FOCUS. DEVELOP. DELIVER.

The focus of this year's NCSL Conference, "Metrology—Why Not?" was addressed by a full range of presentations. We were fortunate to have our conference keynoted by NIST Director Ray Kammer. The full text of Director Kammer’s remarks start on page 7 of this newsletter. NCSL members have frequently requested a justification from NCSL so that they may demonstrate the value of NCSL membership to the sponsoring management in their organizations. It may be seen from the keynote address, that NCSL plays a vital role as the “Voice of the Standards World,” providing critical input to NIST and other regulatory agencies. I encourage member delegates to share Director Kammer’s message with the leadership of their organizations.

1998 has developed as a year of challenge and opportunity. New officers are in place and products are being delivered at a record pace. New NCSL products such as the “Guide to Selecting Standards Laboratory Environments,” and a revised RP-6, “Biomedical and Pharmaceutical Industry Calibration Control System,” have been released. NCSL “Glossary of Metrology Terms” is near release. Also new this year is the availability on searchable CD-ROM of the proceedings of all NCSL conferences from 1990 through 1998. This outstanding product is a resource every laboratory should have.

The new organizational structure implemented at the start of 1998 is delivering results with a team of Vice Presidents fully focused on their departments. The Vice President, Conference Management, delivered a highly successful conference in Albuquerque. If you missed the conference you can still obtain the proceedings on CD-ROM or in hard copy from the business office. In the new area of Standards Policy, NCSL is proactively supporting the recognition of calibration laboratory accreditation as a component in an acceptable international program which will result in “Calibrated Once, Accepted Everywhere.” In the area of Documentary Standards, two ANSI Standards have been published and additional work is in process.

The expanded charter of the former Calibration Intervals Committee, under the Vice President, Measurement Science and Technology, now called the Metrology Requirements Committee, has initiated three new subcommittees. The Vice President, Publications has been very active producing products for you, our members, as noted above. The Vice President, Industrial Programs, has, after several years of effort, launched a vigorous Airlines Metrology Committee. NCSL Internet presence continues to grow under Operations and Marketing. Everyone should check this resource regularly. Our Division, Regional, Sectional and Areas continue to grow and contribute to the success of the organization.

At the October NCSL Board of Directors meeting, the development of a strategic plan, including development of the NCSL position in the international measurement standards arena, will be initiated. NCSL has had a long and successful history of Tactical Planning with its Long Range Plan prepared by the Executive Vice President. Now as our organization has grown, it is time to develop a vision that will carry the organization forward, well into the next century. When NCSL developed its (tactical) “Vision 2000” document a few years ago, input was solicited from the membership after an initial outline was developed by the Board of Directors. It is our goal to follow much the same process with this strategic plan.

NCSL is a member-driven organization and the participation of its membership is critical to its organizational success. I urge you to become part of the team by joining a committee, attending meetings, participating in the election of officers, completing and submitting surveys, and making your voice an active part of the "Voice of the Standards World".

William (Bill) Quigley
NCSL President
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Plan Ahead for a Winter Trip to Disneyland

The 1998 NCSL Measurement Science Conference
Disneyland Hotel Convention Center
Anaheim, CA
January 28-29, 1999

THEME: A CENTURY OF MEASUREMENTS

CONTACT: JOHN GERHARD
562-922-3206 (See page 6)

INTERNATIONAL METROLOGY SEMINARS, TOO

EGYPT
November 6-8, 1998
Middle-East Metrology Workshop
(See page 16 for more information)

INDIA
January 6-8, 1999
National Conference on Test Engineering & Metrology
(See page 16 for more information)

EDITOR'S MESSAGE:

Board Minutes

I've been talking with NCSL Secretary Dave Agy about how to handle the text of his Board minutes, as I use them in this newsletter. Those of you who read through the whole newsletter have always known that there is probably too much redundancy between the information in the Board minutes and all the committee, liaison and regional reports printed farther back in the newsletter. Yet, it is not very simple to edit out all that extra stuff, even with reasonable accuracy.

Therefore, in the interest of more brevity, I have decided to trim the Board minutes dramatically, and try to include there only the unique items which are reported. This won't be easy, and it won't likely be totally accurate, but at least, you won't have to contend with so much information.

(Continued on page 5)
Dr. Klaus Jaeger
1998 Wildhack Award Winner

Dr. Klaus Jaeger, Metrology Manager at Lockheed-Martin Missiles & Space, Sunnyvale, CA, has received the 1998 William Wildhack Award from the National Conference of Standards Laboratories (NCSL). The award was presented by NCSL Past President Kevin Ruhl, on July 20, during the organization’s annual conference in Albuquerque, New Mexico. It is presented annually to recognize outstanding contributions to the field of metrology and measurement science, consistent with the goals of NCSL. The award was established in 1970 in honor and recognition of William Wildhack, a long-time employee of the U.S. National Bureau of Standards, now the National Institute of Standards and Technology. Mr. Wildhack was not only very instrumental in the founding of the NCSL, but also, through his wisdom, his leadership, his dedication and foresight, he helped shape the organization during its early formative years. The award carries an honorarium and includes a bronze and silver medallion bearing the likeness of Wildhack.

This year’s recipient is the 25th individual to be so honored. Klaus Jaeger joined Lockheed Martin in Sunnyvale in 1982 as a research specialist. He progressed in the following years to supervisor and manager of metrology, a position he currently holds.

Klaus Jaeger was recognized for his 16 years of NCSL support and volunteer activities. He has served as committee member, committee chair and VP for Measurement Science as well as publications. Presently, as Executive VP, he has been responsible for updating the NCSL by-laws and guidelines, transcribing them into Word format while updating and reorganizing them to reflect the current organization. As VP for Measurement Science, he initiated the Intrinsic/Derived Standards Committee and co-authored two Recommended Intrinsic Standard Practices (RISP). He participated in the ANSI/NCSL Writing Committee preparing Z540-1-1994 and was an active committee member for the associated handbook.

Klaus Jaeger was born in 1938 in Luebeck, Germany. After receiving his journeyman license for instrument mechanics on September 1958, he immigrated to the U.S. in November 1958, and was drafted into the U.S. Army in March 1959 for a two-year tour of duty.

After discharge from the Army, Klaus enrolled at Syracuse University in New York, graduated with a BS in physics in 1965 and a PhD in particle physics in 1970. He then continued with elementary particle physics research at Argonne and Brookhaven National laboratories, participating in experiments at those facilities, in addition to Fermi Lab and the Stanford Linear Accelerator Center.

In January 1982, he joined Lockheed Missiles & Space and was drafted to the first NCSL committee in February 1982. He continued with several assignments for the NCSL and the Measurement Science Conference (MSC) over the next years, receiving the Woodington Award from the MSC in 1987.

Klaus has been a member of the American Physical Society since 1970 and was elected to the management chain of the topical group for Instrumentation Measurement Science. He chaired that group in 1996. He was elected Fellow of the Society in 1992 in recognition of applying intrinsic atomic and quantum calibration standards to an industrial calibration laboratory. Results of these standards were presented and published at the Conference for Precision Electromagnetic Measurements (CPEM) in 1988, 1990 and 1996.

Klaus has been active within the IEEE for many years by giving talks and presentations. He was member of the Morris E. Leeds award committee from 1987 until 1989, chairing it from 1988 until 1989.

(Continued on page 6)
HIGHLIGHTS OF THE BOARD MEETING

Hyatt Regency Hotel
Albuquerque, NM
July 19th & 24th, 1998

President Bill Quigley represented NCSL at the recent DODCEL meeting in Huntsville, AL.

Klaus Jaeger’s activities included the NCSL-NIST accreditation meeting and participating in the DODCEL meeting. Work continues on the NCSL Guidelines. Klaus had a action item to work with the regional coordinators on their handbook. He has asked Woody Tramel to take over that activity as spokesperson for the divisional VPs. It was agreed that the handbook should be updated and kept separately from the guidelines.

Klaus announced the dates and locations for the Board meetings in 1999:

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
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<tbody>
<tr>
<td>1st - 3rd February</td>
<td>Santa Barbara, CA</td>
</tr>
<tr>
<td></td>
<td>[Monday after MSC]</td>
</tr>
<tr>
<td>26th - 28th April</td>
<td>Baltimore, MD</td>
</tr>
<tr>
<td>15th - 17th July</td>
<td>Charlotte, NC</td>
</tr>
<tr>
<td>18th - 21st October</td>
<td>Las Vegas, NV</td>
</tr>
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Tom McGovney worked with the business office and NCSL’s CPA to determine what financial records must be archived and which could be discarded.

Peter Heydemann presented his report to the Board. Items not in the report include Ray Kammer’s “five challenges for NIST.” (See page 7 for the full text) The first is to provided U.S. industry with the best possible measurements in the world. NIST metrologists have not heard this challenge for many years and are excited to implement it. This and the other four challenges were discussed in Ray Kammer’s Keynote address at the conference.

During the recent NORAMET/NACC meeting, discussion was held regarding MRAs and laboratory accreditation among the three North American national laboratories. An initial agreement will be signed late this year recognizing the equivalence of several parameters among the three laboratories. These parameters will include length, mass and electrical measurements.

Peter also discussed the status of the MRA between the United States and the European Union. He reported that a lot of progress has been made, there are six areas covered today and that measurement & calibration are favored for expansion in the near future. An annex to the original MRA could be signed as early as Spring of 1999.

There was additional discussion followed regarding European and international standards, the effect on American industry, the lack of participation by U.S. corporations and organizations in international conferences that set these standards and what NCSL can do now to change this. There will be meeting on the 23rd of September at NIST in Gaithersburg to discuss, among other things, U.S. industries’ needs as they relate to trade with Europe and the role industry can play to achieve these needs.

Gary Hysen’s Canada report is presented on page 22. He summarized a recent meeting at the BIPM in which 35 NMIs (National Metrology Institutes) initiated a draft of an MRA. This MRA applies to national measurement standards and calibration reports. The agreement will include a list of quantities, ranges and best uncertainties for each of the participating NMIs. The final agreement will be signed in late 1999, after the completion, by CIPM, of several measurement comparisons among the national laboratories.

Klaus asked if NIST was willing to sign the MRA and Peter indicated that Ray Kammer had agreed [in principle] to the agreement and NIST will sign the agreement. Peter also said that Ray had given him an assignment of working with the laboratories at NIST to develop Quality Management Systems for their calibration services, using ISO Guide 25 as a reference.

Mike Sunaci introduced Glenn Harvey, ISA (Instrument Society of America) Executive Director, to the Board. The talk’s objective was to inform the NCSL Board about the organization and operations of the ISA and thus provide possible ideas for improvements in NCSL operations.

What is ISA?
- Individual membership association
- Standards developer
- Publisher
- Training provider
- Conference organizer

Some ISA Dimensions
- 46,000 individual members
- International - - 25% and growing
- 2,000 active leaders - doesn’t include people involved in standards activity, probably an additional 2,000.
- $24 million budget
- 115 full-time staff, doesn’t include technical/instructors/course developers which are hired by ISA on as-needed basis.
- ANSI accredited
- IMEKO national member organization

Editor's Message  
(Continued from page 2)

The Internet World of Metrology

I can get a sense of the rapid increase in NCSL's use of the Internet by my correspondence with all the Board, Committee, Regional and Liaison folks who furnish text for this newsletter. Just in the last year, hardcopy reports, FAX and the US Mail are being replaced in large part by files sent by email. (By the way, the NCSL choice for word processor software seems to be MSWord by some margin.)

When I started the regular newsletter section called the Internet Page several years ago, I felt that most of our member organizations would be using the Internet resource more and more. By publishing new sources of metrology information on the net, I felt we could offer something of value for your working managers. In addition, NCSL itself moved to create its own web site to tie it all together.

However, I have been a bit disappointed by the lack of response from readers to furnish materials for the Internet Page. Are you not yet using the Internet for many metrology purposes? Are your equipment and software suppliers not yet offering useful materials for your use?

Manufacturers would seem to have many reasons to present metrology information to their customers, from training course information to product data. And on page 24 of this issue, I have shown a Hewlett-Packard web site addition which now lists refurbished equipment. This would seem to be an ideal use of the Internet. I recall the "old days" when lists of refurbished gear were maintained by each HP manufacturing division, and the Field Sales Engineers would have to be very nimble to use such available equipment lists for cases where customers could use such gear. Since many sales people might be offering the same list, it was generally a race to confirm a given unique product. Now the Internet shows instantaneous availability.

So much for that, I urge other manufacturers to let me know if they have created a clever web site with member-useful information.

John Minck  
NCSL Editor

Jim Wheeler, Navy Standards Lab, was doing some volunteer proofreading at his conference hotel, and had his camera handy. Trouble is that the "Smith Party" had reserved the entire swimming pool for a hot Albuquerque day, and his kids couldn't use the pool. Not a very friendly action for a hotel which had just been taken over by the Friendship Inns of America.
Klaus and his wife Maria married in 1969 in Syracuse, NY. After living near Chicago for 10 years and Long Island for two years, they moved with their son Erik to the West Coast in 1982. Erik recently completed a four-year tour of duty with the U.S. Marines and is now living at home, in Saratoga, CA, while attending a local college. Both Maria and Klaus love ballroom dancing, enjoy traveling, and complement each other in gardening and other home improvement projects.


**MEASUREMENT SCIENCE CONFERENCE**

Disneyland Hotel
Anaheim, CA
January 28, 29, 1999

Theme: A Century of Measurements

**Conference Sessions include:**

- A Century of Measurements
- Flow Techniques and Technologies
- Process Measurements
- Mass Basics
- Measurement Uncertainties
- Simplifying Calibration via Automation
- DC/LF Topics
- Intrinsic Standards
- Calibration & ISO Standards
- Training Metrologists
- Fiscal Bottom Line & Metrology
- Risk Assessment

**Concurrent Tutorial Workshops**

- Metrology & the Internet Training
- Calibration Lab Startup
- Vibration & Shock
- Mass Standards
- Weighing Instruments
- Hardness Standardization

**NIST SEMINARS**

January 24-25, 1999

- Time & Frequency
- Dimensional
- Statistical Methods for Uncertainty
- Mass Measurements
- Pressure (Hosted at Southern Cal Edison)

MSC Information

<www.msc-conf.com>
John Bowman 714 847 7380
<jbowman@pc.fluke.com>
(Also see page 42)
TOWARDS A BETTER MEASUREMENT SYSTEM: OPPORTUNITIES AND CHALLENGES FOR NIST AND THE U.S. METROLOGY COMMUNITY

Raymond Kammer, Director, National Institute of Standards and Technology.

Good morning. NIST is proud to be a co-sponsor of this important workshop and symposium. This morning, I am going to give you a status report on what NIST aims to accomplish in the next few years. It’s very important for your plans. It’s also very important for NIST to receive your input on the content, quality, and performance of our measurement and standards programs. We value your ideas, and we appreciate the many contributions that NCSL has made to the field of metrology and the practice of measurement.

For example, NCSL’s reports on national measurement requirements provide essential feedback to NIST. Your surveys of our calibration-service customers have helped point the way to improvements and ongoing actions that I will talk about.

Another fairly recent development — and a very welcome one — is NCSL’s involvement in the documentary standards arena. By developing the American handbook for expressing uncertainty and a U.S. version of ISO Guide 25 for calibration laboratories, NCSL truly is “serving the world of measurement,” just like its motto, "serving the world of measurement:

FIVE CHALLENGES TO NIST

NIST’s job — our mission — is to promote U.S. economic growth by working with industry to develop and apply technology, measurements, and standards. Our focus is, in a phrase, on infrastructural technology. I have set 5 challenges for NIST.

Challenge #1: Ensure that U.S. industry has the best measurements and standards in the world.

Challenge #2: Assure that measurement capabilities and standards are in place to support U.S. participation in global markets.

Challenge #3: Build greater consensus on the value of NIST’s Advanced Technology Program.

Challenge #4: Expand access to Manufacturing Extension Partnership services, reach more small and medium-sized companies, and continue federal support for MEP centers after their sixth year of shared funding.

Challenge #5: Promote performance excellence in healthcare and education by fostering adoption of the Malcolm Baldrige National Quality Award approach in both sectors.

Challenges to the NIST Laboratories

I want to focus today on the laboratories. The first challenge is maintaining or attaining world leadership for measurements and measurement standards. I think we are expected to perform this role. The United States has the largest and most vibrant economy in the world. To sustain our competitive position, we must have the best measurements and standards in the word.

There has never been a time in which measuring accurately has been more important to a nation’s economic health. This is an age in which semiconductor devices shrink to half their previous size every 18 months and measurement advances depend on microscopes that “see” individual atoms. The longevity and reliability of car engines depend upon manufacturing tolerances of micrometers — about the width of a single bacterium. Our global communication systems rely on accurate clocks synchronized to within a millionth of a second. And soon, aircraft landings will be guided by coordinates supplied by global positioning satellites.

NIST conducts research on fundamental measurement techniques and technologies that individual companies typically have neither the technical ability nor the resources to conduct on their own. It is this kind of research that, last year, earned a Nobel Prize for NIST Physicist William Phillips. Bill’s work on laser cooling and atom trapping is laying the foundation for next-generation atomic clocks. The Nobel Prize was a tremendous acknowledgment of the scientific value of “basic” metrology research. We were thrilled — for Bill, for NIST, and for the entire measurement community from which he hails.

So, because each company needs these new measurement technologies and standards, once developed, the benefits extend to all. A company paying for such research could not expect to recoup its costs — and it would be paying for research that would benefit not only itself and its customers, but also its competitors.

The returns on this work can be substantial. Consider an assessment of the impact of NIST’s calibration of watt hour meters — the devices that track consumption of electric power. NIST provides national reference standards that are needed to assure the accuracy of the electric power meters found in every home and business in the U.S. In supporting the metering of some 200 billion dollars worth of electricity sold each year, NIST generates benefits that exceed program costs by better than 40 to 1.

Our research on alternative refrigerants also has proved to be a high-payoff technology investment. Another economic assessment reported that this work yielded a social rate of return of over 400...
percent. In large part, this return reflects cost savings by firms as they scrambled to meet the international deadline for phasing out ozone-depleting chlorofluorocarbons. Timely delivery of reliable data on alternative refrigerants made the search for CFC replacements more efficient.

The nation's measurement infrastructure is growing in strategic importance. It's easy to understand why. Global market competition is becoming more technology intensive, and trade—especially, exports of high-technology products—is becoming a more significant determinant of economic health.

At the same time, recognition of the pivotal role of measurements is starting to grow. Testing, inspection, and measurement needs are now integral components of an increasing number of technology roadmaps. These include the National Technology Roadmap for Semiconductors, the National Electronics Manufacturing Initiative, and the roadmap developed by the U.S. chemical industry within the last year or so.

