CSIRNML                                         | CSIR      |
| Syria       | National Standards and Calibration Laboratory                                  | NSCL      |

**TABLE 2: Current Round of APMP Comparisons**

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>COORDINATOR</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMP-1C-1-95</td>
<td>Hardness</td>
<td>Dr. Tong Cong Nhi, VMI, Vietnam. In progress. 10 participants.</td>
</tr>
<tr>
<td>APMP-1C-2-95</td>
<td>Spectral Responsivity</td>
<td>Dr. Y. B. Chung, KRISS, Korea. Measurements completed, report being prepared. 5 participants.</td>
</tr>
<tr>
<td>APMP-1C-3-95</td>
<td>RF Power</td>
<td>Mr. Michael Chow, HKSCI, Hong Kong. In progress. 12 participants.</td>
</tr>
<tr>
<td>APMP-1C-4-95</td>
<td>Vibration</td>
<td>Dr. Shing Chen, CMS/ITRI, Chinese Taipei. Measurements completed. Results circulated to participants. 8 participants.</td>
</tr>
<tr>
<td>APMP-1C-5-95</td>
<td>Line Standard</td>
<td>Dr. Seta Katuo, NRLM, Japan. In progress. 12 participants.</td>
</tr>
<tr>
<td>APMP-1C-6-95</td>
<td>DC Voltage</td>
<td>Dr. Liu Ling Xiang, PSB, Singapore. Measurements completed. Results circulated to participants. 14 participants.</td>
</tr>
<tr>
<td>APMP-1C-7-95</td>
<td>EMC</td>
<td>Dr. John Hunter, NML, Australia. Measurements completed. 3 participants.</td>
</tr>
<tr>
<td>APMP-1C-8-95</td>
<td>Capacitance</td>
<td>Mr. Greig Small, NMI, Australia. In preparation. 12 participants.</td>
</tr>
<tr>
<td>APMP-1C-9-95</td>
<td>AC/DC Transfer</td>
<td>Mr. Klaus Kujath, NMI, Australia. In progress. 10 participants.</td>
</tr>
<tr>
<td>APMP-1C-10-95</td>
<td>Power &amp; Energy</td>
<td>Mr. Mike Gibbes, NMI, Australia. Measurements completed. Report being prepared. 7 participants.</td>
</tr>
<tr>
<td>APMP-1C-11-95</td>
<td>Surface Roughness</td>
<td>Mr. Walter Giardini, NML, Australia. In progress. 9 participants.</td>
</tr>
<tr>
<td>APMP-1C-1-96</td>
<td>Humidity</td>
<td>Dr. Wang Li, PSB, Singapore. In progress. 7 participants.</td>
</tr>
<tr>
<td>APMP-1C-2-96</td>
<td>Acoustic Calibration</td>
<td>Mr. Bruce Meldrum, NML, Australia. In progress. 8 participants.</td>
</tr>
<tr>
<td>APMP-1C-3-96</td>
<td>Mass</td>
<td>Mr. Veera Tulasombat, DSS, Thailand. In preparation. 14 participants.</td>
</tr>
<tr>
<td>APMP-1C-4-96</td>
<td>Luminous Intensity</td>
<td>Dr. Michael S. Chang, ITRI, Chinese Taipei. Measurements completed &amp; results circulated for comments. 9 participants.</td>
</tr>
<tr>
<td>APMP-1C-5-96</td>
<td>Force</td>
<td>Prof. Li Qing Zhong, NIM, China. Survey report complete &amp; circulated. Series of bilateral intercomparisons have commenced.</td>
</tr>
<tr>
<td>APMP-1C-6-96</td>
<td>Laser Wavelength</td>
<td>Mr. J. Ishikawa, NRIM, Japan. In preparation.</td>
</tr>
<tr>
<td>APMP-1C-7-96</td>
<td>Radiation Thermometer</td>
<td>Dr. A. Ono, NRIM, Japan. In preparation. 8 participants.</td>
</tr>
<tr>
<td>APMP-1C-8-96</td>
<td>Thermal Diffusivity</td>
<td>Dr. A. Ono, NRIM, Japan. Brief description and invitation to participate circulated.</td>
</tr>
<tr>
<td>APMP-1C-1-97</td>
<td>Hydraulic Pressure</td>
<td>Dr. Akira Oiwa, NRLM, Japan. In preparation.</td>
</tr>
<tr>
<td>APMP-1C-2-97</td>
<td>Gas Pressure</td>
<td>Dr. A. C. Gupta, NPL, India. Invitation to participate to be circulated soon.</td>
</tr>
<tr>
<td>APMP-1C-1-98</td>
<td>Luminous Responsivity</td>
<td>Dr. J. L. Gardner, NMI, Australia. Invitation to participate circulated to members.</td>
</tr>
</tbody>
</table>
**ACIL FORMS PRODUCT CERTIFICATION COMMITTEE**

ACIL, (formerly the American Council of Independent Laboratories) has announced the formation of a Product Certification Committee. The Committee will be chaired by James G. Kendzel, Vice President, Quality Assurance, of NSF International.

The focus of the Product Certifiers Committee is to enhance the value of third-party certification to stakeholders. The Committee provides a forum, the first of its kind, to address the needs of all U.S. product certifiers. The Committee also supports the harmonization of standards to reduce redundant or additional testing often required of manufacturers conducting business internationally.

ACIL recently changed its by-laws to expand its membership to include non-profit commercial certifying and testing organizations. Joseph O’Neil, ACIL Executive Director said, “Our members understand the additional value that commercial non-profits bring to the Association. Changing our by-laws to include these firms allows ACIL to act as a unifying element for the product certification industry.”

ACIL was founded in 1937. ACIL members provide a wide range of analytical, testing, inspection, and R&D services to clients in the public and private sectors. For information, contact ACIL at (202) 887-5872, fax (202) 887-0021, or e-mail at <acil@ix.netcom.net>.

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**NATIONAL CONFERENCE ON WEIGHTS AND MEASURES (NCWM)**

Georgia Harris, Liaison Delegate

The NCWM 1998 annual meeting is scheduled for: July 12 - 16, 1998, Portland, OR.

Call the NCWM Fax-on-demand line at 1-800-925-2453 for registration information. Document #101 contains a menu of information on the system.

A Workshop on Legal Metrology for the Americas (WLMA) was held at NIST in Gaithersburg, MD, June 1, to June 12, 1998, and sponsored by the following organizations:

National Institute of Standards and Technology (NIST)
National Conference on Weights and Measures (NCWM)
Organization of American States (OAS)
Inter-American Metrology System (SIM)
International Organization for Legal Metrology (OIML).

The workshop was held in Gaithersburg at the NIST facility with the exception of a trip to the Ohio NTEP laboratory and several manufacturing facilities during part of the second week. Representatives participated from nearly every country in North America, Central America, South America, and the Caribbean. Speakers included NIST staff, Steve Malone (NE), Jim Truax (OH), Ross Andersen (NY), and representatives from weights and measures organizations in Canada and Brazil. The NCWM associate members were represented during a panel of the workshop covering the “private sector involvement in the development of OIML and NCWM regulations.”

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**National Conference on Weights and Measures - Metrology Subcommittee**

The NCWM Metrology Subcommittee had a number of topics and speakers that may be of interest to metrologists. Topics include the following:

105 Draft on Field Standard Calibration Intervals
105-1 Draft Class F Update with Weight Cart Appendix
OIML R111 Parts 1 and 2 and Type Approval (Debbie Ripley, NIST)
New Scheme for National Intercomparisons of Mass Standards (Zenia Jabbour, NIST)
Process Measurement Assurance Program (PMA)
LABMATE software demonstration, Norfox

**Metrology Training - Reminder**

Information about NIST/NCWM metrology training seminars is regularly updated and maintained on the NCWM Fax-on-Demand system as well as the NIST Internet site. Call 1-800-925-2453 and request document number 503 for the latest schedule and an application form. Classes for the Fall are not filled yet, but they fill quickly, so get your application in as soon as possible if you want to attend a metrology seminar. Special notes:

The Advanced Hands-On Mass seminar scheduled for November is for previous attendees at an Advanced Mass seminar. The next Advanced Mass Seminar is tentatively scheduled for March 1999.