So our field is finally beginning to get the attention it deserves. At NIST, as we plan for the future, we are asking ourselves four fundamental questions:

- What measurements and standards are needed by industry now, and what will industry need in the future?
- How well are we doing in meeting these needs?
- How does our performance compare to the best in the world?
- And, what do we need to do to maintain or achieve measurement preeminence?

Technology roadmaps are helping us to get a handle on the first question, but we also are evaluating options for more systematic, NIST-wide approaches to assessing industry's measurement requirements.

To answer the second question—How are we doing?—we need to gather constructive feedback from actual and prospective customers. NCSL has been a valuable source of feedback. The most recent report by your Measurement Requirements Committee has made quite an impact.

Generally, the committee's survey found NIST customers to be satisfied with our technical performance. But dissatisfaction with the service occasionally surfaced—boiled over in some instances. In response, we are reviewing our measurement services with an eye toward improvement in service quality and the efficiency of processes. NIST is benchmarking turn-around times for calibrations in all our laboratories. We also are evaluating several pilot approaches for on-line tracking, which would allow customers to quickly check on the status of their equipment. In addition, we have initiated training in customer service. This is a beginning that we intend to build on.

To answer the third question—How do we stack up against the rest of the world?—we are benchmarking our capabilities against other National Metrology Institutes. On most measures, we compare favorably, achieving world-class and, quite often, best-in-class levels of accuracy. We also documented some weaknesses, however. And, we identified several leading-edge measurement services that are available only through National Metrology Institutes in other countries. All these findings are grist for our strategic planning. We want NIST to be the best in the world in terms of the content and quality of its services.

The final challenge we face is assuring that measurement capabilities and standards are in place to support U.S. participation in global markets. Annual U.S. exports of goods and services now total nearly one trillion dollars. Obviously, exports are crucial to our nation's economy. They account for 12 million jobs.

The value of U.S. exports has been increasing by 9 percent a year, but we could be doing better. Before the financial turmoil in Asia, world trade had been growing at an annual clip of 15 percent. Technical barriers to trade account for a significant fraction of the difference. The value of international standards and specifications is paramount. At a minimum, they add to the cost of doing business. At worst, they can drive exporters out of foreign markets.

We have a three-pronged strategy to overcoming measurement and standards-related obstacles to trade.

- First, develop the measurement methods and the international infrastructure needed to ensure that measurements—particularly those needed to support new, high technology products—are available worldwide.

- Second, develop international standards for new products that do not impede U.S. exports. At the same time, we will work in cooperation with voluntary standards organizations and U.S. regulatory agencies to harmonize standards, codes and regulations so that they can be used effectively in the global market.

- And third, facilitate access to markets by working with standards, metrology, and trade experts from developing countries to harmonize standards, conformity assessments, and measurement practices.

The one overriding goal is to achieve international uniformity of measurements. Equivalence of national measurements greatly reduces the challenge of achieving world-wide acceptance of testing and measurement services.

But even as we pursue this critical goal of international uniformity, we must also concern ourselves with objectives that are more tactical in nature. I'm referring primarily to mutual recognition agreements, or MRAs.

In November, I signed an agreement with members of the Asia Pacific Laboratory Accreditation Cooperation. This agreement recognizes the technical equivalence of test reports and calibration certificates issued by accredited laboratories in the United States and five other members of APEC—the organization for Asia Pacific Economic Cooperation. The other signers were Australia, New Zealand, Hong Kong, Singapore, and Taipei. The agreement recognizes laboratories accredited by NIST's National Voluntary Laboratory Accreditation Program—or NVLAP—and by the private sector's A2LA—the American Association for Laboratory Accreditation. It affects several billion dollars in U.S. exports.

In Europe, progress has been slower. Some might even say, "painfully slow." But we are continuing to hammer out the details of a similar recognition agreement with the 17 members of the European Cooperation for Accreditation, which also is known as EA. After several delays, EA is now scheduled to conduct its on-site review of NVLAP and A2LA in September of this year.
this is a matter of considerable interest to many of you, and we hope the pace of progress will increase. If things go well, we could hope for a final agreement by next June.

Peter Heydemann, NIST’s director of Technology Services — our focal point for standards-related activities — will be updating you on the status of the Mutual Recognition Agreement signed by the United States and the European Union last May. I should mention, however, that NIST intends to support efforts to expand the agreement to include instrumentation, which is a priority of the Transatlantic Business Dialog.

In the meantime, we are proceeding with a study to determine whether all the necessary measurement capabilities are in place to support mutual acceptance of calibration results. This entails comparing NIST’s capabilities with those of its European counterparts in the six product areas targeted in the agreement. This approach, we believe, is the best way to ensure integrity in mutual recognitions. You can track the status of this important exercise on the Internet. The NIST home page on the World Wide Web contains a directory of international comparisons — completed, under way, and planned.

We also have set up a toll-free number for companies and other organizations to report measurement problems encountered while doing business in Europe. We especially want to hear from American companies that have been required to repeat a measurement in the EU or have conducted solely by an EU member laboratory because U.S. measurements were unacceptable. If you have a pen and want to jot down the number here it is: 888-591-Test, or 888-591-8378.

In the Western Hemisphere, efforts toward regional cooperation in metrology are making headway. There are several activities worth mentioning. For example, NORAMET, which involves the United States, Canada, and Mexico, is progressing toward measurement equivalence agreements in nine specific fields. And the NACC — the North American Calibration Cooperation Committee — is laying the foundation for mutual acceptance of calibrations performed by accredited laboratories in the three countries. We expect an agreement to be concluded in early 1999.

Ultimately, we hope that these arrangements will be superseded by the Inter-American Metrology System, which goes by the acronym of SIM, and by an emerging accreditation system that serves the entire market of the Americas. NCSC has helped to further the evolution of this much needed regional metrology system, which encompasses 34 countries. By generously providing its publications on calibrations and measurement methods, NCSC is familiarizing our Western Hemisphere neighbors with U.S. approaches to metrology.

National Recognition of Accreditors

Also on the laboratory-accreditation front, NACLA — the National Cooperation for Laboratory Accreditation — is beginning to take shape. Ably represented by Tony Anderson, NCSC has been deeply involved in this venture to create a national infrastructure for laboratory accreditation. This infrastructure will eliminate much of the duplicative accrediting that testing and calibration laboratories must now endure — not to mention, pay for. It also will further the objective of “tested once, accepted everywhere.”

NIST has been spearheading this effort with ANSI and ACIL, a trade association representing independent testing laboratories. Besides NCSC, organizations represented on NACLA’s interim board include the American Industrial Hygiene Association, Ford, Lucent, Caterpillar, the National Sanitary Foundation International, and others. Private sector leadership is essential, but so is government involvement. Many of our trading partners are reluctant to accept reports issued by laboratories that do not operate within some kind of government-backed framework.

Support for NACLA is strong, and we are committed to getting it up and running. NIST is providing start-up funds to NACLA, and we are providing office space while NACLA is getting established.

International Standards

The proliferation of international documentary standards is another reality of global commerce and competition. The United States has yet to fully wake up to this reality. The European Community, in contrast, has an explicit policy to promote the adoption of standards that — quote — “give preference to the European approach at the world level.” Currently, Europe’s major standards bodies are generating new standards at the rate of about five per working day. And a substantial fraction of this output become ISO or IEC standards.

The implications are great for our economy. My colleagues at the Department of Commerce estimate that standards directly affect at least $150 billion in U.S. exports, and that they serve as trade barriers for an additional $20 billion to $40 billion worth of exports. According to another estimate, international standards now account for about 45 percent of the standards used by U.S. industry. In 1970, that share was about 10 percent.

Some U.S. companies and industry organizations are acutely aware of the strategic importance of international standards issues. The great majority are not. These companies are surrendering decision-making authority on standards that may ultimately affect the performance of their businesses. This needs to change. We must step up our efforts to include U.S. concepts and technology in international standards. U.S. industry must become a constructive force in the standards arena.

Getting organized is a key first step for our uniquely American standards system. Unlike most other nations, the United States does not have a private sector organization or government agency that has overriding responsibility for standards. We have more than 600 standards development organizations — or SDOs. These voluntary organizations have done their job well, and some have developed standards that are used in scores of nations.

In all countries, not just the United States, industry wants standards that enable companies to build products that are accepted worldwide. This, of course, also requires international acceptance of product testing done in the manufacturing nation. The U.S. standards community needs, in many cases, to work together more effectively to resolve our differences with one another to achieve a unified U.S. approach in international standards setting.

NIST is fully committed to support private sector organizations and federal agencies in efforts to eliminate standards-related trade barriers in international trade. I have personally pledged NIST’s efforts to work with the American National Standards Institute (ANSI), the American Society of Mechanical Engineers (ASME), the American Society for Testing and Materials (ASTM), the National Fire Protection Association (NFPA), the National Electri-
Keynote Address

cal Manufacturers Association (NEMA) and other standards-developing organizations as we sort through these difficult issues. It is a high priority for us.

We will host a summit on international standards issues in Washington on World Standards Day. That's Wednesday, September 23. The upcoming summit will be a forum for representatives of standards-developing organizations, industry, consumers, government, and other stakeholder groups. This is a beginning toward the ultimate goal of crafting a reasonable plan for an effective national strategy to meet global goals in both standards and conformance assessment.

I think this strategy has to be led by the private sector. I see NIST's role as encouraging the development of the strategy.

I invite NCCL to participate. Your organization represents a sizable portion of our nation's measurement infrastructure, and you are well qualified to address many of the challenges and concerns in the areas of documentary standards, conformance assessment, and accreditation. I encourage NCCL to be involved — and to be an active partner in efforts to eliminate standards- and measurement-related barriers to open, efficient global trade.

Information Technology and Metrology Partnerships

The standards and measurement community, I believe, is standing at a threshold of cooperative opportunities. In particular, I would like to suggest that we as a community take a comprehensive look at how we might use information technology to accomplish our objectives.

Let me tell you about a few projects we've started at NIST.

One project aims to build a Calibration-Web — an Internet-enabled framework for remote calibration, traceability, and accreditation of laboratories that test gas flow meters. Essentially, the goal is to create the equivalent of "portable primary standards."

The secondary metrology laboratory that serves as the pilot for this project is a facility operated by the Colorado Engineering Experiment Station — or CEESI, which is located in Nunn, Colorado. It will be outfitted with redundant pressure, temperature, and time sensors, which will be calibrated against NIST primary standards according to a statistically determined schedule. Via the Internet, NIST personnel will be able to certify that the remote facility is capable of delivering the quoted uncertainty.

For remote calibration purposes, a key piece of technology yet to come is an instrument for determining the flow profile entering the meter-under-test. This technology is under development. We are working with a Houston-based company, Daniel Industries, to develop a novel ultrasonic flow meter that will be positioned upstream from the meter-under-test. We also are working on the fluid dynamics models, pattern recognition algorithms, and other elements that will enable high-accuracy tele-calibration of flow meters. And, of course, we also are addressing issues regarding the encryption and security of control and data packets. We expect that the entire package of technologies and the underlying information infrastructure will enable us to demonstrate NIST-certified calibrations over the World Wide Web — perhaps, by 2001, our centennial year.

A more immediate prospect is the Web-based delivery of our test-
ing service for the form-fitting software used in coordinate measuring machines and related equipment. This service — the NIST Algorithm Testing and Evaluation Program — identifies data-analysis errors and estimates their contribution to overall measurement uncertainty. We expect the move to the Internet will significantly reduce turnaround times and customer costs.

Finally, I want to mention that we also are evaluating the Internet as a vehicle for delivering metrology training and education. Right now, we are thinking about an initiative that would link NIST to other National Metrology Institutes in the evolving Inter-American Metrology System — or SIM, which I mentioned earlier. For starters, we are contemplating establishing reasonably high-speed links with NMIs in about 10 SIM nations. At first, we would focus on providing information and training support for calibrating a subset of measurement standards, such as mass and the basic electrical units.

By means of cameras, reasonably high-speed links, electronic notebooks, and other tools, NIST staff members could provide direct, hands-on advice to their counterparts in Latin America. This idea, I think, has lots of potential. It could be the mortar that solidifies our visions of a unified measurement system for the Americas.

This is only a sampling of the opportunities that NIST is exploring. I invite you, the members of NCCL, to join us in this exploration and in the pursuit of a 21st century measurement system that is significantly better than today's.

Thank you. I'd be happy to answer any questions that you may have.

<http://www.nist.gov/oaia/intcompl.htm>
Dr. Andrew Wallard of the National Physical Laboratory in the U.K. discusses mutual acceptances of calibration certificates.

In the technical sessions, Peter Crisp of Wavetek discusses accreditation.

Irene Sheehan and John Coughlin show off their exhibit from the Hypres Company on the busy show floor. Actually things do slow down during the technical sessions, but coffee breaks are planned nearby to bring back the crowds.

Always the opportunist, Carol Singer, Publisher of Cal Lab Magazine, gets a quick interview with Director Ray Kammer of NIST.

(From left) Dr. Andrew Wallard, Deputy Director NPL, Dr. Peter Heydemann, NIST, and Dr. Angela Samuel, National Measurement Laboratory, Australia, lead a panel discussion on International Acceptance/Recognition.

Board members hang together at a conference luncheon. These gatherings are informal and give new attendees a chance to meet others doing the same kind of work.
The "Surprise Speaker" for the Wednesday luncheon was "Dr. Albert Einstein" (Arden Bercovitz). Tony Anderson tries to find out the connection between Metrology and the Theory of Relativity.

Jim Cigler (l) of the NVLAP program at NIST signs an accreditation agreement (Oh sure!) for Peter Unger (r) of A2LA, with Tony Anderson witnessing.

Arguably the hardest working folks before, during and after the show, our NCSL business office personnel from Boulder; (l to r) Doris Schaffner, Joan Wilshire and JoAnn Knowles. And the reward for a glitch-less show is the chance to do it all again next year.

NIST Director Raymond Kammer (r) joins NCSL President Bill Quigley and Kevin Ruhl at the Board meeting. We believe this is the first time ever NCSL was honored with a visitation from any NIST Director in all the years since our founding in 1961. We, of course, have had good continuous working relations with NIST directors through the years.

The usual "attendance" picture of our esteemed Board of Directors, obviously in a relaxed mood. Once the annual conference is underway, a lot of tension disappears.

Dr. Tom Huttemann (r) and Bill Simmons are busy selling exhibit space already for the 1999 Conference in Charlotte, NC.
Bobby Vee's band provided the music for the conference banquet. It looks like someone scheduled a "drop test" for the bass fiddle case.

Ed Pritchard of Lockheed-Martin with Carol Hackert from the State of Minnesota. Ed was the hard-working Chairman of the Entertainment Committee, and presided over the highly successful keynote and evening entertainment.

Dave Nebel dances with Carol Hackert at the evening program of the conference. Some NCSL metrologists must have taken minors in liberal arts and cultural studies.

Joe Buffalino (c) is congratulated by Bill Quigley and Tony Anderson for arranging the great entertainment.

Magic Comedy Entertainer Christopher de Palma works with Dianne Costlow to pass solid rings through each other. Even though I have seen this one exposed, it still looks magical.

I can't call this gathering of NCSL presidents "elders" anymore since young Kevin Ruhl (Boeing) is among them. Bill Quigley, Bill Simmons, John Lee, Ed Nemeroff, Ralph Bertrum, Kevin, Tony Anderson, Jerry Hayes and Mike Suraci. Well, there are some pretty elder ones there.
The International Dinner was held at Eaves Movie Ranch, a local historical site for early movie making and location shooting.

The Mississippi gambler (Dave Nebel) and the cowpoke (Ed Nemeroff). Pretty impressive costumes, but Ed, your WaveTek tailors need to do a bit of adjustment on the chaps.

Happy couples see the sights and stock up on Native American jewelry and desert artifacts.

The last event on the week's agenda is the always-popular Mike Suraci Door Prize extravaganza. Co-host Margaret Musick watches Ronald Balaze of the Michigan Dept. of Agriculture receive his wireless phone prize.

Food served from the barbeque hits the spot.

Dan Forg, Texas Instruments, picks up his big boom box door prize from Mike and Margaret.
BEST PAPER AWARDS

BEST APPLIED TECHNOLOGY PAPER
NCSL Photographic and X-Ray Film Transmission Tablet Round Robin Reports
Presenter & Author: Thomas A. Kolat
Texas Instruments, Inc

BEST INVITED PAPER
Advancing the State-of-the-Art in Synthesized Resistance Technology
Presenter: Warren Wong
Author: Arnold E. Nordeng
Fluke Corporation

BEST TECHNICAL PAPER
Calibration Importance of Ionizing Radiation for Medical Applications in Radiation Therapy and Diagnostic Radiology
Presenter and Author: Larry A. DeWerd, Ph.D.
University of Wisconsin in Madison, Wisconsin

BEST MANAGEMENT PAPER
NVLAP Calibration Laboratory Accreditation: A Working Example
Presenter: David H. Shumway
Authors: Christopher L. Grachanen
David H. Shumway
Compaq Computer Corporation
NATIONAL CONFERENCE ON TEST ENGINEERING AND METROLOGY (TEAM-99).
Bangalore, India
January 6-8, 1999

Theme: Test and Measurements for Global Competitiveness

Sponsor:
Standardisation Testing and Quality Certification (STQC) Directorate, Department of Electronics (DOE), Govt. of India, New Delhi

SUGGESTED TOPICS FOR TEAM - 99


QUALITY MANAGEMENT: Conformity Assessment, Accreditation and Certification, Education and Training

ABSTRACT DEADLINES:

Editor's Note: The original abstract deadline has passed before this NCSSL Newsletter was published, but the Convener will accept paper proposals during October in case there is room in the program.

The abstract should be sent to:
Convener, TEAM-99
Electronics Test & Development Centre
Ring Road, I Stage, Peenya Industrial Estate
BANGALORE - 560 058, India
Fax: 080-839 1804 or 080-852 0222
E-mail: <centre@etdcb.cernet.in>
<tsomanath@hotmail.com>

EXHIBITS: Equipment exhibitors are urged to inquire about arrangements & cost.

U.S./MIDDLE-EAST METROLOGY WORKSHOP EGYPT
November 8-12, 1998

An Invitation for NCSL Exhibitors to Participate

The United States NIST and the Egyptian National Institute for Standards (NIS) will co-host a series of workshops on Regional Metrology Cooperation, Laboratory Accreditation, Standards and Trade Practices, Chemical Metrology and Standard Reference Materials. These workshops are part of the US-Egyptian Partnership for Economic Growth and Development and under the auspices of the US-Egypt Science and Technology Agreement.

As part of the workshop, NCSL will hosting a one day regional meeting promoting mutual cooperation and understanding within the international metrology and standards community. This session will be open to all attendees. There will be an exhibition of US companies involved in metrology, standards and related activities.

Exhibit space will be limited to 15 exhibitors. Exhibits are table-top style, cost $1000.

Contact Ed Nemecroff, NCSL VP at Tel or Fax 561-287-3547, <ENemecroff@compuserve.com>, or NIST, Office of International and Academic Affairs, Dr. Claire Saundry, 301-975-2386, Fax 301-975-3530.
METROLOGY CALENDAR

NCSL MEETINGS

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

INDUSTRY/GOVERNMENT MEETINGS

October 19-21, 1998
7th Annual Meeting of the Council on Ionizing Radiation Measurement and Standards
NIST, Gaithersburg, MD
CONTACT: Bert Coursey, (301) 975-5584
Fax: (301) 869-7682
e-mail: <bert.coursey@nist.gov>

October 19-23, 1998
Precision Thermometry Workshop
NIST, Gaithersburg, MD
CONTACT: Andrea Swiger, (301) 975-4800
Fax: (301) 548-0206
e-mail: <andrea.swiger@nist.gov>

REGION MEETINGS

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

REGION 3

October 8, 1999
NIST, Gaithersburg, MD
CONTACT: Marlin Johnson, (443) 778-6671
FAX: (443) 778-6914
e-mail: <marlin.johnson@jhuapl.edu>

REGION 4

Central Florida Section, October 22, 1998
Fairfield Inn, Orlando, FL
CONTACT: David Hall, (407) 306-2269
Fax: (407) 306-2271

Tennessee Section, May 4-6, 1999
International Dimensional Workshop
Holiday Inn Select at Cedar Bluff, Knoxville, TN
CONTACT: Ed Pritchard, (423) 574-4261
Fax: (423) 574-2802
e-mail: <ewp@ornl.gov>

REGION 6

South Texas Section, January 21, 1999
Compaq, Houston, TX
CONTACT: Keith Scoggins, (512) 972-7742
FAX: (512) 972-8368
e-mail: <dscog@masnet.net>

REGION 7

October 13, 1998
United Airlines SFO, San Francisco, CA
CONTACT: Bruce Mayfield, (650) 462-5162
FAX: (650) 462-5113
e-mail: <bmayfi@teology1.com>

REGION 8

LA/Valley Section, November 10, 1998
Calabasas Inn, Calabasas, CA
CONTACT: Miguel Cerezo, (805) 447-1128
Fax: (805) 498-8733
e-mail: <mcercezo@amgen.com>

Phoenix/Tucson Section, November 12, 1998
Inn at the Airport, Tucson, AZ
CONTACT: Wayne Benda, (520) 794-4483
FAX: (520) 794-5658
e-mail: <webenda@mail.hac.com>

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: <giefbvr@ca.ibm.com>

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

CHECK WEBSITE FOR UPDATES
www.ncsl-hq.org

Please send Metrology Calendar additions and corrections to the NCSL Business Office,
(303) 440-3339 FAX:(303) 440-3384, or E-mail to ncsi-staff@ncsl-hq.org
Call for Papers
for the
THE 1999 NCSL WORKSHOP
AND SYMPOSIUM
July 11-15, 1999
Charlotte, NC

METROLOGY — At the Threshold of the Century Are We Ready?

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

Papers, Panels and Workshops
Suggested Topics

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

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

Management/Quality
♦ ISO Documents (9000, Guide 25, etc.)
♦ ANSI/NCSL Standard Z540-1 & Handbook
♦ Metrology Management Info Systems
♦ Strategic Planning
♦ Equipment Management
♦ Quality Standards
♦ Laboratory Accreditation
♦ Metrology Education and Training
♦ Self-Managed Workforce
♦ National Measurement Systems
   Around the World

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

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

Authors who meet the publication deadline for papers included in the proceedings will receive one complimentary registration per paper to the 1999 NCSL Workshop & Symposium.

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

Abstracts are required for Workshops, Panels, and Papers.

Due Dates

Abstract: December 11, 1998
Paper: April 12, 1999

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

A technically-redeeming justification to visit Arizona in the Springtime

Two Short Courses:

The Engineering of Measurement Systems for Test and Evaluation
March 8-12, 1999

The Dynamics of Measurement Systems for Test and Evaluation
March 15-19, 1999

The results of all the testing done by engineering organizations are DATA.

But, BAD DATA LOOK JUST AS BELIEVABLE AS GOOD DATA!

For the 38th year, your engineers, scientists and managers can learn how to tell the difference. This series will end with the 40th Annual Programs in 2001!

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, vibration, explosions, etc., especially in hostile environments in the field.

The lectures are presented at the Bachelor’s Degree level, although an experienced technician can absorb 75-85% of the first week’s material. The six lecturers represent a total of 220 years of industrial, consulting and academic experience. The courses are aimed at engineers, managers, theoretical analysts and scientists who must specify tests, perform them or evaluate them, and who need to know the right questions to ask about data validity and integrity. The emphasis is on Total Quality MEASUREMENTS, answering the question:

Can you prove that THESE data were produced by THAT measurement system without contamination, distortion and without interaction with the process being investigated?

For a detailed brochure and abstract of the courses, contact:

Peter Stein
Stein Engineering Services, Inc.
5602 E. Monte Rosa
Phoenix, AZ 85018
602 945 4603 Phone and FAX
800 632 7797
<meas-sys@primenet.com>

LIQUID AND GAS FLOW MEASUREMENT COURSES
MEASUREMENT UNCERTAINTY COURSE

Flow Dynamics, Inc.
(See Training Directory for Course Information)

Liquid Flow Measurement
October 20-22, 1998
April 13-16, 1999
Cost: $925.00

Gas Flow Measurement
October 26-29, 1998
April 19-22, 1999
Cost: $925.00

Measurement Uncertainty
February 16-19, 1999
September 21-24, 1999
Cost: $925.00

Location: Scottsdale, AZ

Course Objectives:
After completing the Liquid Flow course, each student will understand the optimum selection and use of liquid flowmeters. In addition, each student will understand how density and viscosity affect liquid flowmeters. Each student will learn how to calibrate liquid flowmeters using primary and secondary flow standards.

After completing the Gas Flow course, each student will understand the optimum selection and use of gas flowmeters. In addition, each student will understand Gas Law calculations and how they apply to gas flow measurements. Each student will also know how to calibrate gas flowmeters using primary and secondary flow standards.

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

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

**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.)

Feb. 1-5, 1999, Anaheim, CA, the week after the Measurement Science Conference there.

July 5-9, 1999, Charlotte, North Carolina, the week prior to the NCSL Workshop and Symposium 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 culminates 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 Punto  
San Clemente, CA 92672-3130  
Phone and FAX 949 492 6321

********

**SOME NIST CONFERENCE LISTINGS**

**Near-Field Antenna Measurements and Microwave Holography**  
NIST, Boulder, CO  
November 2-6, 1998  
Designed for technical personnel and managers involved with antenna measurements. Intended to transfer near-field measurement techniques to industry.  
Contact: Georgia Institute of Technology  
PO Box 93686  
Atlanta, GA 30377-0686  
404 894 2400, FAX 404 894 8925  
<coned@gatech.edu>

**Seventh Annual Meeting of the Council on Ionizing Radiation Measurements and Standards**  
NIST, Gaithersburg, MD  
October 19-21, 1998  
Intended for industry, government, and academia in applied radiation sciences. To identify national needs for ionizing radiation measurements and standards  
Contact: Bert Coursey  
NIST  
Bldg 245, Rm C229  
Gaithersburg, MD 20899-0001  
301 975 5584, FAX 301 869 7682  
<bert.coursey@nist.gov>

**Microwave Technology: Directions and Measurements for the 21st Century**  
NIST, Boulder, CO  
October 21-23, 1998  
Intended to create a forum wherein a broad and representative cross section of the RF and microwave industry can present their visions of the future of microwave technology and corresponding measurement needs.

Contact: Robert M. Judish  
NIST, mailcode 813  
325 Broadway  
Boulder, CO 80303-3328  
303 497 3963, FAX 303 497 3970  
<robert.judish@nist.gov>

**Precision Thermometry Workshop**  
NIST, Gaithersburg, MD  
October 19-23, 1998  
Intended for calibration laboratory personnel who wish to undertake precision temperature measurements. Traces NIST accuracies needed for research work, factory production or field evaluation.

Contact: Andrea Swiger  
NIST  
Bldg 221, Rm B128  
Gaithersburg, MD 20899-0001  
301 975 4800, FAX 301 548 0206  
<andrea.swiger@nist.gov>
Harry Moody is the Department Manager of Calibration Services for Lockheed Martin Idaho Technologies Company that operates the U.S. Department of Energy Idaho National Engineering and Environmental Laboratory (INEEL) in Idaho Falls, Idaho. The Lockheed Martin Idaho Standards and Calibration Laboratory (S&CL) supports the INEEL in being recognized as the leader in environmental management, nuclear materials disposition, research, applied engineering and systems integration, and the transfer of derived use energy and environmental technologies. The S&CL recently obtained accreditation by the National Voluntary Laboratory Accreditation Program (NVLAP) for metrology to support the INEEL’s mission. The S&CL is a highly diversified metrology laboratory that supports various research and projects at the INEEL.

The INEEL is located in Eastern Idaho and covers 840 square miles. The INEEL also has offices and labs in Idaho Falls, located 45 miles from the site. The S&CL provides standards for the calibration labs at a nuclear reactor, waste processing plant, radioactive waste storage area, special manufacturing plant and environmental research facility. In Idaho Falls, the lab supports Department of Energy research involving electric cars, battery testing, material research with electron microscopes, laser, chemical, etc. The lab has had to develop special calibration capabilities to meet the needs of the INEEL, such as a 120 miles-per-hour-closed-loop wind tunnel with a laser doppler air velocity standard for predictions of nuclear accidents and natural disaster research.

Harry Moody is a member delegate to NCSL since 1987. He is currently the chairman of the NCSL Calibration/Certification Procedures Committee. The committee is responsible for RP-3 “Calibration Procedures.” Harry is active with the NCSL conference by presenting papers, being a session host and helping develop the NCSL conference technical track. In addition, Harry has supported NCSL Region 9 by hosting a conference, presenting papers, and providing speakers from the INEEL.

In addition to NCSL, Harry is professionally active with the Lockheed Martin Metrology Panel. The Panel was formed in 1984 to promote consistency and interaction within Lockheed Martin metrology labs. In 1996, he was the chairman of the Panel. He has given technical presentations and has headed up various initiatives for the Panel. Currently, Harry is on the Steering Committee for the Department of Energy Metrology Committee. Harry has been working with the committee since it started in 1996. He has helped with the writing of the Committee Charter and By Laws and he chaired a working group that recommended a single calibration and testing standard for the Department of Energy.

Harry has a Bachelor’s degree in physical science and math and a master’s degree in physics from the University of Wyoming. Past experience includes working as a metrology engineer at Boeing in Wichita, Kansas and as a technical auditor at the Wolf Creek Nuclear Power Plant in Burlington, Kansas. Harry worked as a metrology engineer at the INEEL and has been the metrology manager for the past 11 years.

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Harry and his wife of 34 years, Sue, live in Idaho Falls, Idaho. Sue is a children's librarian at the Idaho Falls public library. They have two children: Cheryl, of Corvallis, Oregon, is working on a Ph.D. in Analytical Chemistry, and Steven who is a mechanical engineer working for Boeing in Wichita, Kansas, as a design engineer. Their diversions are traveling to see their children, cross-country skiing, riding motorcycles, and touring Idaho and Wyoming in their MGB. Harry's other diversions include golf, amateur radio and fly-fishing on the Snake River.
CANADA REPORT

Gary Hysert
NCSL/INMS Representative’s Report

International Metrology Activities

Alan Robertson represented INMS at a meeting of the Directors of National Metrology Institutes at the BIPM in February. The main topic of discussion was a proposed agreement on the mutual recognition of national measurement standards and NMI calibration certificates. The agreement has been developed under the auspices of the CIPM.

Representatives of thirty-five NMIs initialled a draft of the agreement and indicated their expectation of signing the agreement in late 1999. Analysis of previous measurement comparisons and the completion of new key comparisons will be important activities for the CIPM Consultative Committees over the next few years and it is expected that INMS will play an important role in these activities. The results of these comparisons will form the technical basis of the agreement that will become an important part of the measurement infrastructure underlying international trade.

The agreement will include a list of quantities, ranges and best measurement uncertainties for which calibration certificates of participating NMIs are recognized by the other participating NMIs. This part of the agreement will be administered by a Joint Committee of Regional Metrology Organizations and the BIPM. It has been decided that SIM should be the only member from the Americas. SIM, the InterAmerican Metrology System, is a “super region” composed of five “sub-regions,” ANDIMET, CAMEST, CARIMET, NORAMET and SURAMET.

INMS strongly supported the idea that NORAMET and SURAMET should both be members of this Joint Committee, with SIM representing ANDIMET, CAMEST and CARIMET who are not eligible to be Joint Committee members themselves because none of their members are active signatories of the Metre Convention. However, this position was not accepted by SIM. Other members of the Joint Committee are APMP, COOMET, EUROMET and SADCMET. For the first three years, INMS will be the SIM representative on the Joint Committee with another SIM country taking over after that.

A related issue, currently being debated, is the process by which the Consultative Committee comparisons can be linked to all the countries in the Americas. Currently only six of the thirty-four members of SIM are active signatories of the Metre Convention and thus eligible to take part in BIPM and CC activities. NORAMET is well placed, as all three members are active in at least some of the CCs. The SIM Technical Committee (in which INMS currently represents NORAMET) will probably become more active in coordinating efforts to establish the basis for metrological equivalence throughout the Americas. The policy of INMS is to encourage other SIM NMIs to become more involved as we do not have the resources to take on a significant additional workload in this respect.

QMS Project News

The establishment of internal quality management systems is a project that is being undertaken increasingly by National Metrol-
Standards Group. The OMEGA project was a collaboration between investigators at the University of Wisconsin - Madison and NRC to develop procedures and software for radiation therapy treatment planning using the Monte Carlo method. The workshop is to train investigators and educators in the use of the software. Further information can be obtained from the INMS web site at <www.nrc.ca/inms> or from the Ionizing Radiation Standards Group’s Dave Rogers at (613) 993-2715. You can also register for the course from the web site. Early registration is recommended for this course since there are limited spaces available.

The DC Resistance and Voltage Course tentatively scheduled for the fall of 1998, to be presented by the Electrical Standards Group, has now been put back to the Spring of 1999. Keep an eye on the INMS web site for further news. During 1998, very successful courses have been held in Photometry, Radiometry and Colorimetry and in Pressure and Vacuum Metrology, with over 50 registrants for each course.

Some Technical Highlights

The Electrical Power Measurements program developed a new measurement technique that allows for in-situ measurements of the concentration of cross-linking by-products in electrical insulation of high voltage equipment. The technique is based on thermoluminescence measurements and was shown to be more sensitive and less labour intensive than the commonly employed mass spectroscopy. A Canadian company has expressed an interest in marketing this new measurement technique that may find much broader application in the measurement of cross-linking by-products concentration in food storage containers.

The Acoustical Standards program is participating in two collaborative projects with industry concerning improvements to hearing aids and the development of a surround sound microphone system. The program is collaborating with a small Canadian company that is pioneering a surround sound microphone system for the motion picture entertainment industry. The success of this system will enable significant economies in production as well as maintaining or enhancing the quality of realism and may lead to a lucrative international market.

The Photometry and Radiometry program is collaborating with a small company, spun off from NRC, which is pioneering the development of silicon wafers doped with germanium for use in making integrated circuits for high speed electronic systems such as those used for cellular personal communication systems. The silicon/germanium wafer is widely viewed as potentially the most cost-effective technology for use in the high-speed regime characteristic of modern communications, displacing the previously favoured GaAs technology except at the highest speeds. The collaboration will develop, refine and exploit a photoluminescence technique to monitor the germanium doping levels to a high degree of precision.

The Swiss Federal Office of Metrology (OFM) and NRC have negotiated a collaborative agreement for future research on absorbed dose standards. This stems from research advances by the Ionizing Radiation Standards program using its sealed water calorimeter.

REGIONAL REPORTS

(Continued from page 52)

The second speaker was Jeff Willey of Measurement International. Jeff gave a presentation on automated resistance measurements at sub-PPM accuracies.

The third speaker was John Weland of L.S. Starrett. John gave a presentation on dimensional measurements.

The final speaker was Herb Fannin of Baxter Healthcare. Herb discussed Baxter’s temperature/humidity monitoring network. The network primarily monitors the temperature and humidity conditions of stability chambers and freezers. The system stores the data and automatically pages personnel if a problem occurs.

Four door prizes, consisting of a pen and pocket DMM were raffled off. Thanks to Tim Stark of Wattek and Dan Blagojevich of Base Eight for their generosity in providing the door prizes.

The day was ended with a tour of Baxter’s Metrology Lab, which included the temperature/humidity monitoring network mentioned above.

Attendees:

Juana Alcala  
Mike Albright  
Allen Anglin  
Mike Baird  
Ralph Bonnema  
Dan Bieganski  
Andre Brodsky  
Jim Casey  
Tom Czech  
Lee Dobbs  
Mike Eastham  
Jim Estes  
Herb Fannin  
Bruce Gaze  
Otis Hedlund  
Vijay Jee  
Jim Kane  
David Kalter  
Ken Kien  
Darril Klein  
Phil Lam  
Terry Luczak  
John Lynch  
Joseph Medrano  
Erich Nussbaum  
Elisa Oliver  
Rich Page  
Dave Phillips  
Mark Piper  
Arndt Raimo  
Bonnie Salyards  
Chuck Senevich  
Tim Stark  
Dave Walters  
Dennis Wang  
John Weiland  
Rodney Welbaum  
Fred Wuest  
Jeff Willey  
Dave Zatlow

Siemens Medical  
Instrument Calibration Service  
Lighthouse Training Group  
Lands & Stairs  
Lighthouse Training Group  
Base Eight  
Baxter Healthcare  
Lands & Stairs  
Baxter Healthcare  
R.M. Schutz & Assoc.  
Base Eight  
Blue Mountain Quality Resources  
Baxter Healthcare  
Baxter Healthcare  
Basis Eight  
Basis Eight  
Lands & Stairs  
Standards & Calibrations  
Lands & Stairs  
Standards & Calibrations  
Abbott Labs  
Lands & Stairs  
Lands & Stairs  
Siemens Medical  
Calibration Consultant  
Dekton  
Lands & Stairs  
Lands & Stairs  
ITT Research Inst  
Siemens Medical  
Baxter Healthcare  
Illinois Power  
J & H Metrology  
Baxter Healthcare  
Baxter Healthcare  
Dickson  
Wavetek  
Abbott Labs  
Motorola  
L.S. Starrett Co.  
Instrument Calibration Service  
Oak Grove Technologies  
Measurement International  
Baxter Healthcare
INTERNET PAGE

NCSL Y2K WEB SITE

This is to let everyone know that the Y2K resource site has been
turned on at our NCSL web site

The membership & the multimedia committee will be adding sig-
nificantly more content over the next 30 days. Any comments
and suggestions are solicited.