Metrology training at the Basic (2 weeks) and Intermediate (1 week) level, taught in Spanish, will be added during the first three weeks of December 1998.
REPORTS FROM THE REGIONS

Steve Griffin
Region 1 Coordinator

Due to time constraints we were unable to hold a spring meeting. We will begin planning soon for a meeting in September or October. If anyone is able to offer the use of a good-sized conference room for the meeting please call me at (781) 762-9921.

Work as always, takes a lot of time. Any help that Region 1 members could give in planning the next meeting would be appreciated.

April 28, 1998
GEC Marcon-Hazeltine
Wayne, NJ
Peter Mauro
New York City
Section Coordinator

The Spring meeting of the New York City Section of Region 2 was held on April 28 at the GEC Marconi-Hazeltine Headquarters facility in Wayne, New Jersey. Welcoming statements and introductions were made by Pete Mauro, the Region 2 Coordinator. Pete noted that GEC plc, the parent Company of GEC Marconi-Hazeltine, recently completed the acquisition of Tracor, Inc, a major US defense contractor. Tracor will become part of GEC's North American Group, headed by Mark Ronald. Pete also offered all attendees the opportunity to serve as the New York City Section Coordinator, since that position is now available.

Jeff Willey of Measurements, International, was the day's first speaker. His presentation dealt with techniques, benefits, and disadvantages to consider when measuring standard resistors at a primary level. He described a voltage ratio system, as opposed to a current ratio system using pairs of standard resistors. Jeff demonstrated that, using proper techniques, it is possible to achieve accuracies in the PPM and sub-PPM range. He concluded his presentation by circulating a photograph of a setup used to measure a 1 micro-Ohm resistor at 2000 Amps, to an accuracy of less than 10 PPM.

Steve Griffin of Fluke spoke about expanding workload coverage by improving efficiency and automation, as opposed to either increasing headcount or reducing inventory. He showed that, by using a hierarchy of calibrators and automated calibration routines, a spectrum of calibrations could be performed by using a minimum of equipment. By following this concept, a volume of low-end general purpose test instruments should be serviced by a multi-function calibrator, while the higher-accuracy devices require higher-accuracy standards.

Bill Gatheridge of Yokogawa gave a presentation on a pressure-measurement system using a silicon-resident sensor. He began his talk with a primer on basic pressure units and their derivation. His first equation was F=MA, which most of the attendees probably had not seen since high school. He reviewed physical principles related to pressure measurements, and their units in both the English and the Metric system. Bill then described the evolution from u-tube manometers and their inherent inaccuracies, through digital manometers and the orders of magnitude accuracy improvements.

The last speaker of the day was Ed Fanelli of Tektronix, who described a unique service offered by Tektronix, called TRACE-IT. He emphasized that it is not a product, but a service available through the World Wide Web. Its features include instrument tracking, on-line Certificates of Calibration for audit purposes, various levels of password protection, and many others pertinent to both in-house and third-party calibration labs.

The meeting was concluded by the drawing of door prizes, generously donated by Sam Simione of Contech R/TI. The next New York City Section meeting is tentatively scheduled for early October.

Attendees:
Don Bansen
Scott Barber
Bob Chase
Felix Christopher
Ruth Deane
Margaret Dermody
Caroline DeStefano
Robert Del SIGNORE
Hearty Evard
Ed Fanelli
Bill Gatheridge
Mark Gerfin
Jack Graham
Joe Importico
Floyd Kneaster
Bill Keil
Kenneth Ko
Pete Mauro
Manny Monoz
Phil Reedor
Richard Roddis
Sam Simione
Jeff Willey
Jack Witham
Anthony Yakovich

Dayton T. Brown
Instrumentation Engineering
GEC Marconi-Hazeltine
West Caldwell Cal Lab
Telegy
GEC Marconi-Hazeltine
AIL Systems
Tektronix
GEC Marconi-Hazeltine
Tektronix
Yokogawa
Cannon Instruments
Tektronix
ATM
GEC Marconi-Hazeltine
Hewlett-Packard
Cox Edison
GEC Marconi-Hazeltine
ASCO
Yokogawa
Wavetek
Costech R/TI
Costech R/TI
GEC Marconi-Hazeltine
Costech R/TI

problems associated with high-frequency calibrations are resolved. He brought a calibrator and an oscilloscope so anyone interested could sample the features.
The Spring meeting of the Upstate NY Section of Region 2 was held on April 29 at the Rochester Airport Holiday Inn. Welcoming statements and introductions were made by Alan Brust.

Steve Griffin of Fluke Corp. was the first speaker. Steve spoke about expanding workload coverage by improving efficiency and automation, as opposed to either increasing headcount or reducing inventory. He showed that, by using a hierarchy of calibrators and automated calibration routines, a spectrum of calibrations could be performed by using a minimum of equipment. By following this concept, a volume of low-end general purpose test instruments should be serviced by a multi-function calibrator, while the higher-accuracy devices require higher-accuracy standards.

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Richard Roddis of Wavetek gave a hands-on demonstration of a new high-frequency oscilloscope calibrator, with capabilities up to 3.2 GHz. Rich noted that the unique characteristic of this calibrator is the design of the external heads, where many of the usual problems associated with high-frequency calibrations are resolved. He brought a calibrator and an oscilloscope so anyone interested could sample the features.

Jack Graham of Tektronix described a unique service offered by Tektronix, called TRACE-IT. He emphasized that it is not a product, but a service available through the World Wide Web. Its features include instrument tracking, on-line Certificates of Calibration for audit purposes, various levels of password protection, and many others pertinent to both in-house and third-party calibration labs.

The last speaker of the day was Jeff Grossman of DH Instruments who gave a presentation on automated software for pressure-measurement. He began his talk with a primer on basic pressure principles and their application in today's calibration labs. Jeff demonstrated the software by calibration of artifacts brought with him from DH. The demo was very impressive, a time-saver, and a worthwhile investment of time to investigate its application in any lab.

The meeting was concluded by the drawing of door prizes. The next Upstate Region 2 Section meeting is tentatively scheduled for late September/early October.
MEETING NOTICE
FALL MULTI-REGION WORKSHOP
(Sections of Region 3 and 4)
September 10-11, 1998
Holiday Inn Sunspree Resort
Asheville, NC
To volunteer to give a paper, or
for information, contact:
Ed Pritchard, 423-574-4261
Jay Romanek, 770-664-9797
Charles Lord, 919-483-5825

April 23, 1998
Tektronix, Inc.
Maitland, Florida
David Hall
Central Florida Section Coordinator

The Region 4 Central Florida Section of the NCSL held their
Spring meeting on April 23, 1998 at Tektronix in Maitland, Florida.
The meeting was hosted by Bob Hanson, with Tektronix, and was
conducted by David Hall, Metrologist with Lockheed Martin and
NCSL Central Florida Section Coordinator.

The meeting opened with John Joynt welcoming everyone to the
meeting and performing the introductions of the attendees. After
the introductions, Woody Tramel reported on NCSL Board activities.
He explained some of the organizational changes happening
over the past year.
The NCSL Website was also discussed. The Website can be used
to update the members on the latest news and information available and provide links to the different committees. Additionally, everyone was encouraged to complete the Benchmarking Survey which can be found on the NCSL Homepage.

Perry King with PFC spoke on the NASA Portable Josephson Voltage System. He gave background information on the NASA system, its features, operation of the system and its intended use. The unit will support nine NASA field centers with a population of more than 60 Voltage References. Additionally, it will provide traceability for DC Voltage and replace Zener Reference shipments to NIST.

John Joynt, NCSL Region 4 Coordinator with Guildline Instruments, presented a report on Year 2000 issues. John noted the problems that currently exist and what's being done about it. He explained how certain business issues such as electronic commerce, computer based delivery, financial and legal issues can be impacted.

Bob Hanson of Tektronix talked about High Speed Waveform Acquisition on Digital Storage Oscilloscopes. He explained the differences between traditional storage oscilloscope technology and Tektronix's InstaVu Acquisition software. Specifications and features were discussed and a live demo was performed.

Doug Lynde with On-Time Support spoke after lunch on how databases work and how they apply to metrology. In his presentation, he explained the basics of database management and how databases work. Doug talked about the differences between shared vs. non shared databases and the pros and cons of both.