Thanks to Klaus Jaeger with John Grajera, at LMMSC, for their
great support and assistance and to JoAnn Knowles at the busi-
ness office for getting the site activated.

C. A. Motzko

REFURBISHED EQUIPMENT ON THE NET

To help customers stretch their purchasing budgets, Hewlett-
Packard has listed end-of-production equipment and more than
1,200 refurbished test and measurement products on the Web at

The equipment can be ordered by telephone and comes with a
one-year limited warranty that covers all the components covered
by warranties on new products.

The Web site also offers information on promotions, special trade-
in programs and special sales.

BE IT EVER SO HUMBLE, THERE'S NO PLACE LIKE NIST'S NEW HOMEPAGE

If you're a regular user of the NIST site on the World Wide Web,
<http://www.nist.gov>, there's a pleasant surprise in store on your
next visit. And if you haven't tried out the site before, now is a
great time to get acquainted.

An improved, more customer-friendly NIST homepage is now in
operation. The homepage's new features include a site index, an
upgraded search engine, a "hot news" sections, a link to NIST
atomic time and up-front connections to NIST's four major pro-
grams-the Measurement and Standards Laboratories, the Advanced
Technology Program, the Manufacturing Extension Partnership
and the Baldrige Quality Program.

A special section, "NIST and You," helps online visitors explore
the agency's nearly 100-year-old history, get answers to frequently
asked questions, take a "walk" through the world of timekeeping
and learn how NIST is connected to everyone's daily life ("NIST
in Your House") and community ("NIST and Your City").

Finally, the new homepage links users to the latest information
(usually including special websites) about the more than 100 ma-
jor conferences and symposium held at NIST each year.

Contact: Michael E. Newman, (301) 975-3025,
<michael.newman@nist.gov>.
DOCUMENTARY STANDARDS APPLICATION
Dave Abell, V.P.

Activities:

Worked with Accreditation Resources Committee on new charter and administrative guidelines

Committee activities:

LAB EVALUATION RESOURCES
Leroy Britain

The committee is working on a “Practical Guide for Estimating and Expressing Measurement Uncertainty,” a companion to the Z-540-2 standard. Leroy will hold a committee meeting at the July Conference.

LABORATORY FACILITIES
David Braudaway and Doug Cooper

David has incorporated inputs to “A Guide to Selecting Standards Laboratory Environments” and will resubmit to the Board for approval at the July meeting.

METROLOGY REQUIREMENTS
Dr. Howard Castrup

Howard’s four subcommittees will meet at the July Conference.

• Calibration Intervals
• Measurement Decision Risk Analysis
• SPC Methods
• Decision Support

ANS/NCSSL WRITING COMMITTEE
John Wehrmeyer

John plans to hold a committee meeting at the July Conference. Jesse Morse of the Fluke Corporation is now Vice-Chairman. Still a high priority for this committee is staffing the ANSI Secretariat position. This will be done by the NCSSL Business Manager once that position is filled.

Report:

Since the last committee meeting was held at the Measurement Science Conference in February, the committee has been active in commenting on the ISO Draft International Standard (DIS) 17025, which will replace the ISO Guide 25, and Draft 4 of the APLAC- EAL Policy on Traceability of Measurements.

Due to the outstanding work of Arman Hovakian of the US Navy, significant input on the APLAC-EAL Policy was collected, organized, placed on the NCSSL website, and conveyed to Peter Unger of A2LA.

More recently, the committee has been gathering comments on the ISO DIS 17025. This will be a major discussion topic at the next committee meeting.

The next committee meeting is planned to be held on July 20, 1998 at the Hyatt Hotel in Albuquerque, New Mexico. In addition discussing the comments on the aforementioned documents, the committee will be organizing working groups for a number of projects such as the rewriting of Z540-1-1994 and Z540-2-1997, and the writing of a new standard for certifying facilities making radar cross-section measurements. In addition, plans for interfacing with the ASTM E36, ISO 10012-1 Writing Committee, and the ISO TC 69 will be discussed.

The Committee Chairman has submitted a proposal that the ANSI/NCSSL Z540-2-1997 document on measurement uncertainty be offered for adoption as an ISO International Standard to ANSI. ANSI has requested that the other interested parties be contacted before proceeding such as the ISO TC 69. The Chairman will be pursuing this effort in the days ahead.

At the April meeting of the NCSSL Board of Directors, Jesse Morse, Committee Vice-Chairman, gave a presentation of the roles and responsibilities of the ANSI/NCSSL Secretariat. It has been reported that Mr. Morse did a good job and the presentation was well received.

The Committee Chairman has prepared an input to the NCSSL 1999-2003 Long Range Plan. The proposed plan offers two different budgeting scenarios depending upon the speed at which the NCSSL moves toward issuing documents electronically. The scenarios illustrate how the NCSSL could improve its cash flow by moving to a “reduced paper” approach.

ACCREDITATION RESOURCES
Larry E. Nielsen

Jack Burdick, with the help of Larry Nielsen also of Southern California Edison, has set a meeting date for the upcoming NCSSL Conference in July at Albuquerque. The agenda will include refining the charter, goals and objectives and budget for the committee. Jack, Larry and I are completing the administrative guidelines for this committee.

Report:

The first meeting of the this new committee was held in conjunction with the NCSSL Conference in Albuquerque in July. The meeting was conducted by Larry Nielsen of Southern California Edison, the newly appointed chairman taking over from Jack Burdick also of SCE. Despite the light turnout for the meeting the committee managed to get some preliminary business done, and during the last two days of the conference some potential new committee members were recruited. The following were in attendance:

Dave Abell (Hewlett-Packard) - VP Documentary Standards
Larry Nielsen (So. Cal. Edison) - Chairman
Doug Faison (NIST/NVLAP) - Chairman
Steve Doty (NIST/NVLAP)
Jim Allred (Lockheed-Martin)
Ken Parson (DynCorp)

Dave Abell provided some background on the formation of the committee and its purpose....To serve as a resource of information and guidance within NCSSL for member laboratories either
contemplating, in the process of, or upholding their accreditation to prevailing national and international laboratory accreditation standards.

A good deal of time was spent discussing and debating the size and scope of the task at hand (actually the goals and objectives of the committee). We were quick to recognize that more input and committee members are needed to make it a success. We're looking for members from laboratories that have achieved accreditation (although there are no prerequisites), or assessors or members of the accreditation bodies, that may be willing to share their experiences and expertise with others.

Please contact Larry Nielsen if you are interested in joining this committee and becoming more actively involved in the NCSL. We're looking for customers, too. Tell us how we can serve your laboratory or get your questions answered in an off-line, and user friendly environment.

We did come away from Albuquerque with an agreement on our charter... A simple one-liner that should be generic enough to fit everyone: "To provide practical assistance to NCSL member organizations who are pursuing and maintaining formal calibration laboratory accreditation".

Some ideas tossed around on how we might best live up to our charter included possible publication of a "how to" RP that may include information on getting prepared for accreditation, and perhaps include a quality manual outline or two consistent with ISO 9002, Z540, Guide 25, ISO 17025, etc. A couple of other interesting ideas came up .... Metrologists already understand the benefits of accreditation...let's figure out a way to convince the CEO's of the world ... Accreditation needs to be marketed .... let's use the WWW, and so on. We need your ideas and input!

We agreed to spend the next few months getting the word out on the committee and in recruiting new members. We plan on making some more formal contact with accredited laboratories to invite their participation and representation on the committee. Our next meeting will likely be held in conjunction with the Measurement Science Conference in February. By that time we hope to have our membership lined up and some ideas in hand on which to focus our attention and effort.

Networking at the conference produced some additional committee members. The following folks have indicated their willingness to participate:

Ralph Veale (NIST-retired)
Dave Shumway (Compaq Computer)
Percy Pan (A2LA)

PUBLICATIONS
John B. Ragsdale Jr.

Activities:
- Updated Bylaws and Guidelines for all 180 Committees and those associated with NCSL publications.

Committee Activities:

OVERSIGHT
Dr. Stuart Kupferman and Steven Stahley

We began processing for publication the RISP on "Intrinsic and Derived Standards" and the RP on "Dead Weight Piston Gauges." Reviewed the proposed RP to be titled "Guide to Selecting Standards Laboratory Environments".

GLOSSARY
Jesse Berlanga

The Glossary revision is 95% complete. The final draft is being formatted by Claude Fourroux. This should be complete and ready for publication by the end of July. The Acronym List is complete and will receive final review by the Committee at the Albuquerque meeting. The Committee especially wants to thank Claude Fourroux, Maria Santiago, and Julia Rivera for the contribution they made in reviewing and formatting the Glossary and Acronym List.

ARCHIVAL
Don Dowell

No Report

EQUIPMENT DOCUMENTATION
Hugh Felger

No Report

CALIBRATION/CERTIFICATION PROCEDURES
Harry Moody

The Committee page has been installed as part of the NCSL Home Page. There are links that allow access to the procedure database, search capabilities, and an online method to submit procedures. A small number of procedures have been submitted through solicitation efforts of the Committee.

The Committee will review RP-3, "Calibration Procedures", at their meeting to be held in conjunction with the NCSL Conference to determine if it needs to be revised or updated.

EDUCATION AND TRAINING
Bill Sorells, V.P.

Activities:
- Modified Guidelines 164 and 165 and forwarded to the Executive VP
- Created Guideline 166 for the Simmons Scholarship.
- Identified and reported training available from NIST.

I believe that I have been successful in recruiting a chair for either Training Resources and Training Directory. I will hold one further discussion with the candidate and then appoint him as one of the chairs.

I plan to have a meeting with the committee chairs at the conference and try to establish a focus on the mission of Education and Training and attempt setting some achievable goals.
The checks for $3000 each for 3 of the 4 selected community colleges were requested and will be presented to the representative during the conference or at the board meeting. Sir Sanford Fleming College in Canada does not want the money distributed at this time.

I reviewed the rewritten charter for The Joe D. Simmons Scholarship fund. Norm Belecki established a nomination committee with the anticipated result of selecting a scholarship recipient in time for the conference.

Committee Activities:

TRAINING RESOURCES COMMITTEE
Bill Serrells

The sub-committee reviewing the material in the library is still working, but slowly. Some of the volunteers have had to back out due to increased workplace pressures. We need to recruit some new volunteers to review material and reallocate some of the workload to those that are still active. I want to thank Lyle Bagley for providing the leadership for this committee and Alene Hibbard and Roy Campbell for their diligent work to complete the video tape reviews.

The NCSL Training Material Library has had a banner year. Statistics are taken each year just prior to the NCSL Conference of the participation by the membership. This year the business office has handled 561 requests for training material. The library now consists of 143 titles.

The highest requested title, with 35 requests is the tape that contains lessons 324-326, Introduction to Measurement, Calibration, Accuracy & Error, Measuring Dynamic Variables. We had 35 titles requested more than 5 times, 13 titles requested more than 10 times and 4 titles requested more than 20 times.

We do have a problem in that the more popular titles have a backlog of requests. For instance, the tape requested 35 times has only been delivered to 10 members, with 25 outstanding requests remaining. The next most requested tape, with 34 requests, is backlogged with 22 outstanding requests. These are the tapes that we purchased from Omega Engineering and are relatively inexpensive. If our members that are waiting to review this material are interested they might purchase the tapes for their own use. See the Omega Engineering General Catalog. The titles are:


516-517 Thermometer Calibration
23/10 Mass, Force, Strain, Torque & Pressure Measurement

I have received a recommendation to purchase the 27-tape series of 62 hours of lectures by Dr. Peter K. Stein's course, "The Engineering and the Dynamics of Measurements Systems for Test & Evaluation; according to the Unified Approach." The cost is $1,100 for the set and some discounts are possible. It is recommended that we purchase 2 copies as we anticipate a high demand.

I have reviewed the feedback from our members about our training material. Generally most members are satisfied with the training material. Some members seem to believe that we produce this material and should be updating it periodically. Other members are so critical about the material, one would think that they were looking for a specific answer for their measurement problem, instead of understanding the material that is presented and make their own application to their problems.

TRAINING INFORMATION DIRECTORY
Dave Lorenzen

I do not have anything new to report for the Training Information Directory Committee. This quarter, as usual, did not involve any specific activities. I will be mailing solicitation letters to training course sponsors by the end of July to start the process of preparing the 1999 edition of the directory. If at the NCSL conference you find someone who would like to take over the chair of this committee, I will be glad work them through the procedure this year.

PERSONNEL TRAINING REQUIREMENTS
Hong Rosson

I wish to thank Tom Kimbrell for his efforts as Personnel Training Requirements Committee Chairman for the past three years. I will continue to follow our goal to gather the information that we need to develop the RP for Personnel Training Requirements. I obtained the information from Tom at the last meeting at the Measurements Science Conference in February, which 16 other committee members attended. The meeting was excellent. They set the Purpose of RP as well as the general guidelines for RP, which we will continue to discuss in detail at the NCSL conference. This effort will require many volunteers.

I am asking all of my committees to continue to contribute their time and effort to complete this RP in the near future. I have some proposals on job titles and descriptions that we can discuss and modify based on committee input. I also put together a company guideline to hire new personnel and to upgrade existing personnel. I encourage all teams to contact each other via e-mail more often to introduce and discuss new and better ideas for this RP. Again I would like to thank all of you for your support of this committee in the past, and I am looking forward to working with all of you in the future. Together we will make this thing happen.

EDUCATION SYSTEM LIAISON
John Gerhard

This committee has not been active during this quarter, due to business requirements of the Chair and other members. Updated the Long Range Plans and the Guidelines 164 and 165.

CANADIAN EDUCATION SYSTEM LIAISON
Graham Cameron

Fleming College Awards
Awards were presented to three students at Sir Sanford Fleming College, Peterborough, Ontario, with top standings in the course Measurement, Science, namely;
Leonard Armstrong, Lynn Bryans and Robin Fair.

The 1998 Academic Awards Ceremony took place on Friday, June 19th.

Scholarships & Bursaries

I have had a number of discussions with Fleming staff about the scholarships for this year. We are planning to offer either 6 or 8 scholarships, the monies for which will be expended in calendar year 1998. As per our previous practice, a small amount of funding will be used for discretionary bursary purposes. These awards, scholarships and bursaries are being funded from monies previously provided to Fleming College.

Due to sickness, I was unable to attend the planning meeting which I had scheduled with key Fleming staff for 1998-06-19. It will be rescheduled at Peterborough or Ottawa for early Fall and will cover distance learning, which may be an excellent delivery mode for Canadian NCSL member companies which need to expand staff capabilities into other metrological disciplines or enhance individual capabilities.

Realizing that I would not attend the Summer Board meeting, Bill Sorrells and I discussed very briefly some new delivery approaches.

I am endeavouring to find ways to make Metrology and Applied Measuring Science a more attractive career for current and future students, have planned for some slides and overheads which show Fleming graduates in interesting and demanding laboratory settings, and arranged for printed media coverage.

INDUSTRIAL PROGRAMS
Gary Shulkr, V.P.

Activities:

• Drafted a guideline addition for the Honors and Awards area, for submittal to Klaus Jaeger.

• Worked with Hong Rosson and Charlie Motzko on transfer of the longevity awards information to Hong, and acquiring some additional plaques and pins.

Committee Activities:

UTILITIES COMMITTEE
Ken Raslon

The Utilities Committee held a meeting at MSC and has laid plans for two meetings in conjunction with the annual NCSL convention in Albuquerque. Ken has lined up two speaker/presenters and this looks to be two good sessions.

Report:

The Utilities Committee meeting took place on July 20 & 21, 1998, at the Albuquerque Convention Center in Albuquerque, NM. There were twenty-three attendees present, representing fourteen member utilities and other interested private and government organizations.

Gerald FitzPatrick of NIST presented an overview of a document which he co-authored, “Measurement Support for the U.S. Electric-Power Industry in the Era of Deregulation” (NISTIR 6007). He noted that the technical and measurement needs for T&D Systems described in this document were identified through discussions with power equipment manufacturers, utilities and R&D organizations. Mr. FitzPatrick invites your comments on this assessment. Comments should be sent to:

James K. Othoff
Electrical Systems Group
National Institute of Standards and Technology
Bldg. 220, Rm. B344
Gaithersburg, MD 20899-0001

A copy of NISTIR 6007 is available from the National Technical Information Service, at (800) 553-6847.

John Ramboz of RAMTech Engineering, Inc. discussed the latest developments in the measurement of high currents; specifically the High Current Technologies, Inc. Model 1016 pulsed current calibration system for the calibration of circuit breaker test sets. According to Mr. Ramboz, the heart of the unit is a precision Rogowski coil, which enables the instrument to measure currents up to 100kA rms at an accuracy of 0.7% of reading for a pulse duration of 10 cycles or less. A demo CD ROM is available upon request from RAMTech Engineering (352-242-0456).

Curt Casto of Southern California Edison presented a software program he developed and wrote to perform automatic failure analysis. The specifications - including accuracy degradations due to environmental effects - for all M&T&E used by a particular customer, are in a database. Whenever the customer uses a piece of M&T&E, the specifics, (i.e. range, reading, environmental conditions) are entered into another database. When a piece of M&T&E is found to be out of tolerance, a look up occurs to determine whether the out-of-tolerance parameter was ever used, and if so, under what conditions. This is a very sketchy description of a multifarious and comprehensive program. Anyone wanting more information should contact Curt directly.

Update on the Utilities' Committee Web page - there is none. However, Carolyn Hiller did offer to help design a page with the assistance of another volunteer who chooses to remain anonymous for now. I fully expect that we will have a web page before our next meeting.

The next meeting will be held in conjunction with the MSC in January, 1999 in Anaheim, CA at the Disneyland Hotel.

Attendees:

Joseph Bowers
Carolyn Hiller
John Ragsdale
Bradley Bell
Steve Wellman
Stephen Gifford
Rob Ostrander
Jim Brown
John Ramboz
Curt Casto
Chris Guillot
Bill McCulloag
Ken Raslon
Keith Suggins

Virginia Power
Pacific Gas & Electric
TVA
First Energy
Consumers Energy
Commonwealth Edison
Commonwealth Edison
Consumer Energy
RAM Tech Engineering
SCE
Energy Operations
Bently Nevada
PECO Energy
South Texas Project Nuclear Operating Co.
HEALTHCARE METROLOGY  
Mitchell Johnson and Tom Couch

Healthcare held a meeting at MSC as well and has plans for another at the Convention. Please note a change of employer for Mitch Johnson, this will be temporary, Johnson Enterprises, 9231 16th Ave So, Minneapolis, MN 55425. Also I am pleased to announce a joint Chair for this very active committee Tom Couch, Baxter Tech Park, Round Lake, IL 60073.

AIRCINE METROLOGY  
Carl Closemore

On April 29, 1998, the Airline Metrology Committee met at Delta’s Technical Operations Center in Atlanta.

We discussed mutual concerns of metrology departments within the major airlines. Metrology within our airlines began from the necessity to comply to calibration requirements. Calibration shops were located in different areas of each airline operation as the need dictated. At United and Delta, different calibration shops are under different management, either Quality Assurance or Tooling/Maintenance. We agreed that all calibration in an operation should be organized under one manager.

United presented an impressive booklet listing Standards and their uncertainties. Daran Paden presented a list of Standards and uncertainties for Delta’s pressure, flow, weight and torque calibrations.

Each airline in the committee is asked to produce a list of calibration standards and uncertainties, and a list of key calibration personnel with contact numbers. This information may be sent to the Chairman, Carl Closemore, who can distribute it to interested members.

United noted that they use a steering committee to help make recommendations for calibration policy.

Copies of the Australian AAC concerning calibration were distributed.

All members present were in agreement that the ANSI/NCSL Z-540 is a valuable tool, and we should now scrutinize it to decide if compliance with it, for the airline industry, is feasible. We should decide if we can comply with it as written, or if we need to recommend any exceptions or exclusions of sections that are not pertinent to airline operations. We acknowledge the importance of a standard we can work to, and be measured against. Lee Clements recommended that we may want to receive ATA (Airline Transport Association) involvement when we adopt a standard.

We contacted Carl by teleconference in the afternoon, to recap the meeting. He agreed that we should make the next step toward adopting this standard. Carl also indicated that through the NCSL we may be able to set up vendor training on aircraft specialized test equipment. A list of training requests can be forwarded to Carl, and he will communicate our needs to the NCSL.

We have scheduled a tentative meeting at the Albuquerque conference.

Attendees:

| Mike Thilges | United Airlines |
| Todd Bjornson | United Airlines |
| Lee Clements | Delta Airlines |
| Ray Lewis | Delta Airlines |
| Daran Paden | Delta Airlines |
| Bob Van Patten | Delta Airlines |
| Joe Cebulski | Delta Airlines |
| Carl Closemore | Northwest Airlines |

(by teleconference)

On July 22, 1998, the Airline Industrial committee held a meeting in Albuquerque, NM following the NCSL conference. In attendance were 21 representatives from: American Airlines, Boeing, Delta Airlines, National Association of Testing Authorities, National Measurement Laboratory AU, National Physical Laboratory UK, NIST US, Northwest Airlines, United Airlines, and US Airways. Many common concerns were voiced in the meeting, and the committee discussed what direction airlines metrology was going with respect to Z540, Guide 25, Guide 17025 or Mil Spec.

Representatives from NIST provided good information of an upcoming NIST case study on the Airline Industry, and discussion between NIST and the FAA on many airline’s metrology issues. Some issues being looked at are: 1) Whether to adopt Guide 25 or 17025 in airlines metrology, 2) The formation of a test equipment data base for equipment appropriate for the airlines, and 3) Laboratory accreditation.

Other topics discussed included: 1) Inconsistencies in manufacturer’s specification, and certificates of calibration, 2) The limited number of manufacturers for some aircraft-related test equipment, 3) Traceability of test equipment to national standards laboratories other than NIST.

The committee decided to look at Guide 25 and 17025 to see if it might be appropriate for the airlines industry. The airlines in attendance were also interested in having the FAA involved in the next meeting.

Craig Hubbard

EQUIPMENT MANAGEMENT FORUM  
James Taverner

The EMF committee has a meeting set for the convention. Jim Reports little activity this quarter and is looking to get additional involvement during the next.

BENCHMARKING PROGRAMS  
John Wade Keith III

Benchmarking reports very little response to this year’s survey. We will need to discuss this Board Meeting how to proceed with this important effort.

Health and Safety committee no reported activity.

I’ve had no further contact with the two folks from the Chemical
Industry that expressed interest. I will again attempt to follow up in this area.

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STANDARDS POLICY
Anthony Anderson, V.P.

Activities:

Since the last board meeting I attended the first meeting of the National Cooperation for Laboratory Accreditation (NACLA) permanent board. NACLA was incorporated on May 20, 1998 in the District of Columbia, as a 501 C (6) non profit organization. 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 the board meeting on May 29th, Fred Grunder of the American Industrial Hygiene Association (AIHA) was voted in as the first President of NACLA. Lou Dixon of Ford Motor Company was voted in as Executive Vice President and I 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 Conference in Albuquerque.

I provided input to the Laboratory Liaison Committee of ILAC regarding a checklist of key points to be examined to determine equivalence of accreditation of laboratories in the context of mutual recognition agreements. A draft is being prepared, which will be discussed at the Sydney meeting in October.

Committee Activities

GOVERNMENT AFFAIRS
Mike Suraci

INTERNATIONAL MEASUREMENTS COORDINATION
Graham Cameron

Regional NMI Activities

Those who are aware of the work in progress within the regional National Metrology Institute (NMI) coordination committees such as NORAMET, EUROMET, APMP and SIM, see progress being made with measurement intercomparisons and a promising outlook for the establishment of measurement equivalence agreements and a global agreement under the BIPM.

Laboratory Accreditation & NMI Committee's Interface

The North American Calibration Cooperation (NACC) committee is an example of regional coordinating committees working closely with the regional NMI committee (NORAMET) to identify unmet traceability needs above the cal lab level which require resolution.

Guidance Publication

Through the European Cooperation for Accreditation (EA), the European community recognized the differences in thread gauge measurement (Calibration) and accreditation practices which have grown historically. Those who work in the field of thread metrology will welcome a consensus of member opinion and preferred practice on how the clauses of accreditation standards and the estimation of measurement uncertainty might be applied in this context.

Documents such as this one, currently at the draft stage and also under review by the member organizations of the Asia Pacific Laboratory Accreditation Cooperation, should go a long way to smoothing the way for international measurement coordination in this important field.

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MEASUREMENT SCIENCE & TECHNOLOGY
Richard Pettit, V.P.

Activities:

We are still very interested in locating a person to take over the Consensus Standards Committee. As you remember, a consensus standard is defined as “an artifact or process that is used as a de facto standard by mutual consent of the supplier and customer when no recognized U. S. national standard is available.” The committee was in the process of surveying the NCSL membership on the use of consensus standards. Anyone interested in consensus standards is urged to call R. B. Pettit and discuss the committee.

Please note that the Pressure Working Group (this group just developed the RISP "Deadweight Pressure Gauges" that will be printed soon) is still active and is reporting to the Intrinsic/Derived Standards Committee. If you are interested in working with this group, please contact either Kurt Solis (Ruska Instrument Corp.) or Michael Bair (DH Instruments, Inc.).

There will be two interesting sessions at MSC in January 1999. John Bell (US Army) is organizing a session titled "Current Status of Intrinsic Standards and Recommended Practices," and I am organizing a session titled "Issues in Purchasing and Maintaining Intrinsic Standards." Both sessions should have a lively discussion.

Committee Activities:

CANADIAN NATIONAL MEASUREMENT REQUIREMENTS
Les Peer and Lorraine Yeomans

The committee has been re-activated following summer holidays. Working with me as co-chair is Lorraine Yeomans of Pulse Engineering Ltd. in Winnipeg, Manitoba.

Lorraine has resumed her very successful action of faxing a one-page survey to all our member delegates. Those who haven't faxed back within one week are receiving a follow up phone call from Lorraine to complete the survey. To date we have received faxed replies from 44 of our 110 members.

This membership input is greatly appreciated. We fully understand the imposition on your daily schedule which such surveys make, but this is not a sales market survey, it is designed to help you and your companies remain competitive. We encourage the rest of you who haven’t yet replied to give this survey your serious consideration as the information received is important to the
NRC/INMS, enabling them to guide and obtain funding for both the expansion of current programmes and the establishment of new ones to serve your measurement and training needs.

A preliminary report will be presented at this fall’s NCSL Canadian Region Symposium at IBM in Bromont, Quebec.

**MEASUREMENT COMPARISON PROGRAM**

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/nscilmcp>. I have had eleven visitors to the "MCP Guestpage and Survey" form page and five 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 also planned for the website. I also plan a page of links to information on Youden Plots, Statistical Process Control (SPC) and methods of analysis, etc. If you have any favorite links relating to those topics, let me know and I will include them.

The MCP Webpage will be home to a set of MCP reports that go back to 1989. I am trying to make them available to viewers of my web page. They go back to the days when Mike Cruz and Arno Ehman chaired the MCP committee. They will provide some information on past round robins. I hope to be able to catalog them and provide search capability to viewers using Adobe Acrobat.

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>. Woody has distributed the latest draft to those on the writing group. We hope to pass it to the NCSL Board in October. A check list and bibliography have now been added. The bibliography includes a reference section and list of papers from past NCSL, MSC and CPEM Proceedings.

Seventeen people attended the MCP Committee Meeting at NCSL. We discussed the RP and made some additions to it. Three papers were given at NCSL on round robins: Ronald F. Dziuba (NIST) “NIST Measurement Assurance Program for Resistance”, Tom Kolat (Texas Instruments) “NCSL Photographic and X-Ray Film Tablet MCP Report” and Marc Butler (Micro-Motion Inc.) “A Mass Flow Measurement Comparison Program Using A Tandem Coriolis Flow Meter Artifact.”

Dr. Petitt (NCSL VP of Measurement Science and Technology) and I discussed the charter and long-range plan of the MCP committee. We decided to update it to the following:

Provide calibration laboratory management with methods for evaluating or improving the quality of measurements performed by their laboratories. Activities will include:

1. Develop and support NCSL sponsored round robins
2. Interface with the NIST Calibration Program on requested NIST calibration support
3. Assist with international, national and regional round robins as appropriate
4. Develop and maintain guidelines that define the responsibilities and procedures for round robins.
5. Provide artifacts to interlaboratory comparisons on a case-by-case basis.

**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 POC at NIST (Phone 301-975-5939). Richard states that he is waiting for a status report from KRISS and he 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 yet. Clark can be contacted at FAX 303-497-2740 or e-mail <hamilton@boulder.nist.gov>

Jeff Gust (GTE 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. The ILC will begin in Sept. 1998 and end in May 1999. Ron Dziuba is the contact at NIST. The ILC will be limited to 20 participants due to administrative and time constraints. There are 3 openings left as of Aug. 25. Jeff can be contacted by phone at 219-428-6504, FAX 219-424-1031 or e-mail at <jeffgust@aol.com>

Ronnie Eubanks (Halliburton Energy Services) reports on Region 6 Gage Block Round Robin. This is the second round of this particular MCP on our gage block set (furnished by Texas Instr.). The participants are Texas Instruments, Halliburton Energy Services, Compaq Computer, NIST, Metropex Metrology, Precision Fabricating & Cleaning and SIMCO Electronics. The final report has not been sent to the participants as of this date. It will have been sent before the NCSL Conference in July. Thomas Kolat (Texas Instruments) will coordinate the next round of this MCP. Ronnie can be reached at <Ronnie.Eubanks@halliburton.com> or phone (214) 418-4034.

Curtis Keller (Stabro Laboratories) is interested in starting a new internal dimensional measurement of ring gages. It would run for approximately 6 months beginning this January using 4 rings at 0.040, 0.125, 0.250 and 1.000 inches. NIST will participate. Contact Curtis at (800) 578-2276, (801) 530-0715, FAX (801) 530-0745 or e-mail <ckeller@vii.com>

A national mass round robin is in the planning stages according to Lewis A. Fong (Lockheed Martin Missiles & Space). If inter-
Committee News

ested call Lewis by phone at (408) 756-3534, FAX (408) 742-4435 or e-mail <lewis.fong@lmco.com>

The following people are interested in participating in ILCs. The information is listed by Date of Form Input; Name; Company; Measurement Area(s); E-mail Address

8/97; Charles L. Thomas; Allied Signal; RF Power 100 kHz to 50 GHz; <chuck.thomas@jpl.nasa.gov>

4/98; Daniel Lincoln; McDermott Technology, Inc.; DC & Low Freq, Mechanical and Pressure; <dan.1.lincoln@mcdermott.com>

7/98; James E. Brown; Consumers Energy; DC Volts 1 micro to 1000 Volts; <jebrown@voyager.com>

8/98; Stephan A. Dixon; Constellation Technology; Mass (1 mg to 5 kg), DC Standard Cell (10 Volts); <sdixon@contech.com>

The preceding information was taken from the “MCP Guestpage and Survey” form page.

ARFTG Verification Kits

Greg Burns (Northrup Grumman) is now the Chairman of the ARFTG Standards Committee that runs the MCPs. His email address is <BURNS.John-Postal.essd.northgrum.com>. I submitted a letter in January to Sharrill Dittmann (NIST Office of Calibration Services) requesting funding for NIST support 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 an ongoing round robin and they are always looking for new labs to join in. 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 at:<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 Airlines and a short. Connie can be contacted at (303) 497 - 3264, FAX (303) 497-3970 or e-mail <ondrejka@boulder.nist.gov>

Pat Nolan (Lockheed Martin Missiles and Space) was 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, Beadless Airline, and a set of Offset Shorts (M/F). Call Pat at (408) 756 - 2144, FAX (408) 742-4435 or e-mail <pat.nolan@lmco.com> for more information.

Pat received the 1998 Woodington award at MSC in Pasadena, CA. Congratulations Pat!!! We have also learned that he has retired from Lockheed-Martin. We send our best wishes for a fulfilling retirement.

Ed Daws (Witttron) 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 or <ken_wong@hp.com> 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.nadeponi.navy.mil>
A second special meeting was organized in April this year at the NIST Boulder facilities to discuss national and international accreditation issues. The meeting took place during one of the NCSL Board of Directors meeting days. In attendance from NIST (Boulder) were Dr. David Norcross, NIST Director Boulder Labs, and fifteen metrology experts from the various laboratory facilities. In addition, Dr. Peter Heydemann, NIST Director for Technology Services, Ms. Sharrill Dittmann, Chief of Calibration Programs, Ernest Gainer, Scientific Advisor and Norm Bockel, Quality Control/Calibrations, attended this meeting from NIST, Gaithersburg.

The presentations by NCSL members were similar in nature to the ones given in January in Gaithersburg, MD. Besides facilitating the meeting, I discussed the accreditation experiences at Lockheed-Martin in Sunnyvale. Ed Nemeroff, representing Wavecek, continued with topics covering the role of NCSL in the accreditation area, as well as worldwide accreditation issues.

Dr. Richard Pettit covered accreditation experiences and future plans by the DoE laboratories. Mike Suraci gave an overview of accreditation status in the U.S. Navy, Army and Air Force facilities. This was followed by a detailed report by Roy Nichols from Eastman Kodak discussing accreditation under NAMAS, the United Kingdom program. Tony Anderson, representing Guideline Instruments, discussed the need for the National Cooperation for Laboratory Accreditation (NACLA) as well as Mutual Recognition Agreements (MRA). He also went into detail regarding accreditation costs for Original Equipment Manufacturers (OEM) in different parts of the world.

Representing the Fluke Co., Bill Hoffman discussed issues regarding worldwide recognition agreements, and the lack thereof, resulting in the need for simultaneous accreditation by NVLAP (U.S. System) and DKD (German System). Another industry perspective was presented by Bill Sorrells, representing Hewlett-Packard, who are seeking system accreditations which have to be repeated in different parts of the world due to lack of MRAs. Next, Todd Mysak from Cummins Engine reinforced the need for MRAs and enhanced U.S. capabilities since their facility had to seek accreditation from the DKD for Coordinate Measuring Machines.

The meeting concluded with a lively discussion regarding pros and cons of accreditation and the need by industry for participation and support of NIST laboratories and management.
NEW TECHNIQUE HELPS MANUFACTURERS CAST BETTER DIES

Scientists at the National Institute of Standards and Technology are the first to succeed in using a new technique that shows precisely what happens to a metal when its shape is deformed, an advance that could help manufacturers save hundreds of millions of dollars annually.

A single automaker alone will spend as much as $2 billion each year perfecting molds called dies to press sheet steel into body parts for new car models. That's because processing steel into sheets and then pressing the metal into dies to make auto parts creates a myriad of imperfections in the atomic structure of the metal. These defects, known as dislocations, make it impossible to predict precisely how the metal will behave when pressed into specific dies. Consequently, manufacturers must resort to trial and error, sometimes redesigning a die as many as 10 times before discovering the mold that forms the proper shape.

What they need is better computer models with which to design the dies. The NIST research offers hope of one day providing the data for such computer models. Now, 47 years after it was first proposed by a French scientist, NIST researchers have learned how to apply an advanced measurement technique that uses intense X-ray beams to study how the defects form and evolve.

Contact: Emil Venere, (301) 975-5845

NEW WEB MUSEUM EXHIBIT DESCRIBES HISTORY OF THE METER

Between Barcelona, Spain, and Dunkirk, France, the meter—the international unit of length—was born, albeit somewhat illegitimately. Tasked to measure this segment of an imaginary arc, or meridian, extending over the Earth's surface, a team of surveyors missed their mark. Nonetheless, their measurement provided the raw data used to calculate one millionth of the distance between the North Pole and the equator—the definition of the meter decreed by the new Republican Government of France in August 1793. With this calculation, the French fashioned a platinum bar, that from end to polished end was intended to be the physical replication of the meter.

After the surveyors' mistake was discovered, the meter was redefined to be the platinum bar, despite its tenuous connection to the original definition.

Thus begins the tale of the meter as distilled by Howard Layer and William Penzes in a feature that appears on the home page of National Institute of Standards and Technology on the World Wide Web. In narrative and chronology form, the researchers trace the evolution of the meter, one of the original cornerstones of the International System of Units, from its somewhat confused beginning to its current incarnation as the length of the path traveled by light in a vacuum in 1/299,792,458 of a second. For the full-length version of "Length" and "Time for the Definition of the Meter," surf on over to <http://www.mct.nist.gov/div821/museum/length.htm>.