John Joynt, NCSL Region 4 Coordinator with Guildline Instruments, delivered a speech on the construction of a high value resistor. He explained the problems encountered in the manufacturing process. Also, John gave some helpful measurement hints when high value resistances measurements are required.

Special thanks to Bob Hanson and Tektronix for allowing us to utilize their facilities for this meeting. Their hospitality was very much appreciated.

Central Florida Region smiles for the camera.

Attendees:
Terry Bales
Robert M. Clement
Ray Corn
Dwain Cox
Michael Edward Daley
Bob Friend
Jack Graham
Bill Gravina
David Hall
Bob Hanson
Bill Jordan
John Joynt
Perry King
Ed Luminik
Doug Lynde
John Martinez
R. J. Miescheid
Val Miller
John Riley
Mark Roberts
Heng Reeson
Elmore Saxon
David Stone
Woody Tramel
Southern Marketing Assoc.
Siemens
Siemens Associates, Inc.
Bell Technologies
Siemens
Honeywell
Tektronix, Inc.
United Space Alliance
Lockheed Martin
Tektronix, Inc.
Rockwell International
Guildline Instruments
PFC
Guildline
On-Time Support
Computer Science Raytheon
Computer Science Raytheon
United Space Alliance
Metrology Consultant
Tektronix, Inc.
Rockwell International
Honeywell
XOMED Surgical Products
PFC
April 7, 1998
Southern Polytechnic State University
The Center for Quality Excellence
Marietta, Georgia
Jay Romanek
Atlanta Section Coordinator

The Region 4, Atlanta Section, Spring Seminar and Workshop was held on Tuesday, April 7, 1998 on the campus of the Southern Polytechnic State University (formerly Southern College of Technology) in the Center for Quality Excellence in Marietta, GA.

Section Coordinator Jay Romanek opened the workshop with a Welcome Address to all attendees. He was followed by Greetings from Charles Limpert, acting for Dr. Gloria Pursell Director of The Center for Quality Excellence. Mr. Limpert gave a brief summary of matters relating to the Center and the activities providing support to local industry.

Attendees then received a Report on ISO 9000 Activities by Charles Limpert - Quality Systems Coordinator at The Center for Quality Excellence. Approximately 120,000 companies were registered worldwide as of January 1998, with 16,776 in the US; and 22,595 total in North America. Growth continues because of the benefits in improved product quality and competitive position. Changes to look for include: consolidating ISO9003 into ISO9001 and eliminating ISO9002, rolling QS-9000 into ISO9001, and revising to make more consistent with ISO 14000 (the environmental standard). There were 3,657 US companies registered to ISO 14001 and 3,657 to QS 9000 as of November 1997.

The next speaker, Patrick Elliott - Fluke Corporation, spoke on Process Calibration and the changes that are taking place. Improved continuous process control and higher quality with the goal six-sigma results has placed the demand for “metrologists on the factory floor”. Just-in-time manufacturing requires better measurements, previously done only in Cal Lab environments. Technicians are called to certify ‘characterized’ transducer performance to better traceable standards, and not always in the best environment. Solid-state components and microcontroller designs are helping instrument manufacturers to provide calibration tools for improved accuracy.

Asset Management was the subject of a Panel Discussion before the lunch break. Panel members Sharon Thomas - Boeing North America, Ray Lewis - Delta Air Lines, Rick Mooney - American Airlines and Paul McNamara - The Sente Group, each gave a short report on their company activities. Attendees learned the Calibration Lab has a vital role in equipment inventory management. Various methods are under review to provide efficient use of inventory with computerized database control. The Y2K question has already risen with 30 month recall intervals. Paul McNamara was able to give several examples as questions came in from the attendees.

Following the lunch break, “Y2K-Are you ready for the Year 2000?” was presented by Al Jacobson and Tom McClure of Omicron, a consortium group of major corporations. We were informed of the “reality” of the 2-digit year date code software problem, and advised to participate in our organization’s plans. Tom reported that some have had a 5-year plan to review their code in the IT and MIS areas, but what about the on-line processes that control communications, process lines, power generation and so forth? Locating faulty code and fixing may take up to 25% of the time and effort, with the “testing” consuming the remaining 75% to make sure that no other problems are created, according to McClure.

The metrologist needs to be aware of the impact on their company and develop alternatives in the event problems occur. How many instruments with microcontrollers will lose stored calibration constants? Are the new products Y2K compliant? Embedded systems will contain over 25 billion chips worldwide by 1999.

McClure suggested most Y2K faults will be annoying and trivial, but some will be mission critical/catastrophic. The answer will be to identify and prioritize critical areas, develop a strategy to correct those areas, stay informed on status of other parts of your company as well as suppliers and essential services to your group.


Tom closed by noting that the Securities and Exchange Commission (SEC) is requiring all public Corporations to notify stockholders starting with 1997 Annual Reports, of any financial cost connected with Y2K solutions.

After a short break, Jay Romanek presented each speaker with a certificate of appreciation and thanked them for their participation. Questions and comments from the attendees showed high interest in the program.

A survey questionnaire was passed out for suggested items for future meetings. The Fall Atlanta Section meeting will be held jointly with the Oak Ridge Section in a September 2-day workshop in Asheville, NC. Details will be forthcoming.

Attendees:

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<tr>
<th>Name</th>
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<td>Joe Brown</td>
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<td>Ray Lewis</td>
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<td>Gary McCarthy</td>
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<td>Kevin Mowen</td>
<td>CRYOLIFE, Inc.</td>
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<td>Daran Paden</td>
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<td>Rick Peadland</td>
<td>Robert Bosch Corp.</td>
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<td>Raymond Perham</td>
<td>Michelin Tire</td>
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<td>Troy Ragardless</td>
<td>Dist. Rep. US Senator, Max Cleland</td>
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<td>Scientific-Atlanta</td>
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<td>Myrna Richmond</td>
<td>NACOM Corp.</td>
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<td>Jay Romanek</td>
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<td>Mike Smith</td>
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<td>Sharon Thomas</td>
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<td>Eric Cooke</td>
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The Huntsville Section of Region 4 supported a presentation by the NCSEL on "Best Commercial Practices" for the Department of Defense Consolidated Electronic Test Equipment Listing (DODCEL) Joint Working Group (JWG). The meeting was held at the Radisson Inn in Madison, AL on Tuesday May 19, 1998. This year's DODCEL JWG meeting was hosted by the US Army TMDE Activity at the US Army Aviation and Missile Command Redstone Arsenal, AL.

DODCEL is a listing of high density, high cost electronic test equipment (ETE), calibration equipment and metrology standards, available via open government contracts. In addition, DODCEL identifies future ETE contracts and recently expired ETE contracts. The open and future contracts can be utilized by DOD and other agencies to facilitate purchases resulting in savings in cost and acquisition time. The DODCEL JWG is comprised of representatives from all branches of DOD (Army, Navy, Air Force, Marines, NSA, FAA, etc.) who meet yearly to discuss their common test equipment and calibration standards requirements.

With the shift within the DOD from MIL-Specs products to COTS products and the move to outsourcing of the tri-services calibration missions, the DODCEL JWG wanted to have the NCSEL bring their professionals to discuss Best Commercial Practices pertaining to calibration and outsourcing.

The DODCEL JWG meeting was called to order by Robert Dubois, Deputy Executive Director for TMDE. After his opening comments, Mr. Dubois introduced Dr. Westmoreland, Director of TMDE Engineering and Acquisition, to moderate the NCSEL session for the day. Dr. Westmoreland in turn introduced Bill Quigley President of NCSEL.

Bill Quigley presented the NCSEL to the audience. Bill discussed the mission, the makeup, and the current direction of NCSEL. Bill outlined the topics of discussion for the Best Commercial Practices morning session covering Calibration, Outsourcing, and Standards and for the afternoon session covering an open forum round table discussion. Bill thanked Charlie Motzko and Clint Plant for their efforts in putting the session together.

Bill Quigley turned the session over to the three speakers discussing the Calibration topics.

Tom Kimbrell, Staff Metrologist of Bell Technologies discussed issues pertaining to calibration. His message to the audience was that if the government is going to outsource their calibration missions, a clear and defined statement of work specification is a must. Tom further added, the government needs to work closely with the potential bidders to make sure both parties have a clear understanding what is expected from each.