NIST TO STEP INTO NEW ROLE

Now that efforts to develop global product data exchange standards have attained self-sustaining "international momentum," NIST has begun to shift out of its 15-year role as secretariat of the body guiding the evolution of STEP, the global Standard for the Exchange of Product model data.

In a letter, NIST recently advised the American National Standards Institute that it intends to transition from its role as administrator of manufacturing and enterprise integration standards to focus on its technical contributions to these standards instead. As the U.S. member of the International Organization for Standardization (known as ISO), ANSI named NIST in 1984 as the secretariat for the ISO Subcommittee on Industrial Data. ANSI is expected to re-assign the secretariat to a different organization by October 1999.

The quest to create a universal, unambiguous language for exchanging product information among computers grew out of NIST manufacturing research. STEP—officially adopted as ISO 10303 in 1994—has committed implementations from all of the top 10 vendors of computer-aided design systems. Major automotive and aerospace manufacturers have adopted STEP-based technologies and are spreading them to their supply chains.

The subcommittee also works on standards in support of parts libraries, manufacturing management data, and oil and gas industry data, with more than 250 people now meeting quarterly to continue this development. In order to further the evolution and increase the capabilities enabled by these standards, NIST will continue to develop testing methodologies and make other technical contributions to the standards.

For more information, contact Lisa Phillips, (301) 975-5021, <lisa.phillips@nist.gov>; or Steven Ray, (301) 975-3524, <steven.ray@nist.gov>.

PROPOSALS SOUGHT FOR PRECISION MEASUREMENT GRANTS

NIST is seeking project proposals for two research grants for fiscal year 2000 in the field of precision measurement and fundamental constants. NIST Precision Measurement Grants are awarded each year to faculty members of U.S. universities or colleges for work in determining values for fundamental constants, investigating related physical phenomena or developing new, fundamental measurement methods. Each Precision Measurement Grant of $50,000 for one year may be renewed by NIST for up to two additional years for a total of $150,000.

Prospective candidates must submit summaries of their proposed projects and biographical information to NIST by Feb. 1, 1999. The application should include a pre-proposal summary of not more than five double-spaced pages outlining the objective, motivation and technical approach of research and the amount and source of current funding for the research, together with a concise biographical sketch of the applicant and a list of the applicant's most important publications.
On the basis of this material four to eight semifinalists will be selected to submit more detailed proposals. Submit 10 copies of the pre-proposal summary to Barry N. Taylor, B161 Technology Bldg., NIST, Gaithersburg, Md. 20899-0001.

PARTNERSHIP FOR COMPETENT LAB ACCREDITATION NOW INCORPORATED

The National Cooperation for Laboratory Accreditation, a voluntary private/public partnership established to provide coordination, recognition and worldwide acceptance of competent laboratory accreditation, has been incorporated as a non-profit organization in the District of Columbia.

The new corporation’s vision is “a test or calibration performed once and accepted worldwide.” To accomplish this goal, NACLA will seek to end redundancy of multiple accreditations (both domestically and internationally), reduce accreditation costs for all parties and support the move to one-stop shopping. NACLA will develop and administer recognition procedures to be accepted by all of its members in the United States and North America, and to serve national and international needs in laboratory accreditation.

NACLA’s creation was the result of a three-year collaborative effort of laboratories, accreditation bodies, federal and state agencies, industry and other interested groups. Coordinating the development stage was the Laboratory Accreditation Working Group, sponsored by ACIL (formerly the American Council of Independent Laboratories), the American National Standards Institute and NIST.

Now that the organization has been incorporated, the next milestone for NACLA will occur later this year when a nominating committee recommends a slate of candidates for the organization’s first elected board of directors. Voting for the slate by the full NACLA membership will take place at the partnership’s first national meeting in late 1998 or early 1999.

For more information on NACLA membership and activities, contact Fred Grunder, American Industrial Hygiene Association, (703) 849-8888, or Cathleen Trail, NIST, (301) 975-4462. Interested parties also should visit the NACLA World Wide Web site at <http://ts.nist.gov/ts/it/docs/210/nacla/index.htm>.

BIPOLAR VOLTAGE SOURCE DEVELOPED FOR AC AND DC METROLOGY

Scientists in NIST’s Electromagnetic Technology Division in Boulder, Colo., have developed an accurate bipolar voltage source for use in alternating and direct current metrology, based on the quantized pulses of Josephson junctions. The device has potential applications in the generation of digitally synthesized AC signals with calculable rms voltages, the characterization of digital-to-analog and analog-to-digital converters, and in the calibration of DC and AC reference standards and voltmeters.

In a paper delivered recently at the Conference on Precision Electromagnetic Measurements in Washington, D.C., the NIST researchers presented experimental progress toward realizing a quantum mechanically accurate voltage source for AC and DC metrology. They described a new method of generating bipolar waveforms with an array of Josephson junctions by driving the array with a combined input waveform consisting of a two-level broadband digital code and a single frequency sinusoidal drive. This new method provides a sixfold increase in output voltage compared to the voltage of previous unipolar waveforms. The paper states that “the accuracy of this source is based on the fact that Josephson junctions generate voltage pulses whose time-integrated areas are perfectly quantized. Appropriate sequences of these quantized pulses can be used to generate AC and DC waveforms with precisely calculable rms voltage.”

The investigators were Samuel P. Benz, Clark A. Hamilton, Charles J. Burroughs and Todd E. Harvey.

For a copy of the paper, contact Sarabeh Harris, MS 104, NIST, Boulder, Co., 80303-3337, (303) 497-3237, <sarabeh@boulder.nist.gov>.

STANDARD INTERFACE PROPOSED FOR INSPECTION PROBES

Inspection systems, the next generation. What sounds like a Star Trek knock-off for the manufacturing-minded is actually an ongoing collaboration aimed at developing inspection technologies that are 10-20 times faster than currently available. In the project’s most recent installment, the partners have proposed a standard for integrating inspection probes with machine controllers.

“Our goal,” explains NIST engineer William G. Rippey, “is to provide sufficient technical guidance so that independently developed probe and controller products will be compatible right out of the package.” With the proposed Sensor Interface Module, or SIM, users of coordinate measuring machines could integrate new inspection probes without customized engineering efforts. “This should lead to better inspection capabilities, possibly at lower cost,” Rippey says. “Probe vendors could see their latest technology in use on shop floors in much less time.”

The proposed SIM describes a hardware card that plugs into the Industry Standard Architecture computer bus. It supplies an interface between sensors and control systems for either inspection equipment or machine tools. NIST and nine other organizations are participating in the Next Generation Inspection System (NGIS) project—now in its second phase—organized by the National Center for Manufacturing Sciences. With input from other partners, the proposed specification was written by representatives from NIST, the Raytheon Consulting Group, Real Time Development Corp., Automated Precision Inc. and ExtrudeHone Corp.

The SIM now is being evaluated on a coordinate measuring machine at NIST and by two makers of controllers. Before submitting the specification for adoption as a formal standard, the partners are gathering additional industry input.

The NGIS SIM Specification can be viewed at the NGIS Application Programming Interfaces World Wide Web home page at <http://isc.cmrl.nist.gov/refo/ngisAP>. For additional information, contact William Rippey, B124 Metrology Bldg., NIST, Gaithersburg, Md. 20899-0001, (301) 975-3417, <william.rippey@nist.gov>.
THIRTY-SIX COMPANIES APPLY FOR 1998 BALDRIGE AWARD

Thirty-six U.S. companies—up from 26 in 1997—including 15 large manufacturers, five service companies and 16 small businesses, have submitted applications for the 1998 Malcolm Baldrige National Quality Award, the nation’s premier award for business excellence and quality achievement.

Many companies believe that applying for the award is beneficial, whether they win or not. “The Baldrige application process is a great business health check that forces a company to closely examine all of its business practices. Every company that applies is a winner,” said Gary Foss, Director, customer-focused quality, Medtronic Inc., and Chair, Baldrige Award board of judges.

Applicants for the award must show achievements and improvements in seven areas: leadership, strategic planning, customer and market focus, information and analysis, human resource focus, process management, and business results. Every applicant receives an extensive feedback report highlighting strengths and opportunities for improvement.

Winners of the 1998 award are expected to be announced in November by President Clinton and Commerce Secretary William Daley after the award’s examiners and judges make their recommendations.

Contact: Jan Kosko, (301) 975-2767, <janice.kosko@nist.gov>.

INDUSTRY, GOVERNMENT TEAM UP FOR SEAMLESS, SECURE E-COMMERCE

NIST and 16 leading companies in the electronic commerce arena recently banded together to ensure their products can communicate easily while providing a high level of security.

The group, formed as part of a cooperative research and development agreement, held its first technical meeting this month, bringing together computer security experts from NIST and its private-sector partners, including leading software, telecommunications, computer security and credit card firms.

The collaboration marks an intensified effort to support a “public key infrastructure” that will make e-commerce more secure. PKI is expected to bring the advantages of cryptography to consumers and business who do business over the Internet.

The current project builds upon previous work by NIST and industry partners to develop technical specifications that enable a variety of e-commerce PKI products and services to communicate seamlessly in the same way that telephone and Internet services offered by different companies can utilize a common network. The previous effort focused primarily on digital signatures, which can be used to verify the identity of parties involved in e-commerce. Digital signatures are critical to the growth of e-commerce because consumers and businesses alike want to “know” the parties they do business with and the signatures help each party to recognize the other one electronically.

The CRADA partners are focusing on issues such as enhancing the confidentiality of e-commerce PKI transactions and interoperability, which assures that products and services produced by a variety of companies can communicate over a common network. Participating companies are AT&T Corp., CertCo, Certicom Corp., Cylinc Corp., Digital Signature Trust Co., DynCorp Information & Engineering Technology, Inc., Entrust Technologies Inc., Frontier Technologies Corp., GTE, ID Certify, MasterCard International, Microsoft Corp., Motorola Inc., SPYRUS Inc., VeriSign Inc. and Visa International.

For technical information, contact Donna Dodson, Bldg. 820, Rm. 418, NIST, Gaithersburg, Md. 20899-0001, (301) 975-2934, <ddodson@nist.gov>.

MEASURING MASS: NIST SCIENTISTS TACKLE KILOGRAM PROBLEM

Scientists love the International System of Units, which is the basis of practically every measurement in research and commerce. More precisely, they really love six of the system’s seven basic units of measure, which define how we quantify such things as time, length and temperature. However, the unit for mass, the kilogram, poses a problem. The kilogram is the only unit still based on a physical standard; the other six units are based on unchanging natural phenomena, such as the speed of light or atomic oscillations. Physical standards are hard to reproduce accurately and can change over time.

Scientists at the National Institute of Standards and Technology are working to remedy this situation. They’ve just completed the first phase of a watt-balance experiment that can determine mass by comparing mechanical electrical power through calculations based on other quantum standards. Their system can measure mass accurately to seven decimal places and with refinements could reach eight or more decimal places. That would rival the accuracy with which scientists can currently measure the physical kilogram standard and would eliminate the disadvantages of basing mass on a physical standard. NIST scientists are presenting their electronically derived kilogram results at the Conference on Precision Electromagnetic Measurements in Washington, D.C., July 10.

Contact: Linda Joy, (301) 975-4403.

TRAVELING KITS MAKE SCATTERING PARAMETER TRACEABILITY EASIER

To verify the accuracy of microwave scattering parameter data on vector network analyzers, companies often send verification kits to NIST’s Boulder, Colo., laboratory to obtain NIST-calibrated measurements. However, the customers then were faced with the task of comparing NIST’s results to theirs in order to demonstrate traceability. Now a new NIST microwave measurement service using “traveling verification kits” eliminates this step.

Instead of the previous procedure, customers measure one of NIST’s kits in their environment and then send the measurement data back to NIST for analysis. A formal report from NIST compares their measurement to the agency’s and details the uncertainty in the NIST assessment. Traveling verification kits are currently available in 3.5 millimeter (33 gigahertz), 2.92 millimeter (40 gigahertz) and 2.4 millimeter (50 gigahertz) also will be added shortly.
Another benefit of the new measurement service is that the cost—at $2,000 per kit—is substantially less than for conventional measurements of customer-owned verification kits.

For more information, contact John Juroshek, (303) 497-5362, juroshek@boulder.nist.gov; or Denis LeGolvan, (303) 497-3210, fax: (303) 497-3970, legolvan@boulder.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 NanoFoil Inc., a small New Mexico company, to learn how to make integrated circuits with a novel insulator made of 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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TOLL-FREE WAY TO SEND METROLOGY-RELATED 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) 59-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: 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. CONTACT: Michael E. Newman, (301) 975-3025.

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USE OF NEW CRYOGENIC CURRENT COMPARATOR BRIDGE IMPROVES RESISTANCE CALIBRATION SERVICE

Metrologists Randolph E. Elmquist, Lisa L. Scott, and Ronald F. Dziuba, all of EEEL’s Electricity Division, have recently built and installed a cryogenic current comparator for improving NIST’s working resistance standards used in customer calibrations. The electrical resistance calibrations provided by NIST cover 17 orders of magnitude, from micro-ohm shunts to tera-ohm thin-film resistors. Maintaining the working standards requires that metrologists accurately transfer the value of the national ohm, established with the quantum Hall effect at 1 ohm to 10 kilo-ohms by using ratio measurements.

Previously, the scaling measurements on which customer calibrations were based had been made with Hamon network devices which use banks of 10 or more wire-wound resistors. The assigned uncertainty of the Hamon process in the present uncertainty budget is \(20 \times 10^{-8}\). Today’s most accurate method of resistance ratio scaling is the cryogenic current comparator. This technique was first developed at NIST in the 1970s using superconducting quantum interference device (SQUID) technology; it operates at the cryogenic temperature of liquid helium, or 4K. In this technique, two different currents are exactly compared by containing the magnetic flux associated with both of the currents in a superconducting shield, and detecting any difference with the SQUID. CONTACT: Alan F. Clark, (301) 973-2139.

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ACTIVE AC VOLTAGE DIVIDER EXTENDS RANGE FOR PRIMARY ELECTRIC POWER CALIBRATIONS

A special-purpose ac voltage divider system has been developed by researchers in EEEL’s Electricity Division to meet the demand for extended range of power and energy calibrations. The primary realization of the quantity of ac electric power, the watt, is achieved with a current-comparator-based “power bridge” that has been optimized for 120V, 5A operation. Calibrations at lower voltages and currents are performed using scaling transformers within the bridge.

To extend the upper voltage limit of the bridge, an active ac resistive voltage divider has been designed to scale input voltages of up to 600V to the 120V operating level of the bridge with less than 5 \(\mu\)V/V uncertainty in amplitude ratio. A novel two-stage design overcomes the limitations of fine gain of the operational amplifier of the simple active voltage divider circuit. In this way the errors of the single-stage divider that would normally be \(1 \text{ mV/V}\) are reduced to below \(1 \text{ \mu V/V}\). A two-stage output circuit also was designed to allow use with two-stage voltage transformers while maintaining errors below \(5 \text{ \mu V/V}\). The divider has four ranges for 50 Hz and 60 Hz operation: 240V, 360V, 480V, and 600V. It will be used in the NIST Power/Energy Laboratory to meet the demand for calibrations of wattmeters and watthour meters of U.S. electric utility and meter manufacturers. CONTACT: James K. Othoff, (301) 975-2431.

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SP 250 SERIES FOR RADIOMETRIC MEASUREMENTS UPDATED

Three updated NIST Special Publications in the 250 series have recently been published by PL’s Optical Technology Division. SP 250-41, Spectroradiometric Detector Measurements, describes detector responsivity measurements and calibrations in the ultraviolet, visible, and near-infrared spectral ranges. SP 250-43, Radiance Temperature Measurement Calibrations, describes radiance temperature standards for disappearing filament optical pyrometers, ribbon filament lamps, and radiation thermometers. SP 250-48, Spectral Reflectance Measurement Services, includes description of the instrumentation, standards, and techniques used to measure spectral reflectance over the ultraviolet, visible, and near infrared wavelengths.

NIST’s SP 250 series provide detailed descriptions of important features of specific calibration services. These documents provide a description of the (1) specifications for the services; (2) design philosophy and theory; (3) measurement system; (4) operational procedures; (5) assessment of the measurement uncertainty, including random and systematic errors and error budget; and (6) internal quality control procedures used by NIST. These documents present more detail than can be provided in calibration reports or generally allowed in articles in scientific journals. SP 250s make detailed measurement information easily available to users of NIST measurement services and provide a basis for comparing quality of measurements among different laboratories. CONTACT: Albert Parr, (301) 975-2316.

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NATIONAL STANDARDS STRATEGY FOCUS OF SEPTEMBER SUMMIT


The summit launched a concerted effort to create a more effective national standards strategy that will meet the needs of both the private sector and government. Discussions covered issues surrounding the development, support and use of national and international standards that significantly affect U.S. manufacturers and exporters. Three scheduled roundtables at the summit addressed:

- Identifying U.S. needs for domestic, regional and international standardization;
- Ensuring that standards reflect the state of technology and that global standards contain U.S. contributions; and
- Funding the standards development and dissemination process.

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

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D-DO T SENSOR CALIBRATIONS DELIVER FOR AIRCRAFT INDUSTRY

In order for avionics manufacturers to test their aircraft electronics for susceptibility to outside interference from electromagnetic fields—such as those generated by powerful radars or broadcast transmitters—NIST provides calibrations of the sensors used to measure EMFs. NASA conducts these electromagnetic interference and compatibility (known as EMI/EMC) tests by flying the aircraft close to a high-powered electromagnetic radiator and measuring EMF inside and outside the craft.

D-Dot sensors (one of the types used in EMI/EMC tests) provide an output voltage proportional to the time derivative of the impinging electric field. These broadband sensors are teardrop-shaped metal objects about 15 centimeters (6 inches) long, mounted point down over a metal plate using a cylindrical plastic collar. They also may be useful for other forms of EMI/EMC testing. NIST effectively calibrated the D-Dot sensors by mounting them on a metal ground plane near an inverted-cone radiator and inside transverse electromagnetic cells (both are methods of generating known EMFs). CONTACT: Collier Smith, (303) 497-3198.

NIST-INDUSTRY ROUND ROBIN ADDS CONFIDENCE TO SILICON WAFER MEASUREMENTS

A NIST-coordinated round robin among industrial firms to compare results from different types of instruments for measuring the surface roughness of silicon wafers has increased the confidence in the measurements by the different techniques. The roughness of silicon wafers is an important functional specification in the semiconductor industry. Silicon wafers, similar to those used in the semiconductor industry as the substrates for the fabrication of integrated-circuit chips, were prepared with different finishes by a major wafer manufacturer. Along with MEL’s Precision Engineering Division, scientists and engineers from at least six different companies (instrument producers or users) participated in the round robin: ADE Corp., ADE Optical Systems Corp., Chapman Instruments, Digital Instruments, KLA-Tencor, and Silicon Genes is Corp.

Five different types of surface dimensional measurement instruments were used: scanned probe microscopy, optical profiler, capacitance-gage profiler, optical scattering instrument, and stylus profiler. Instruments such as these are used to determine the root-mean-square (rms) roughness of silicon wafers in production. A power spectral density (PSD) computed from the measured data provided a more detailed description of the surface properties in the different frequency ranges covered by the instruments. Comparison between the PSDs showed a high degree of an interaction agreement among instruments. Initial results of the ongoing comparison were reported in January 1998 at the SPIE Photonics West meeting in San Jose, Calif., with final results being prepared for publication in the Journal of Vacuum Science and Technology. CONTACT: Egon Marx, (301) 975-3498.

NEW EMG RESULTS REPORTED AT ASME GEAR METROLOGY MEETING

At the March 20, 1998, meeting of the American Society of Me-
The new method used the phase of the GPS microwave carrier rather than the code for the common-view time transfer. This process requires identifying the same cycle of the carrier (or carrier cycles with constant separation), a difficult problem because the frequency is high, each satellite is in common view for only a short period, and there is no reference available to help identify a particular cycle. This method is similar to one used by geodesists to compare and adjust observations from a large number of sites to identify the appropriate cycle. The NIST-Colorado researchers were able to achieve carrier-phase time transfer for periods lasting many weeks.

This work is critical to comparison of frequency accuracy among the new generation of laser-cooled atomic frequency standards being developed at NIST and in laboratories around the world. The carrier-phase method should provide an order-of-magnitude improvement in the precision of such frequency comparisons. This first experiment already achieves frequency comparisons at the level of 1 part in $10^8$ over one day. CONTACT: Judah Levine, (303) 497-3903.

MEETINGS HELD ON IMPACT TESTING MACHINES

Chris McCowan of MSEL participated in a European Commission (BCR) meeting on the certification of reference materials for verification of Charpy impact testing machines. The Material Reliability Division is responsible for certifying (using NIST SRMs) Charpy impact testing machines. The meeting was held at the Institute of Reference Materials and Measurements in Geel, Belgium. At this meeting, two master batches of reference materials were recommended for certification. For the first time, one of the NIST test machines was included in the BCR certification process. NIST test results were close to the mean value of the 17 machines in Europe that participated in the testing, and now the NIST machine is recognized as a reference machine for Europe.

A second meeting was held to discuss an international comparison that MSEL has organized for reference impact machines and test specimens. The plans call for a horizontal comparison of the machines and specimens used by the European Commission, France, Japan, and NIST. The results will enable the first statistical evaluation of bias and standard deviation for this broadly used mechanical property test. CONTACT: Tom Siewert, (303) 497-3532.

BILLIONS FOR INDUSTRIAL “MEASUREMENT CAPABILITY” REPORTED

The U.S. semiconductor industry spent between $2.3 billion and $2.5 billion in 1996 to buy measurement tools and instruments used in support of chip manufacturing, reports a first-of-its-kind study commissioned by NIST.

Capital spending to acquire "metrology capability," the study projects, will grow to between $3.5 billion and $5.5 billion by 2001, increasing at a compound annual rate of 15.5 percent. The estimates exclude operating expenses associated with metrology activities.

Suppliers of semiconductor manufacturing equipment incur nearly two-thirds of the industry’s metrology costs—most of it going for measurement tools and equipment necessary for making the inspection equipment and other gear used during chip production. However, analytical labs—facilities that provide specialized testing services—account for the fastest growing share of the industry’s total investment in measurement-related equipment.

NIST initiated the study to better understand the measurement infrastructure that supports the nation’s semiconductor industry. The results will help NIST assess how it can best leverage its measurement research and services to address the industry’s technical needs.

While several market research firms track spending for metrology equipment, their estimates exclude most of the industry’s extensive “food chain.” In contrast, Technecon Analytic Research, which conducted the NIST-funded study, evaluated the measurement costs of semiconductor manufacturers and three other “metrology intensive” industry segments. It focused on 16 categories of physical measurements—such as temperature, optical properties, dimensions—used primarily to monitor and control processes.

About 190 U.S.-based companies supplied measurement equipment to domestic chipmakers in 1996. For about 60 percent of these firms, semiconductor related sales totaled less than $8 million. CONTACT: Mark Bello, (301) 975-3776.

RESEARCHERS FIND COOL WAY TO MAKE LASER MEASUREMENTS

Researchers in the NIST Optoelectronics Division, Boulder, Colo., have built a new laser power and energy measurement system based on a commercial cryogenic radiometer. Designated the Laser Optimized Cryogenic Radiometer (LOCR), the NIST system will increase the accuracy to which the agency can calibrate optical power meters used with lasers.

Since 1967, NIST has built and maintained electrically-calibrated calorimeters to calibrate laser power and energy detectors for a variety of industrial and defense customers. Because commercial laser power and energy meters have improved significantly in the last 10 years, customers now require lower uncertainties from NIST’s calibration services. The combined standard uncertainty of measurements with electrically calibrated calorimeters is limited to 0.25 percent because they are operated at room temperature.

The new system, based on electrically calibrated cryogenic radiometers operating near liquid helium temperatures, eventually will provide laser power measurements with a combined standard uncertainty of 0.02 percent or less and will provide traceability to SI (metric) units with improved accuracy for laser power and energy calibration services.

NIST compared the LOCR with its highest accuracy laser calorimeter and found that the two systems agree within 0.1 percent. This means the LOCR may be used in the future to calibrate transfer standards for other calibration services, resulting in a lower calibration uncertainty. CONTACT: Fred McGehan, (303) 497-3246.
NVLAP STATUS REPORT

NVLAP is preparing for a final assessment from the European cooperation for Accreditation (EA) during the week of September 21-25. The EA teams will review the NVLAP operations on September 21 and then spend the next two to three days accompanying NVLAP assessors on-site visits to several testing and calibration laboratories. A final report will be written and an outbriefing with NVLAP management will be conducted on September 25. It is hoped that, based on the results of this exercise, NVLAP will be recognized by the signatories to the EA Multilateral Mutual Recognition Agreement so that the laboratories accredited by NVLAP will be able to have their test and calibration data readily accepted in Europe.

NVLAP's chief is a member of the ISO/CASCO Working Group 10, which is an ad hoc group formed to revise ISO Guide 25. The working group met in Geneva in February and produced a draft of the document which was sent to CASCO for distribution as a draft international standard, DIS 17025. When approved by the CASCO membership, it will be known as ISO 17025. The official draft is expected to be distributed by ISO/CASCO in the next few months. The plan expressed in Geneva was for a five month comment period followed by a final revision draft which would be balloted among the ISO/CASCO members for two months. Look for ISO 17025 in the Spring of 1999 at the earliest.

Twenty-three calibration laboratories have been accredited by NVLAP at this time with an additional thirteen in process. CONTACT: Jim Cigler, (301) 975-4171.

SURVEY SAYS “GLOBALIZATION” AMONG TOP CEO CHALLENGES

While U.S. business leaders believe that becoming a global company is an important trend, they also believe most U.S. companies are only doing a fair job at it, according to a survey on leadership challenges for the 21st century. The private-sector Foundation for the Malcolm Baldrige National Quality Award commissioned the survey of chief executive officers in a broad range of U.S. companies and other organizations.

Most of those surveyed said the Baldrige program was extremely or very valuable in stimulating improvements in quality (79 percent) and competitiveness (67 percent) in U.S. businesses. In addition to becoming a global company, five other trends affecting large U.S. companies were determined to be “major” by more than 70 percent of the respondents: improving knowledge management (88 percent); cost and cycle-time reduction (79 percent); improving supply chains globally (78 percent); manufacturing at multiple locations in many countries (76 percent); and managing the use of more part-time, temporary and contract workers (71 percent).

The results from the more than 300 CEOs who responded were tabulated and analyzed by Louis Harris and Associates Inc. CONTACT: Jan Kosko, (301) 975-2767.

WORKSHOP ON LEGAL METROLOGY FOR THE AMERICAS (WMLA)

A Workshop on Legal Metrology for the Americas (WMLA) was held at NIST from June 1 through June 12, 1998. It was sponsored by NIST, the National Conference on Weights and Measures (NCWM), the Organization of American States (OAS), the InterAmerican Metrology System (SIM), and the International Organization of Legal Metrology (OIML). All thirty-four OAS member nations were invited, and representatives from thirty-one of the countries participated.

The Workshop was conducted for several reasons. Legal metrology is now recognized as an important issue in the globalization of trade, especially with regard to technical barriers to trade. Moreover, since other regions (Europe, Asia-Pacific, Africa) have developed regional legal metrology organizations, nations within the western hemisphere are considering whether they should do the same, and good metrological cooperation has been growing among the countries of the Americas through SIM.

Based on discussions between NIST’s office of Standards Services and the NCWM, which includes associate members from industry, the workshop had objectives similar to those of the NIST Standards in Trade Workshops, namely, familiarizing participants with U.S. technology and practices in metrology, standardization, testing and certification, and developing professional contacts to strengthen technical ties and enhance trade among participating countries. Representatives of Brazil’s INMETRO, Measurement Canada, and NCWM members were invited to present informational items to give a broad perspective of weights and measures practices in the Americas.

In addition to the meetings at NIST, Gaithersburg, there was a three-day field trip to Ohio to tour the Hobart Corporation Technology Center, laboratories of the Mettler Toledo Corporation, and the Ohio National Type Evaluation Program (NTEP) laboratory.

The Workshop achieved its main goals: 1) to better acquaint participants with the weights and measures practices within the Americas and globally; and 2) to solicit views and develop a plan of action towards regional cooperation in the development and implementation of legal metrology procedures and practices within the Americas. The group adopted resolutions to: 1) create a working group on legal metrology in SIM; 2) develop a program structure for that working group; and 3) organize periodic workshops and other fora to identify and address key issues and needs for fostering future cooperation in legal metrology within the Americas. CONTACT: Chuck Ehrlich, (301) 975-4834.
MEASUREMENT SCIENCE CONFERENCE
Chet Crane, MSC Liaison Delegate

The 1999 Measurement Science Conference (MSC) will be held January 28th & 29th in Anaheim, California in the Disneyland Hotel Conference Center. The Conference theme is “A Century of Measurements,” and the President for this Conference is Nidal Kerida of Teledyne Electronic Systems.

The MSC program will be preceded by several two-day seminars Monday and Tuesday January 25th and 26th presented by the NIST. Four will be presented at the Disneyland hotel and one at Southern California Edison Company.

Wednesday, January 27th MSC will offer four half day Tutorial Workshops each scheduled for presentation both morning and afternoon and two two part workshops part 1 presented in the AM and part 2 in the afternoon. Each part is complete and will stand on its own but will be offered once only.

MSC Tutorial Workshops
A. Metrology on the Internet
   B. How to have in-house Training for Low-cost
   C. Applying the KISS Principle to the Start-up Calibration Lab
   D. Fundamentals of Vibration and Shock Measurements and Calibration
   E. Part 1—Selection, Use, and Maintenance of Mass Standards
   E. Part 2—Selection, Use, and Maintenance of Mass Standards
   F. Part 1—Hardness Standardization: Traceability to NIST
   F. Part 2—Hardness Standardization: Uncertainty

The Conference and NIST programs with authors, descriptions, and program information are available on the Internet at <http://www.msc-conf.com>. You may review the technical program and other Conference information by logging on. You may also register for the conference on the Internet and get all the information mailed to you.

The MSC is still collecting donations for the “Joe Simmons Scholarship Fund.” Checks should specify Joe Simmons Scholarship Fund and sent to:

Mike Magin
% MSC
1280 Bison Ave., Suite B9-530
Newport Beach, CA 92660

For registration information, contact:
John Bowman, Fluke, 714 847 7380
   NAPPT proficiency test, and fifty-five other laboratories have been put on a waiting list for upcoming proficiency tests. By October 1, 1998 NAPT will have over 12 different proficiency tests in distribution. I would like to remind your members that it is not too late to become involved in one of NAPT’s proficiency tests.

The second most exciting news item is that NAPT’s Metrology Discussion Forum is now up and running on the Internet. This forum can be found on NAPT’s web site <www.proficiency.org>. In addition to the general information about NAPT on the site, there are eight different forums from which to choose. Each one is a different category of metrology (General, Dimensional, Electrical-AC, Electrical-DC, Force, Resistance, Pressure, and Temperature). Here you can post a question or a particular problem you are having. You can also post an answer to a question or problem that someone else has asked.

The system is setup so that if you enter your e-mail address, when there is a reply posted to a question, the system will e-mail a notice to the person who posted the question. We believe this enhances our forums by providing a feed-back system to the users of these forums. We have set up a panel of “experts” for each forum, who will check in on a regular basis and try to be a resource for the questions posted on the NAPT website. I would like to invite your members to stop by the site and ask or answer a metrology related question.

With exposure from the metrology community growing, NAPT is still attracting a phenomenal amount of attention. NAPT was even recently featured on a Minneapolis Television Program, the program highlighted how NAPT is a nonprofit association and spoke about the objectives of the association. Also, several positive magazine articles have been written on NAPT in the last couple of months. All the individuals involved in setting up NAPT appreciate the good things being said and written about NAPT. Everyone is working hard to live up to these expectations. We are very excited about the growth of this association and how with the help of NCSL we will be able to reach our goals.

NAPT has been asked by several organizations outside of this country to open up its proficiency testing to the international community. We are now in the process of evaluating these requests and hope to have in place the ability to expand the proficiency testing services by 1 January, 1999.

Our primary goal, as always, is to meet the needs of our members and prepare for the growing demands of the metrology community. To meet this need, NAPT is working hard to secure additional sources of artifacts for use in future proficiency testing. Any assistance that NCSL would like to contribute to NAPT in securing additional artifacts would be greatly appreciated.

NAPT is presently in pursuit of grants, donations, sponsorships and financial support from various organizations. If we are not able to secure additional sources of sponsorship, NAPT may be forced to increase the cost of the participation fee. It is our hope to secure this funding, thus enabling NAPT to keep the cost of the enrollment fee as low as possible.

NAPT hosted an informational meeting at the NCSL conference.
CORM
John Wehrmeyer, Liaison Delegate

The CORM 98 Annual Conference and Business Meeting with a joint CIE Division 2 meeting was recently held at the NIST facility in Boulder, Colorado.

On Monday, May 18, 1998 CIE Division 2 held the following Technical Committee meetings:

TC 2-16 Characterization of the Performance of Tristimulus Colorimeters
TC 2-25 Calibration Methods and Photoluminescent Standard for Total Radiance Factor Measurement
TC 2-29 Measurement of Detector Linearity
TC 2-36 Retroreflection: Definition and Measurement
TC 2-37 Photometry Using Detectors as Transfer Standards
TC 2-39 Geometric Tolerances for Colorimetry
TC 2-43 Determination of Measurement Uncertainties in Photometry

On Tuesday, May 19, 1998 CIE Division 2 held its Division meeting to discuss reports from Associate Directors and the technical community.

The CORM 98 Annual Conference began on Wednesday, May 20, 1998 and included the following sessions:

Session I: International Radiometry and Photometry Standards
Session II: Optoelectronics

A total of twenty-one papers were presented at the two day long conference at NIST.

CORM and the Ultra Violet Spectrometry Group (UVSG) recently held the Third Oxford Conference in Egham, United Kingdom from June 28 to July 2, 1998. The conference addressed Optical Spectrometry issues in the UV, VIS and NIR regions. The following sessions were held at the conference:

Measurement Standards and Validation
Reflectance, Fluorescence and Colour
Instrumentation and Applications

A total of thirty-one papers were presented along with fifteen posters and equipment displays by various manufacturers from Europe, North America and the United Kingdom.

The papers from the conference will be published in late 1998 in a special publication from Elsevier Science Publishers.

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CONFERENCE ON PRECISION ELECTRONIC MEASUREMENTS
Norman B. Belecki, Liaison Delegate

The CPEM Executive Committee met on July 8 & 9, during the CPEM '98. The most important issues discussed were the venues of the 2004 and 2006 conferences. Until now, conferences outside North America have been on U.S. election years, creating an attendance problem for NIST and other government employees. Having two conferences abroad consecutively shifts the schedule advantageously. The schedule of future conferences is:

<table>
<thead>
<tr>
<th>Conference</th>
<th>Venue</th>
<th>Dates</th>
<th>Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPEM '00</td>
<td>Sidney, Australia</td>
<td>14-15 May</td>
<td>NML - CSIRO</td>
</tr>
<tr>
<td>CPEM '02</td>
<td>Ottawa, Canada</td>
<td>18 - 20 June</td>
<td>INMS - NRCC</td>
</tr>
<tr>
<td>CPEM '04</td>
<td>London, England</td>
<td>26 June - 2 July</td>
<td>NPL</td>
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<tr>
<td>CPEM '06</td>
<td>Torino, Italy</td>
<td>To be determined</td>
<td>IEN, IMGC,</td>
</tr>
<tr>
<td>CPEM '08</td>
<td>Boulder, USA</td>
<td>To be determined</td>
<td>NIST</td>
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</tbody>
</table>

There was an inquiry about the status of NCSSL assuming the role of bursar for the CPEM Executive Committee.

CPEM '98

The Conference was held from July 6 to July 10, 1998 in the Renaissance Washington Hotel. Some 525 people attended, including a few one- and two-day participants. The Conference was generally a success, having only a few minor glitches. The heaviest concentrations of papers were in the time and frequency, and dc-lf measurement areas. Klaus Jaeger addressed the Conference on behalf of the NCSSL at the Monday luncheon.

The following is excerpted from our report to the CPEM Executive Committee:

Papers and technical program:

A program featuring morning oral sessions and afternoon poster sessions was fashioned based on the 345 summary papers accepted for presentation by the Technical Program Committee in February. The afternoon poster presentations are given in two sessions in order to give poster presenters some opportunity to see others' posters and take place in relevant discussions. Moreover, to enhance these opportunities, poster sessions on some topics were spread over several afternoons. The Conference had a total of 33 oral sessions and 33 poster sessions.