Tony Skufca, Metrology Manager, Newark Metrology Center of Wyle Labs, discussed the current status of their calibration support contract with the Air Force. Tony also reiterated Tom Kimbrell's thoughts on an exact statement of work for any outsourcing efforts.

Tony Rushin, Account Manager of the Sente Group, discussed issues involved with calibration equipment management. Tony discussed Sente's asset management model as it pertains to calibration missions.

After a short break, Bill Quigley turned the session over to the three speakers discussing the Outsourcing topics.

Paul McNamara, VP Account Management of the Sente Group discussed issues involved with outsourcing of equipment assets. Paul discussed Sente's asset management model as it pertains to effective customer asset management.

Dexter Shelton, Mobile Calibration Manager, Lucent Technologies, discussed the need for a mobile calibration capability under any outsourcing model. Dexter touched on the logistic savings as well as traceability issues of a mobile scenario.

Chuck Head, Metrology Operations Manager, Raytheon Support Services Company, discussed his outsourcing experiences with their customers. Chuck's key point was that in developing a statement of work for an outsourcing calibration mission, the government should not put any unnecessary requirements on the successful contractor than already exist. Chuck related a situation in which the government was doing a 7-day turn around on its calibrations but during an outsourcing RFQ they were demanding a 3-day turn around on calibrations.

After a short break, Bill Quigley turned the session over to Dr. Klaus Jaeger to discuss the Standards topics. Dr. Jaeger discussed the current National and International Standards affecting metrology and trade. Klaus also discussed new emerging standards that will have an impact on calibration/metrology in the future.

After the lunch break Bill Quigley introduced Charlie Motzko of the Sente Group to moderate the afternoon open forum round table discussion. The number of questions and answers are too numerous for this report. The afternoon session was most beneficial for the audience and the panel. Dr. Westmoreland made the closing remarks and adjourned the day's meeting.
April 9, 1998
Oak Ridge Metrology Center
Oak Ridge, TN
Ed Pritchard
Tennessee Section Coordinator

The Tennessee Section of Region IV held its Spring meeting on April 9, 1998 at the Pollard Auditorium in Oak Ridge. It was hosted by the Oak Ridge Metrology Center, the primary calibration lab for the Department of Energy's Oak Ridge Complex.

Ed Pritchard, Deputy Manager of the Metrology Center and the Section Representative welcomed everyone to Oak Ridge and introduced the welcoming speaker, Jackie Hill of the Oak Ridge Centers for Manufacturing Technology. Mr. Hill thanked everyone for attending and gave the audience a brief overview of the ORCMT and the National Prototype Center which is located at the Y-12 facility.

The next speaker was Patrick Elliott of the Fluke Corporation who talked about Process Calibrations and ISO requirements. Following a short break there was a multi-speaker session on Asset Management with the following speakers making presentations:

- Ed Nemeroff of Wavetek and VP of NCSL gave a presentation on "Metrology and its Impact on International Trade." Ed discussed
- Rick Mooney from American Airlines, Ray Lewis from Delta Air Lines, Dwain Coppenger from Lockheed Martin Energy Systems and Tom Scibetta from the Sente Group. Each speaker made their presentation followed by a question and answer session.

Following a buffet lunch, the next speaker, Bruce Cox of the Metrology Center presented a paper on Determining Measurement Uncertainty on a Coordinate Measuring Machine.

The last speaker of the meeting was Tim McKnight of the Instrumentation & Controls Division of the Oak Ridge National Lab, who presented a paper on Maintaining ITS-90 Traceability Above 600 degrees C.

Ed closed out the meeting with a drawing for door prizes and thanked everyone for their attendance. He also reminded everyone to remember the multi-section meeting that will be held in the fall in Asheville, North Carolina, on September 10-11 at the Holiday Inn Sunspree Resort.

Attendees:
- Rudy Escher
- Don Reeves
- Bill McKeehan
- Ross Endley
- David Silvuy
- Joe Keck
- Paul McNamara
- Tony Rushin
- Nancy Day
- Len Jones
- John Stone
- Mike Ramey
- Charles Sevas
- David Turmeze
- John Joynt
- Tom Scibetta
- Bruce Cox
- Jackie Hill
- Tim McKnight
- Dwain Coppenger
- Patrick Elliott
- Ray Lewis
- Rick Mooney
- Ed Pritchard

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April 8, 1998
University of Alabama
Huntsville, AL
Clint Plant
Huntsville Section Coordinator

The Huntsville Section of Region 4 held a meeting at the Optics Building of the University of Alabama, Huntsville, on April 8, 1998. Our host, Dr. Fred Seely, provided a large conference room for the meeting.

Clint Plant of W.A. Brown Instruments welcomed and thanked the attendees for coming to the meeting. The Huntsville Section Chapter has been dormant for over four years, so the turnout was greatly appreciated. Clint went over the purpose and goals of the NCSL as well as informed non-NCSL members of the benefits of membership.

Ed Nemeroff of Wavetek and VP of NCSL gave a presentation on "Metrology and its Impact on International Trade." Ed discussed
the present status of metrology standards across the world and the immediate and future barriers facing international trade.

Jeff Whitmire of Adtran gave a presentation on "ISO 9000 and International Traceability from a Manufacturer's Perspective." Adtran is a leading worldwide manufacturer of telecommunications products such as ISDN, DDS, and HDSL communication equipment. Jeff discussed the problems facing international manufacturers confirming much of what Ed Nemeroff had previously presented.

Thom Adams of A2LA gave a presentation on "Calibration Laboratory Accreditation and Registration." An overview of the accreditation process was given as well as the elements of an on-site laboratory assessment.

Randy Fowler of Wavetek presented a talk on "Transfer Standards for Multifunction Calibrators." Randy discussed the needs for having a portable transfer standard to perform on-site calibration of multifunction calibrators.

Mike Pambianchi of Hypress gave a presentation on "Next Generation Josephson Junction Voltage Standards." Mike discussed the technical aspects of JJs. He also considered the current technology and where JJs will be going in the near future.

After lunch, the meeting moved to the U.S. Army Primary Standards Laboratory, where Dr. Jim Jones gave the group a tour of the facility.

Attendees:

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<td>Charles Fagg</td>
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<td>Clint Plant</td>
<td>W.A. Brown</td>
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<tr>
<td>Ed Nemeroff</td>
<td>Wavetek</td>
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<tr>
<td>Jeff Whitmire</td>
<td>Adtran</td>
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<td>Thom Adams</td>
<td>A2LA</td>
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<td>Randy Fowler</td>
<td>Wavetek</td>
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<td>Mike Pambianchi</td>
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Opening comments were made by Keith Scoggins to welcome everyone to the meeting and ask for feedback on what they would like to see in the section meetings.

Jim Patterson, Manager of the Calibration Laboratory at the Southwest Research Institute and Region 6 Coordinator, gave a report of the Board of Directors Meeting.

Richard Roddis, from the Wavetek Corporation, presented a very enlightening look at the certainties that can result with automated oscilloscope calibrations. He discussed the types of errors (distortion, mismatching, etc.) that can be introduced and how "Active Head Technology" can reduce or eliminate these errors.

After lunch, Brian Kennedy, from the Azonix Corporation, provided the group with important information about "End-To-End Temperature Calibration" which is a system calibrated from the sensor to the measuring instrument using a reference standard as a source. Brian's presentation is also printed in the January/February 1998 issue of Cal Lab Magazine.

The next speaker was Greg Secord, from the DH Instruments Corporation, who gave a presentation on "Turn Key Laminar Flow Element Calibration System For Low Mass Flow Instruments." He discussed the need for an evolution in standards and calibration methodology to improve the process measurement and control of low mass flow. He also compared the conventional metrological support structure to conventional low mass flow metrological support structure. Craig's presentation is printed in the
Fred Pummill, from the ASL Corporation, spoke to the "Techniques of Temperature Calibration" and their importance to the metrology community. Fred discussed the reasons for calibrating, and the types of temperature calibrations. He described the use and application for Standard Platinum Resistive Thermometers (SPRT), fluid calibration baths, and metal block baths.

The last speaker was Ken Kolb, from the Ruska Instrument Corporation. Ken gave an overview of the McCloud Gauge and a capacitance manometer. He provided an illustrative comparison of these two types of vacuum measuring devices.

The meeting concluded with a general discussion and an information on the desire to start two laboratory inter-comparison measurement programs. One for a 10 volt electronic cell and another for high and low pressure transducers. Wayne Cummings, from the Fluke Corporation, will coordinate the 10 volt electronic cell and Dave Upton, from EMA, will be working with Ken Kolb, from Ruska Instrument Corporation, to coordinate the pressure transducers.

A tour of the new Ruska Instrument Corporation facilities was provided to attendees wishing to see Ruska's operation.

Fred Pummill, of ASL Corp, brings us up to date on techniques of temperature calibration.

Another impressive crowd in South Texas. Many section coordinators are now sending in their pictures as digital files. My reproduction system still lacks modern capabilities.
Leon Barnes, NCSL VP (Regions 6 & 11) addressed NCSL Board of Directors issues and explained how policy and direction are determined. Leon explained how NCSL member companies can express their desires and concerns regarding business and metrology issues to the NCSL Board.

Dave Upton (EMA, Houston TX), discussed the effects of local gravity on measurements made with deadweight testers in the field. Dave discussed the uses of lab and portable digital measurement systems, the uncertainty considerations for pressure measurements, and the economic results of failing to consider this influence factor.

Eric Webb (SIMCO Electronics) presented a photographic lab tour of the Richardson TX SIMCO calibration lab using 35mm slides. Mr. Webb's presentation showed some of the electronic and physical/dimensional areas of the local lab as well as the lab's administrative and shipping/receiving areas.

Tom Kolat (Texas Instruments) gave the attendees an update on his recently completed X-Ray and Photographic step tablet Round Robin. The comparison program included 16 labs (+NIST), Tom used Youden diagrams to illustrate the "systematic" and "random" errors revealed from the program data. Tom explained the difficulties he experienced in attempting to use two different software packages to plot the program data.

Dave Upton (EMA, Houston TX) announced that a "pressure" MCP is planned in the Region 6 area, and asked for feedback for participants to provide information regarding ranges and medium of interest. One local aerospace company responded (150 PSIA, GAS). Those interested should contact Dave.

Dan Fory (Texas Instruments, Dallas) explained the status of the regional Gage Block MCP, previously coordinated by Ronnie Eubanks (Halliburton Energy Services), and a planned (regional) Fluke 732 (10V) DC voltage Round Robin in conjunction with Fluke. Local participants in these programs were solicited.

Clyde Orrison (SIMCO Electronics) briefly described the status of the ongoing (since 1991) NCSL RF Power MCP. Clyde's transparencies showed the report format used, and explained the choice of artifacts for this effort. MCP statistical summary reports were made available for attendees. During 9 rounds, 205 sets of test data have been collected on the MCP artifact.

An excellent catered lunch was provided by our HP hosts, and time was provided for "networking" during the mid-day break. This section owes much to the faithful member companies who agree to host these bi-annual meetings.

Following lunch, the topic turned to quality systems (standards), and reviewed the QS and AS-9000 documents and made note of several of their unique requirements as they apply to metrology operations. Jim Patterson (Southwest Research Institute) and Dan Fory (Texas Instruments) both commented on their experiences with the QS requirements, while Don Basham (Lockheed Martin Tactical Aircraft Systems) spoke on his company's experience with the AS9000 quality system.

Dave Sanders (Oscilloscope Services, Houston TX) shared his design and implementation of a mobile calibration facility his company uses for on-site calibration. His "fourth wheel" trailer is well equipped to provide a work area in which to perform calibration-verification on state-of-the-art equipment. Dave's humorous stories about generators and trucks kept our attention, and his "on-site" experiences (shared) helped all to understand the difficulties of this type of service.

The final technical subject of the day involved a panel from regional NCSL member companies to discuss their chosen methods for the calculation of "measurement uncertainty." Warren Gilchrist (TU Electric, Gen Rose), Tom Kolat (Texas Instruments), and Jim Patterson (SW Research Inst.) shared how they have chosen to address this issue. Tom used a set of transparencies to review the basic principles of this process and showed an example computation from his lab. Jim showed a form and calculation sheet used at SW Research with each calibration-verification procedure. Warren Gilchrist used dimensional examples of how TU Electric performs this operation.

At the conclusion of the meeting, a drawing for NCSL door prizes was conducted. NCSL ("world") nerf balls, a NCSL desk set and two NCSL brief cases were awarded as prizes. Dave Sanders of Oscilloscope Services provided two ball caps (with logo) for the drawing. A Fluke "Calibration Philosophy" book completed the door prize drawings.

Please call Jim Patterson at 210-522-2702 to update your company's member delegate information if it has recently been changed. Remember to invite other interested parties. You do not have to be a NCSL member to attend meetings.

Attendees:

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Warren Gilchrist</td>
<td>TU Electric</td>
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<td>Terry Senter</td>
<td>TU Electric</td>
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<td>Greg Chambers</td>
<td>Fluke</td>
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<td>Bob Barnes</td>
<td>Mentor Texas</td>
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<td>Mark Burnsby</td>
<td>Acadata</td>
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<td>Jimmy Shipley</td>
<td>Microwave Networks</td>
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<td>Allen Todd</td>
<td>Fluke Corp. Carrollton</td>
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<td>Paul Weaver</td>
<td>Allied Network Systems</td>
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<td>Fred Mikkelsen</td>
<td>Hewlett Packard</td>
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<td>David Ecester</td>
<td>Bell Helicopter, Hurst</td>
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<td>Bob Pfeifer</td>
<td>Bell Helicopter, Hurst</td>
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<td>Matthew Sell</td>
<td>On-Time-Supper</td>
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<td>Don Basham</td>
<td>Lockheed-Martin TACS</td>
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<td>Jim Johnson</td>
<td>Metroplex Metrology Lab</td>
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<td>Frank Schell</td>
<td>Nokia Mobile Phones</td>
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<tr>
<td>Leon Barnes</td>
<td>Allied Signal Inc.</td>
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<td>Joe Seymour</td>
<td>Metroplex Metrology Lab</td>
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<td>Pat Collan</td>
<td>RELTEC, Bedford TX</td>
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<tr>
<td>Jon Riba</td>
<td>Northrup-Grumman, Dallas</td>
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<td>Santiago Rodriguez</td>
<td>Raytheon-TI Systems</td>
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<td>Arlyn Lund</td>
<td>Nense Technologies</td>
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<td>Mike Pierce</td>
<td>Simco Electronics</td>
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<td>Dave Upton</td>
<td>EMA</td>
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<td>Dan Fory</td>
<td>Texas Instruments Inc.</td>
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<td>Phil Houck</td>
<td>Texas Eastman</td>
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<td>Tim McGaha</td>
<td>GIE Instrument Services</td>
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<td>Mike Giorgio</td>
<td>DSC Communications</td>
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<td>Bill Gibbons</td>
<td>Greenwood Equipment</td>
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<td>Wayne Cummings</td>
<td>Fluke</td>
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<td>Jim Patterson</td>
<td>SW Research Institute</td>
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<td>Tom Kolat</td>
<td>Texas Instruments Inc.</td>
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<td>Eric Webb</td>
<td>SIMCO Electronics</td>
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<td>Keith Walker</td>
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<td>Paul Sharp</td>
<td>Motorex</td>
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<td>Willard Godfrey</td>
<td>SANDEN</td>
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<td>Bob Rauck</td>
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<td>Jim Mooney</td>
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<td>Dave Sanders</td>
<td>Oscilloscope Services</td>
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<td>Lyle Devore</td>
<td>Lockheed-Martin-Vought</td>
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<td>Chuck Smith</td>
<td>Lockheed-Martin-Vought</td>
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<tr>
<td>Ken Hone</td>
<td>KS Specialties</td>
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<tr>
<td>Clyde Orrison</td>
<td>SIMCO Electronics</td>
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On May 18th, 1998, thirty-eight members of Region 8 met in Del Mar, California, to delight in not only the warm ocean breezes, but partake in a day of robust information exchange regarding the following topics:

1) Simplifying Automated Scope Calibration up to 3.2 GHz  
   Presenter: Richard Roddis, Wavetek Corporation, San Diego, CA.

2) A New Challenge for NCSL - Metrology and Its Impact on International Trade  
   Presenter: Ed Nemeroff, VP - NCSL International Division.

3) NVLAP Accreditation, Getting Your ACT Together  
   Presenter: Ken Parson, Consultant/NVLAP Assessor.

4) Accreditation - Why Not?  
   Presenter: Larry Nielsen, Southern California Edison/NVLAP Assessor.

Technology: Overview of Automated Scope Calibration up to 3.2 GHz

Richard Roddis of Wavetek gave a presentation on the latest technology developed by Wavetek Corporation, which allows automated calibration of up to 3.2 GHz oscilloscopes. Wavetek’s Active Head Technology was illustrated and a module was passed around for attendees to inspect. Richard highlighted topics covered in his white paper, “Implementing Automated Oscilloscope Calibration Systems,” which attendees could take with them.

Accreditation: A Look Toward the Future and A Look at Today

Three of the four presentations looked at accreditation issues and perspectives. Ed Nemeroff’s presentation was a look into the future where metrology standards, international trade, and accreditation converge—and the resulting challenges to industry. “The drivers for the T&M industry and other business in the 21st century will be quality standards and regulations that affect global trade,” said Ed. He went on to discuss how North American industry can go about harmonizing standards worldwide and the potential outcomes of mutual recognition.

Ken Parson presented an overview of NVLAP (National Voluntary Laboratory Accreditation Program), building on the day’s earlier session. He helped attendees “explore the possibilities” of making “a voluntary commitment to meet an international level of competence.” After explaining the benefits of gaining NVLAP laboratory accreditation, Ken outlined the process of gaining accreditation, the required corporate commitment, and how to develop a proofing plan.

The momentum of the previous speakers was topped off with a summary discussion of NVLAP accreditation by Larry Nielsen. What is the meaning of accreditation? “Declaration of the competence and technical qualifications for your laboratory by a recognized accreditation body,” explained Larry. The presentation
Regional Reports

summarized the purpose, implementation steps, advantages, and initial/recurring costs of attaining NVLAP accreditation.

Thank you to all the wonderful presenters who assisted in Region 8's workshop!

Panel Question/Answer Period

Throughout the workshop, attendees exchanged perspectives, concerns, questions, and experience with the panel and other attendees. Strategies and rationale for moving labs from the "we need to be" to "we are accredited" was a broad theme, also, "what is the best accreditation for our lab?" Also raised was the issue of ISO 900X...what is the difference between ISO 900X and accreditation? Why does our company need both? Also discussed were concerns about what being ISO 900X means and how ISO is being represented.

Board of Directors Report

Ed Nemeroff provided the Board of Director's Report. Highlighted was membership growth, NCSEL objectives and goals, review of recent personnel transitions, status of publications (in response to several inquiries regarding #17025 replacing #25), and a general update on NCSEL board activities.

The Next Step

Vicky Van Meter of Wavetek, Section 8 Regional Coordinator, arranged to send all attendees a copy of each presenter's notes and white paper. In addition, a list of all participants is to be distributed among attendees to promote interaction between our membership colleagues.

Suggestions for a theme to the next meeting included: 1) What do companies need? 2) Why do calibrations in-house versus outsourcing? 3) Why calibrate? Several participants volunteered to assist Vicky Van Meter with the next meeting (date to be determined). Attendees were asked for suggestions on where to meet and if any companies with meeting facilities would be interested in making their facility available for the next meeting? Please direct responses and suggestions to Vicky at 619-715-7159 or vanmeterv@wavetek.com.

April 1, 1998
Marriott Courtyard
St. Louis, MO
Glenn Thompson, Jr.
St. Louis Section Coordinator

Thirty-seven personnel were in attendance at the April 1, 1998, NCSEL Region 11, St. Louis Section meeting at the Marriott Courtyard. Coffee, rolls and beverages were provided by Peter Racen, Metermaster/ISL.

Glenn Thompson opened the meeting. After introduction of the attendees, the coordinator welcomed all to the meeting. Peter Racen also added his welcome, and talked about the consolidation of ISL and Metermaster corporations. Peter also presented an NCSEL 10-year pin to Glenn Thompson, St. Louis Section Coordinator.

Bo Barber from Yokogawa discussed the care and maintenance of ph measurement systems, applications and the practical use of innovative devices for ph measurements.

The next presentation did not cover any type of Metrology or Instrumentation, but did cover something that affects calibration directly. Leroy Pryor from MMunters Incentive Group (Cargocaire) presented considerations of desiccant dehumidification history and dehumidifier processes using state-of-the-art technology.

Sandy Menke from Rosemount discussed analog vs. Hart digital communications and forthcoming digital protocols, multivariable
Regional Reports

capabilities utilizing digital communication and application of
dmultivariable technologies for calculating mass flow.

Fred Pummill from Automatic Systems Laboratories made a pre-
sentation covering Temperature Calibration and discussed primary,
secondary and working level equipment requirements.

Our last speaker was Robert Wurm from HBM, a manufacturer of
strain gauge transducers and instrumentation. The topic covered
signal conditioning aspects utilizing gate array technology with
24-bit A/D converters. This technical discussion focuses on the
"hows" and what it means for metrology labs and personnel. He
concluded with a demonstration of a 0.0005% instrument.

NCSL thanks Peter Racen for his donation of coffee mugs, and
Promac and Dynamic Technology for the door prizes they sup-
plied. Thanks to Peter Racen and Metmaster/ISL for hosting
the meeting and providing refreshments and lunch.

Attendees:

Jack Pesslup  Adelphi
Kev Kafka  Adelphi
Fred Pummill  ASL, Inc.
Dick Eilers  Dynamic Technology
Jim Darr  Boeing
Wendy Hom  Boeing
Forrest Hammer  Boeing
Patrick Jaarsve  Boeing
Mark Maxwell  Boeing
Robert Wurm  HBM
Gregory Roy  HBM
Cindy Jeffries  Incal
Leo Lang  Incal
Lee Patsios  Incal
Mike Postlewait  Incal
Tim Redel  Incal
Gary Windler  Incal
Joe Brennan  Metmaster
Michael Morris  Metmaster
Peter Racen  Metmaster
Jerrold Bearden  Monsanto
Steven Beekman  Monsanto (EHL)
Bryan Bicker  Monsanto
Mike Kozaj  Monsanto
Charlie Smith  Monsanto
Glen Thompson  Monsanto
Marty Worch  Monsanto
LaRoy Prior  Monsanto/Cargocaire
Mel Whitten  Phillips Consumer Comm.
Tom Herrnich  Promac
Sande Meade  Rosemount
Tom Mosley  SEL
Jim Wakkies  Sherwood-Davis & Geck
Karl Schmeer  Shire Ind
Joe Gass  Wastes Co.
Rud Wohberg  R.W. Wohberg
Bo Barber  Yokogawa

Bo Barber of Yokogawa discusses the care and feeding of ph
instrumentation.

Well, there are a few "suits" in St. Louis, after all.

Technical enrichment, metrology networking, complimentary
coffee and lunch is not a bad way to spend a day away from the
office.

Peter Racen (r) opens the meeting by presenting Glenn
Thompson with his NCSL 10-year membership pin.
The Twin Cities Section of Region 11 held its meeting at 3M in Woodbury Minnesota on April 22, 1998. Our host at 3M was the corporate metrology lab. 3M took good care of us, providing refreshments and lunch for 138 attendees. This was the most attendees we have ever had.

We had five scheduled speakers:

Ralph Larson, (Executive Director of Quality at 3M) gave a presentation on the history of 3M and "Corporative Initiatives through Metrology Excellence".

Chuck Ellis of NAPT (National Association for Proficiency Testing) gave a presentation on "Selecting & Working with a Third Party Calibration House". This was a very lively presentation. We had lots of audience participation.

Terry Conder of 3M gave a presentation on "How to prepare for an ISO-9000 Audit." Terry covered the process used by the Corporate Metrology Lab to get ready for an audit, internal or ISO-9000.

Wayne Cummings from Fluke gave a presentation on Automated Calibration Procedures - Software Limitations and Strength. He covered the differences between "Certified, Validated or Accredited" procedures and what regulatory documentation can be used.

Steve Bjørstedt's (3M) presentation was on the problems they incurred when moving their Corporate Metrology Lab last fall.

The final agenda item was a tour of the new Corporate Metrology Lab. We were all very lucky in that all the 138 attendees had the opportunity to tour the new Corporate Metrology Lab. 3M went out of their way to make sure everyone's interests were met.

I want to thank everyone at 3M that made this day very successful.

Attendees:

Bob Hagenberg 3M
Chuck Regal 3M
Dennis Ackerman 3M
Dennis Paulson 3M
Doug Mackey 3M
Jeff Otto 3M
Jim Reliasberg 3M
Jim Swedinsni 3M
John Paul 3M
John Madsen 3M
Laura Tshacker 3M
Mike Mc Donald 3M
Ross Nelson 3M
Sera Lamin 3M
Steve Alston 3M
Steve Bjørstedt 3M
Steve Lilienthal 3M
Terry Conder 3M
Tim Mohrland 3M
Jay Killian Anderson Windows
Mitch Johnson Angelen Corp.

Dan Lust 3M
Jim Olesen 3M
Mike Steggal 3M
Brad Grams 3M
Jack Bravis 3M
Jim Manders 3M
Rich Ludovice 3M
Jim Cooy 3M
Kevin Kruta 3M
Joe Davis 3M
Kurt Szendzie 3M
Larry Roden 3M
Pat Knott 3M
Ryon Rubischko 3M
Roger Zemaitis 3M
Wayne Cummings 3M
Michaéal Stackner 3M
Willard Fulston 3M
Doug Erickson 3M
Jerry Janousek 3M
Wally Holmgren 3M
Bradley Loten 3M
Ken Reeves 3M
Mary Walker 3M
Peter Schmidt 3M
Cathy Borowicz 3M
Dale White 3M
Dave Vainhaverne 3M
Kevin Kraabel 3M
Steve Boyles 3M
Ted Pribil 3M
Winston Ball 3M
Roger Fous 3M
Dave Donahue 3M
Dave Hithnla 3M
Jeff Cloiner 3M
Ron Peterson 3M
Ralph Brudenberg 3M
Amy Childs 3M
Joe Sirem 3M
Keith Stoukis 3M
Chuck Rhueult 3M
Rod Enke 3M
Jeff Larson 3M
Brian Miller 3M
Harold Albright 3M
Doug Burch 3M
Jeannie Morgan 3M
Odell Jacobsan 3M
Chuck Vogland 3M
Jeff Helges 3M
Jim Fowlke 3M
Mark Riedel 3M
Scott Disdor 3M
Bob Remer 3M
Dave Kreitlow 3M
Gaylord Degroot 3M
Keven Johnson 3M
Kevin Rust 3M
Scott Gingrich 3M
Dale Barrett 3M
Jim Gruetzman 3M
Chuck Ellis 3M
Frank Lockovich 3M
Tom Smith 3M
Shawn Mason 3M
Movis Hodlund 3M
Troy Staaf 3M
Carl Clossmore 3M
Craig Hubard 3M
Mike Gaud 3M
Tom Dickey 3M
Doug Evink 3M
Phil Sykes 3M
Randy Pohl 3M
Steve Markert 3M
June McDougall 3M
Jorge Perales 3M
B F Goodrich Aerospace 3M
B F Goodrich Aerospace 3M
B F Goodrich Aerospace 3M
Dytek Instruments 3M
Burl Northern/Sante FE RR 3M
Burl Northern/Sante FE RR 3M
Cal Mesries 3M
Cal Mesries 3M
Cardiac Pacemakers 3M
Cardiac Pacemakers 3M
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Cardiac Pacemakers 3M
Dytek Instruments 3M
Fluke 3M
Floutouware 3M
General Dynamics Info Systems 3M
General Dynamics Info Systems 3M
General Dynamics Info Systems 3M
Gorecki Mfg 3M
Gorecki Mfg 3M
H.B. Fuller 3M
H.B. Fuller 3M
Honeywell 3M
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Honeywell 3M
Kato Engineering 3M
Kono Machines 3M
Lifecore Biomedical 3M
Lifecore Biomedical 3M
Lockheed Martin 3M
Lockheed Martin 3M
Lull Industries 3M
Martin Instruments 3M
Martin Instruments 3M
Medtronic 3M
Medtronic/Biomedical 3M
Menor Urology 3M
Midwest Calibration 3M
Midwest Calibration 3M
Minnesota Rubber 3M
Minnesota Rubber 3M
Minnesota Rubber 3M
MKS Instruments 3M
MTS Systems 3M
MTS Systems 3M
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MTS Systems 3M
MTS Systems 3M
Mueller Sales 3M
Mueller Sales 3M
NAPT 3M
National Calibration 3M
National Calibration 3M
Nelcor Puritan Bennett 3M
Northern Balance & Scale 3M
Northern Balance & Scale 3M
Northwest Airlines 3M
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Precision Repair 3M
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The Central Illinois Section of Region 11 held its second meeting at the facilities of Advanced Technology Services (ATS) on April 14, 1998. There were 27 in attendance. Section Coordinator Roy Campbell opened the meeting with introductions. Jeff Owens, VP of Advanced Technology Services Division welcomed the group to the facilities of ATS with a brief presentation of their history. Special thanks go to them for providing the meeting place, refreshments and lunch.

The first technical presentation was by Mike White of Western Environmental Corporation who presented a paper on Validation/Certification of Laboratory Environments. His presentation covered the entire process from determining the need through the procedures to the final report and certification. His handouts contained an abundance of documentation.

The second technical presentation was by Jeff Willey of Measurements International. He presented a paper on Automated Resistance Measurements using two different methods. It was good to see someone come all the way from Ogdensburg, NY to support our Section.

After lunch and a tour of the ATS facilities, Carl Saunders, the TQM Manager for Caterpillar Inc.'s Technical Services Division stimulated the thinking of the attendees by talking about the proposed changes to ISO. Carl is a member of the International Standards Organization Technical Committee 176 (ISO/TC176) which is responsible for administering and revising the ISO9000 Standard for the year 2000. Carl is also an ISO/QMS000 Lead Auditor and has been a Malcolm Baldrige National Quality Award Examiner for three years. His presentation resulted in people volunteering to provide input and to serve as reviewers of proposed changes.

The last presentation of the day was by Larry Unfried, Projects Manager of ATS. He used a video and his experiences as a metrologist in the Navy and private industry to discuss the issue of traceability, NIST numbers, and data quality requirements and their impact in today's environment of using Quality Systems registrations to determine the way businesses operate.

After the last technical presentation, a steering committee consisting of Bill Hatfield from Komatsu Dresser, Randy Masters from ATS and Roy Campbell from Caterpillar was formed to help in the planning of future meetings. Tom Walze of Walze volunteered to host the fall meeting and provide speakers. With the steering team in place, it looks as if things are beginning to roll in this young section.

**Attendees:**

- Walt Addis: Caterpillar Inc.
- Gary Alsup: Caterpillar Inc.
- Tom Bushman: Illinois Radio
- Kari Butler: Walz Equipment
- Roy Campbell: Caterpillar Inc.
- Ted Chapman: Caterpillar Inc.
- Rich Dickson: Caterpillar Inc.
- Tom England: Advanced Technology Services Inc.
- Doug Frank: Komatsu Dresser
- Bill Hatfield: Advanced Technology Services Inc.
- Bill Hillis: Caterpillar Inc.
- Dave Johnston: Caterpillar Inc.
- Rick Liggett: Caterpillar Inc.
- Pat Lovel: Walz Equipment
- Randy Masters: Advanced Technology Services Inc.
- Bob Moore: Central Illinois Light Company
- Quaker Oats
- John Johnson: Walz Equipment
- Mel Sommer: Caterpillar Inc.
- David Phillips: Caterpillar Inc.
- Marshall Poff: Caterpillar Inc.
- Carl Saunders: Caterpillar Inc.
- Kurt Butler: Komatsu Dresser

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It's not clear why there's a Christmas tree in the 3M lobby in April?
The Canadian Region Spring Meeting and Workshop and overview of current and future NCSL activities.

Satoshi Nishie, Canadian Region Coordinator welcomed the participants, spoke briefly about the Canadian Region and thanked Michel Filion of Pylon Electronics, the Eastern Ontario Region Coordinator, Declan McEvoy, QETE’s member delegate, and Mrs. Marilyn Ross for organizing the very successful conference and tour of QETE facilities. Ed Nemeroff presented NCSL service pins to member delegates and gave an overview of current and future NCSL activities.

Quality Presentations were given by the following people:

- Mr. Peter DeWitt, Holt Instruments Ltd.—A Method of Establishing Traceability.
- Dr. Alan Steele, National Research Council Canada—Industrial Resistance Thermometry Standards.
- Mr. Ed Nemeroff, EN Industries, (v.P. International NCSL)—International Traceability in Laboratory Accreditation.
- Dr. Jennifer Decker, National Research Council Canada—Stylus Penetration Correction for the Calibration of Gauge Blocks of Dissimilar Materials.

The group gained an insight on the multidisciplinary nature of QETE when they visited selected laboratories. (Standards and Measurements, Environmental, Climatic, Flight Safety, Structural Integrity, and Electrical).

The Canadian Region Fall Workshop and Symposium is scheduled for October 15-16, 1998. It will be held at the IBM facility in Bromont, Quebec with Gilles Lefebvre, IBM member delegate, as host. Adrien Michaud of Canadian Marconi and Quebec Area Coordinator will be coordinating the Workshop.

Please consider this as a first “CALL FOR PAPERS.” If you are interested in presenting a paper or perhaps chairing a panel discussion, please contact Adrien at 514 748 3000 X4074, FAX 514 748 3149, or email at <Amichaud@mtl.marconi.ca>.
Regional Meeting for Canada

Location: Granby/Bromont, Quebec
Contact: Gilles Lefebvre
514 534 6604
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REGION 13
India Region Report
A.K. Datta
Region 13 Coordinator

Report from India Region

NATIONAL CONFERENCE ON TEST ENGINEERING & METROLOGY (TEAM)

Standardisation, Testing & Quality Certification (STQC) Directorate, an attached office of department of Electronics has been providing Testing, Calibration & Quality related services to Indian industries in general and electronics industries in particular through a network of 14 labs. STQC has been operating for over 2 decades and during this period it has been able to carve a niche for itself in national as well as the international arena. STQC services are recognised and sought by organisations from India as well as abroad.

To propagate the concepts of Calibration, its importance and to provide more efficient services to the industry, STQC has launched STQC Calibration Services. The major aim of this service is to harmonise the Calibration services being provided by all the STQC labs and to provide training/education in the fields of Calibration. STQC Calibration Advisory Group is coordinating the services. One of the tasks the group has taken upon itself is to organise national level annual conferences.

STQC has decided to organise a National Conference on Test Engineering & Metrology (TEAM) on yearly basis. The first conference known as TEAM-99 is being organised at Bangalore during January 6-8, 1999. The theme of the conference is “Test & Measurements for Global Competitiveness.” The conference would be inviting papers covering topics such as Testing, Calibration, Quality Management and related topics for the electronics industry during the conference. More details of the conference will be given in the next issue.

ERTL (N) COORDINATES PROFICIENCY TESTING PROGRAMME

Electronics Regional Test Laboratory (north) [ERTL (N)], NCSL member and Delhi area coordinator, has been nominated as coordinator to conduct Proficiency Testing under National Accreditation Board for Testing & Calibration Laboratories (NABL) programme of Department of Science & Technology (DST). The laboratory will be organising and coordinating proficiency testing covering selected parameters for products and components such as:

- Diodes (IN414B)
- Transistors (2N2222A)
- Room Heater (up to 3KVA)
- SMPS (250 Watt).

The entire exercise is expected to be completed within six months.

Also, ERTL (N) has been nominated for participating in Proficiency Testing programme in Electrical Safety being conducted by NATA on behalf of APLAC. The testing is to be based on IEC-742 (1983-01) on isolating transformers and safety isolating transformers.

CERTIFICATION ACTIVITIES

STQC PARTICIPATES IN INTERNATIONAL EXAMINATION TEAM UNDER CB SCHEME

STQC as National Certification Body (NCB) along with its five CB approval labs namely ERTL(N), ERTL(E), ERTL(W), ERTL(S) & Electronics Test & Development Centre (ETDC) (Bh) has been actively involved in the international certification activities for safety of electronics and electrical equipment -IECEE-CB- Scheme. Under this scheme, recently, Mr. Arvind Kumar, Joint Director, STQC was chosen as a member of an International CCB Examination Team constituted for assessment and approval of three labs in Hong Kong (VL International, Intertek Testing Services (ITS) and HKSTC) under the scheme. Other members of the team were Mr. T. Sollie, NEMKO, Norway and Mr. A. Pederneschi, IMQ, Italy.

STQC TO UNDERTAKE PRESHipment TESTING & INSPECTION SERVICES FOR SASO

Based on the requests received from Indian Industries and also as one of its activities towards export promotion, STQC is planning to undertake pre-shipment testing and inspection services with regards to export consignments. STQC has already agreed to undertake such services on behalf of VDE Testing and Certification Institute, Germany and now STQC has agreed to undertake similar activity on behalf of Saudi Arab Standards Organisation (SASO). This is another additional activity of STQC towards Exports Promotion and providing ‘One Stop Solution’ to quality-related requirements of the Indian Electronics Industry. For details please contact: Sh. Chandrasekhar, Director, STQC Hqs, New Delhi.

PRESENTATION OF PAPERS

NCSL India region has been actively participating in the annual CSL Workshop and Symposium every year. Three papers from NCSL India region have been accepted for publication at this year’s CSL Workshop & Symposium being held at Albuquerque, USA during July 19-23, 1998.


2. Calibration Technique of Optical Jitter Transmitter by Mr. Subhendu Das of Electronic Regional Test Laboratory (E), Calcutta.

3. Automation of Flow Laboratory using Flow Computer by Dr. K. Ramani of IDEMI, Mumbai.
ADDITIONAL CALIBRATION FACILITIES INSTALLED AT INDIA FACILITY

At the Institute for Design of Electrical Measuring Instruments (IDEMI) in Mumbai, India, several new equipment stations have been installed to solidify the position of this institute as an important center in the Asian area for calibration in both Process Control and Electrical Parameters.

1. A 2-Coordinate Universal Measuring System, Microrep MIL 201 calibrates micrometers, depth gauges, dial indicators, vernier calipers, bore gauges, precision rules, squares and snap gauges, Bevel protractors, etc. It boasts a resolution of 0.001 mm for a wide range of linear and circular calculations.

![The Microrep MIL 201 measuring system.](image)

2. A Brown and Sharpe 3-Coordinate Measuring Machine, model Microxcel 765 performs a multitude of measurements, including first phase inspection, reverse engineering, and total set up. Ranges are 750 mm X-axis, 650 mm Y-axis, and 500 mm in the Z-axis, conforming to the European VDI/VDE 267. The software facilitates sophisticated measurements and provides guidance to the operator and analyzes measurement results. A torque wrench calibrator has also been added.

![This Brown & Sharpe Microxcel 765 helped in acquiring accreditation from NABL.](image)

3. The Electrical Instruments Calibration Laboratory installed a 3-Phase Power and Energy Calibrator, Rotek model 8000-3P, to be used in calibration and testing of Watts, VAR, Watthour, Volt,

Ambient, Phase-Angle meters and Transducers. Measurement ranges are up to 700 V, 200 A, 25 to 1000 Hz and 100 ppm power accuracy. The system can be remotely controlled with IEEE-488.2 interface.

A standard Rotek model MSB 001A Standard Watt Converter features 50 ppm accuracy and serves as a transfer standard.

![Rotek model 8000-3P tests a wide variety of power instrumentation.](image)

Dr. K. Ramani, Principal Director, reports that IDEMI is also participating in the inter-comparison experiments to be conducted by APLAC, the Asia Pacific Laboratory Accreditation Program. He states that many global players in the field of power generation are beginning to use their facilities in that region of the world.
# NEW NCSL MEMBERS

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*Executive Committee Members
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<th>Anthony Anderson</th>
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<tr>
<th>U.S. GOVERNMENT AFFAIRS</th>
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<td>Lockheed Martin Missiles &amp; Space</td>
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EDITOR'S NOTE
This schedule is for guidance for anyone who needs to submit material for publication in the Newsletter.

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July 19 & 24, 1998
Convention Center
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