Six plenary speakers were recruited:

Keynote: Prof. Daniel Kleppner, Massachusetts Institute of Technology
*Historical Physics and the Evolution of Precision Experimentation*

Plenary:

Dr. Barry Inglis, National Measurement Laboratory, CSIRO, Australia
*Overview of AC Voltage and Current Measurements*

Dr. Bryan Kibble, National Physical Laboratory, United Kingdom
*Monitoring the Kilogram by Electromagnetic Means*

Dr. William Phillips, Co-recipient of the 1997 Nobel Physics Prize, NIST, USA
*Cool Atoms - Their Physics and Application*

Dr. Ulrich Stumper, Physikalisch-Technische Bundesanstalt, Germany
*New Developments of RF and Microwave Power Standards*

Dr. Carl Wicman, JILA/University of Colorado, USA
*Bose-Einstein Condensation*
A number of auxiliary meetings were accommodated:

- CCEM working group on international comparisons
- Quantum Hall effect (ad hoc)
- Josephson effect (ad hoc)
- AC-DC difference measurements (ad hoc)
- CCEM working group on radio frequency quantities
- CCEM working group on ac voltage ratio comparisons
- NCSL Josephson standards round-robin meeting
- Italian delegates' meeting (ad hoc)
- IUPAP SNUMACO
- Single electron tunneling (ad hoc)
- Avogadro constant (ad hoc)
- CODATA task group on fundamental constants

On Friday afternoon following, tours of the NIST campus in Gaithersburg were offered. The response to this tour offer was unexpectedly high; in the preregistration nearly 200 people indicated interest (twice that anticipated). A total of 290 visitors went on the NIST tour.

We have at this point received 198 manuscripts as candidates for the Proceedings. Apparently, some presentations on related work were merged into single papers because of our 145 paper limitation in the IEEE Transactions on Instrumentation and Measurement.

Attendance, support, and budget issues:

The latest attendance figure is 515 (on July 9). Of these, some 25 have yet to pay and the conference supported 22 attendees by waiving the registration fee. Of these, eleven were in the Young Scientist Program, six were the Plenary Speakers, and the remainder were invited speakers, session chairs, or authors of particularly noteworthy papers. The Conference originally budgeted for 18 of these.

The Young Scientists were supported by waiving registration fees, defraying lodging and partially defraying transportation costs. Of the six plenary speakers, three were transient visitors to the Conference, all attending an atomic physics meeting in Italy later in the week. (We were fortunate that Bill Phillips chose to honor the commitment he made prior to winning the Nobel Prize by flying in from vacation in Italy to speak before returning to Italy for the afore-mentioned meeting.)

The following is a population plot of the attendance. Areas of weak representation are South America, Africa, and the Near East.

<table>
<thead>
<tr>
<th>Region</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>166</td>
</tr>
<tr>
<td>North America</td>
<td>158</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>84</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>18</td>
</tr>
<tr>
<td>South America</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>

All twenty exhibit spots were sold. However, one exhibitor was unable to participate because of an unexpected illness. I discussed their exposure with many of the exhibitors and most were pleased, if not enthusiastic. None that I talked to expressed disappointment.

Our experience with Courtesy Associates, our conference management company, has been outstanding. They helped our decision-making starting from the very beginning and they have been invaluable in dealing with the hotel, especially in the sense of knowing the right people to approach for service, but in the few instances when there have been problems.

GIDEP

Jim Carlton, Liaison Delegate

On 31 July 1998, ISL Corp. Division of Metersmaster hosted a GIDEP Metrology Meeting at their facility in St. Louis, MO. Peter Racen was our host. This meeting was held in conjunction with the GIDEP Management Team meeting. In addition to reviewing and discussing the Metrology relevant issues and results of the Management Team meeting, the meeting included the following:

- Overview of ISL Corp and their recent merger with Metersmaster by Mr. Peter Racen, Vice President of Service.
- Presentation by Mr. Chuck Ellis, Managing Director of National Association for Proficiency Testing (NAPT). In addition to an overview of NAPT, Mr. Ellis discussed the relationships between ISO 9000 and proficiency testing.
- Discussion of GIDEP by led Jim Carlton, GIDEP Metrology Data Mgr. and Kam Mayner, Metrology Lab Mgr., Lockheed Martin, Orlando. Current and new "pdf" GIDEP Metrology Data CDs, were demonstrated and discussed during this meeting.
- Tour of Boeing Standards and Calibration Laboratories provided by Dave Alexander, Boeing Metrology Lab Manager.

The GIDEP Management Meeting is going back to the data interest area concept. That means we will have a Metrology Data subcommittee again! There is lots to talk about these days. We have almost 400 subscribers for the GIDEP Metrology Data CDs and our Utilization S's reported last year gave us significant momentum for having the GIDEP Management Team respond to the GIDEP Metrology community's needs and ideas; so, start planning to participate in the GIDEP Management Team.

An effort has been under way to reconcile the GIDEP Metrology Database with the Air Force Metrology Center's database. To date we have ordered over 200 AF Calibration Procedures that were not currently available in the GIDEP. So, if you been looking for Air Force calibration procedures, take another look. There are lots of new ones (contact me for a list). You must look on the Web database though. They won't be on the CDs for a while longer.

All GIDEP Metrology Data Participants: Share your data with each other! If you are looking for something that you don't find in GIDEP, others are in the same boat. By sharing your data, you will be helping others and they in turn will be helping you. Also,
you will be getting your data back on CDs for easy use.

GIDEP Metrology Data CD #7 has just been distributed!

See the GIDEP website for details at:
<http://www.gidep.org/metrology/edrominf.htm>

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INSTITUTE OF ENVIRONMENTAL SCIENCES AND TECHNOLOGY
Robert Mielke, Liaison Delegate

Name Change. The Institute of Environmental Sciences has changed its name to the Institute of Environmental Sciences and Technology. The name change reflects the Institute's commitment to unsurpassed excellence in the quality of its educational programs, publications and service to the technical community. The Institute will now use the letters IEST as its shorthand designation.

IFEST is an international professional society that serves its members and the industries they represent through education and the development of standards. IEST has three technical divisions: Design, Test and Evaluation (DTE), Product Reliability (PR), and Contamination Control (CC).

Fall Conference. IEST will hold a Fall Conference November 15-19 at the Swissotel in Chicago, IL. It will include both short courses and Standards-writing Working Groups. The short courses will include Cleanroom, Functional System Concepts, New International Cleanroom Standards, Vibration Fixture Design, Basic Mechanical Shock, and Pyroshock Testing. Also, there will be more than 25 Working Groups meeting from all divisions writing standards and recommended practices at the conference. For further information on the specific Working Groups which will be meeting, contact the IEST National Office at 847 255-1561.

IFEST Web Site. IEST has a new web site, <http://www.iest.org>
The site has the latest information on IEST, including membership, sponsorship, educational courses, news, meetings and events, publications, career opportunities, leadership contacts, links to related sites and more. The web site is an evolving resource for IEST's worldwide membership.

ISO/TC 209 Activities. IEST is the Secretariat for ISO/TC 209 Technical Committee on "Cleanrooms and Associated Controlled Environments." The eighth Technical Committee meeting was held in Phoenix, AZ in April, 1998. The next Technical Committee meeting will be held in Paris, France in October, 1998. The current status of standards outstanding for public review are; one document is in the FDIS (final draft, international standard), stage, and two documents should be ready for the CD (committee draft) stage in early 1999.

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EUROPEAN COOPERATION FOR ACCREDITATION (EA)
Graham Cameron, Liaison Delegate

The European Cooperation for Accreditation held its General Assembly in Oslo, Norway on June 23-25, 1998. Gary Hysert of the National Research Council of Canada attended on behalf of the North American Calibration Cooperation Committee; Peter Unger attended on behalf of the American Association for Laboratory Accreditation (A2LA).

Since the EA organization resulted from the merging of the European Cooperation for Accreditation of Laboratories and the European Accreditation of Certification, this assembly concerned itself with such matters as establishing itself as a legal entity and in which country this legal establishment should occur.

Other items discussed included: 1) New rules of membership and associate membership (NACC and APLAC are likely to be accorded Observer status); 2) Two of reference for the EA Advisory Board; 3) Memorandum of Understanding between the EA and the European Commission and terms of reference and titles of committees. A liaison committee was proposed to coordinate cooperation between the communities of accredited bodies and accreditors.

The assembly concerned itself with discussions of certification of products, quality systems, of personnel, of environmental management systems, and of inspection bodies.

EA continues its mutual recognition discussions with the Asia Pacific Laboratory Accreditation Cooperation (APLAC) but no firm decisions have been reached on the recognition or acceptance of non-EA interlaboratory measurement comparisons for the purposes of recognition or acceptance of non-EA comparisons in order for a third country’s application to become a signatory to the EA MLA.

Ten of the EA members signed an agreement to recognize each other’s accreditations in the field of environmental management systems. These organizations have undergone a peer evaluation process to confirm their implementation of ISO 14001. The EA Multilateral Agreement has now been opened officially to include the environmental management field.

The next EA General Assembly is scheduled for Bratislava, Slovakia on Nov 24-26, 1998.
Eastern Division Workshop in Asheville

The 4th annual Eastern Division Workshop was held in Asheville North Carolina on September 9th to 11th at the Holiday Inn Sunspree Resort. It began with an early registration on Wednesday evening along with a reception and a vendors area.

The workshop began in earnest Thursday morning with a welcome to Asheville from John Ragsdale, the NCES Vice President for publications. John introduced our first speaker, Ernest Garner from NIST who talked on the effects of the new standard ISO 17025 that is soon to replace ISO Guide 25. He was followed by Dave Parsons from Tegam who presented a paper on a method for noise reduction and speed enhancement in resistance measurements.

Following a short break, John Ball, from the Redstone Arsenal in Huntsville, gave a report on the Intrinsic and Derived Standards committee of the NCES, of which he is the chair. He was followed by Dave Nebel of Electronic Distributors, who talked about instruments on a card.

After lunch, Mr. Jeff Willey of Measurements International presented a paper on automated resistance measurements to sub-PPM accuracy. Next we had a presentation from 2 of the faculty and 2 students from North Carolina A&T State University on the School of Technology at NCA&TSU and the importance of Co-op Internships for their students.

Again following a short break, Bernard Baird from Norfox Software gave a presentation on the development of a universal automated calibration engine. The last presentation on Thursday was given by Dr. Ted Doiron of NIST on a project he worked on to develop a high accuracy method to measure cylinders and wires. We completed the first full day of the workshop with a viewing of the vendors tables.

The final day started with a presentation by Chuck Ellis from the National Association for Proficiency Testing who described the program and its goals. He was followed by Larry Warner from Fluke who talked about guardbanding and how it is impacted by the new ISO standard.

Following a break, Mark Cowan from M&M Precision, described a NIST funded ATP project that he was involved in and how it improved their measurement accuracy. Next Bill Ryan from Control Solutions described what everyone should do when planning the construction of a calibration lab.

After lunch, Jim Hylton from Oak Ridge National Lab described a software package they developed to automate the mass measurements made in the Mass Lab of the Metrology Center. He was followed by Steve Patterson from the University of North Carolina at Charlotte who presented a paper on interferometric cylinder measurement.

Following the afternoon break, Randy Fowler from Wavetek, talked about DC Voltage Standards and the last speaker for the day was John Joynt from Guildline who presented a paper on the construction techniques for high value resistance standards. After that a drawing was held for the door prizes and Ed thanked everyone for their attendance.

Attendees:

- J.P. Coquin
- Lynette Pierce
- Scott Long
- Jeff Willey
- David Mazy
- Michael Purdy
- Bill Wright
- John Ragsdale
- Michael Ross
- Dave Parsons
- Bill Neville
- Ray Reece
- Rick Foster
- Patrick Elliott
- Bill Murray
- Don Reeves
- Ernest Garner
- Dave Nebel
- Dr. Marcus Tillery
- Gerald Erickson
- Jay Romanek
- Jim Hylton
- Ed Pritchard
- John Ball
- Dr. Ernest Walker
- Karen Branch
- Diqita Lucas
- Dr. Ted Doiron
- John Joynt
- Bill Ryan
- Doug Cooper
- Randy Fowler
- Bernard Baird
- Chuck Ellis
- Mark Cowan
- Dr. Steve Patterson

Michelin Tire
Sieno Electronics
TVA
Measurements International
W. A. Brown Instruments, Inc.
Square D Company
Oak Ridge National Lab
TVA
Mettler-Toledo, Inc.
Tegam, Inc.
Square D Company
Delta Airlines
Duke Energy & Services Std. Lab
Fluke
Oak Ridge National Lab
Oak Ridge Metrology Center
NIST
Electronic Distributors, Inc.
North Carolina A&T State University
Certified Measurements, Inc.
Southern Marketing Associates
Oak Ridge National Lab
Oak Ridge Metrology Center
U.S. Army Primary Standards Lab
North Carolina A&T State University
NC A&T SU Student
NC A&T SU Student
NIST
Guildline Instruments
Control Solutions, Inc.
Control Solutions, Inc.
Wavetek
Norfox Software
NAPT
M & M Precision Measurements
UNC Charlotte

CANADA REGION FALL MEETING
AND WORKSHOP

Hotel Le Castel
Granby, Quebec

Contact: Adrien Michaud
514 748 3000
The Albuquerque Section held its fifth meeting on May 6, 1998. This was a special meeting held in conjunction with the Ideas in Science and Engineering trade show at the Convention Center. Randy Edgett, Aztec Enterprises, arranged with the ISE for our meeting room.

Previous meetings had focused primarily on presentations from practitioners—equipment vendors, calibration laboratory technicians, engineers and managers. The attendees at this meeting were treated to two excellent presentations from USERS of calibration services and measurement standards.

The first presentation, given by Rich Underwood of the Federal Aviation Administration, was entitled, "Application of Standards to the FAA Avionics Repair Centers." Rick discussed how the FAA administers regulations governing the operation of FAA certified repair centers, the importance of calibration and measurement to the daily operation of the airline industry, and the investigation of aircraft incidents and accidents.

The next presentation, by John Krebsbach of the Albuquerque Police Department, was entitled, "Standards and Measurements—Influence on Forensic Science." John is the type of customer that any metrologist would appreciate. John demonstrated not only that he is conscientious in assuring that calibrated measurement instruments are utilized in his laboratory, but also exhibited a thorough knowledge of what accuracies are required in various forensic methods (DNA identification, hair and fiber analysis, etc.). He presented a detailed explanation of how standards and measurement influence the resolution of criminal cases and how traceability is required by prosecutors to establish validity of forensic results.

The second half of the meeting was opened by Dick Pettit, Sandia. Dick is NCSL V.P. for Measurement Science and Technology, and is currently a representative on The National Cooperation for Laboratory Accreditation (NACLA). Dick discussed the current activities of NACLA, including his group’s effort to establish mutual recognition agreements between accreditation organizations.

Karl Ricker, current Section Chair for the American Society of Quality (ASQ), presented his talk on the activities of ASQ in the Albuquerque area. He discussed various ISO standards, the Malcolm Baldrige Criteria and described the organization of the ASQ Albuquerque Section.

Finally, Chris Miller presented Keithley Instruments Low Level Measurements Seminar. The focus was on the effect of thermal emf, ground loops, magnetic fields, and Johnson noises on low voltage measurements.

Following the presentations, the attendees were free to roam the exhibit hall where numerous vendors were exhibiting the latest equipment, computer software, materials and services available to scientists and engineers. Other formal presentations were conducted by the ISE and were open for all to attend at no charge.

Attendees:

- Glenn Anderson
- Mark Bernier
- Joy Bennett
- Lisa Bunning
- Randy Edgett
- Leo Duda
- Gary Gones
- Bob Graham
- Brandon Harper
- Leroy Holmes
- Jim Hubbs
- Ron Johnson
- John Krebsbach
- Stu Kapperman
- Michelle Lonsam
- Jim McWhorter
- Tom Moxley
- Jeff O’Guin
- Dick Pettit
- David Pitman
- Karry Ray
- Karl Ricker
- Bob Romero
- Rick Rios
- Michael Salaar
- Mel Salaar
- Dave Sanchez
- Dennis Smith
- Phil Thacher
- Patti Thomas
- Russ Walker
- Rick Underwood
- Tom Wunsch

SP Pharmaceuticals
Sandia National Labs
Sandia National Labs
Sandia National Labs
Asee Enterprises
Sandia National Labs
FAA
Sandia National Labs
SP Pharmaceuticals
Sandia National Labs
Sandia National Labs
Instrument Service Labs, Inc.
Sandia National Labs
Sandia National Labs
Sandia National Labs
SP Pharmaceuticals
Sandia National Labs
JTI Systems
Los Alamos National Lab.
SP Pharmaceuticals
Sandia National Labs
Sandia National Labs
Sandia National Labs
Sandia National Labs
Sandia National Labs
Sandia National Labs
Sandia National Labs
Sandia National Labs
FAA
Sandia National Labs

August 12, 1998
Doubltree Hotel
San Antonio, Texas
Keith Scooggins
South Texas
Section Coordinator

The Region 6 South Section of the NCSL summer meeting was held on August 12, 1998 at the Doubletree Hotel in San Antonio, Texas. The meeting was hosted by Bob Trelinger of Acurata and Wayne Cummings of the Fluke Corporation and was conducted by the Section Coordinator Keith Scooggins, supervisor of the metrology laboratory at the South Texas Nuclear Project.

Jim Patterson, Manager of the calibration laboratory at the Southwest Research Institute, gave a report of the Board of Directors Meeting. Jim also discussed the ongoing progress of laboratory accreditation; a subject that generated numerous comments and questions.

Jeff Willie, from Measurements International, presented a very enlightening look at an automated resistance measurement systems with sub-ppm accuracies. He discussed the system types and the technology utilized in each. He stated that these new automated resistance systems could achieve accuracies in the 0.08-ppm range.

The next speaker was Bryan Fisher, from Interface Products. He described how to use open architecture PC based software for automating any calibration process utilizing Excel, Visual Basic, and other object oriented components. Bryan discussed how anyone could create solutions to meet their own individual needs with minimal training. He explained how data points could be obtained.
Regional Reports
via an instrument serial port or internal IEEE A/D boards.

After Bryan’s presentation, Chris Grachanen, from Compaq Computer Corporation, lead a discussion on proficiency testing. He talked about the National Association of Proficiency Testing, a nonprofit organization that provides information and assistance to laboratories in determining measurement proficiency.

After lunch, Dong Lynde, from On Time Support, provided a discussion on proficiency testing. Dong’s presentation provided information about the processes of process calibration and metrology. He suggested that an integrated system would better serve both the metrology laboratory and the process calibration department.

The last speaker of the day was Wayne Cummings, from the Fluke Corporation. Wayne outlined the key points to consider when automating your calibration tasks. He gave an overview of the quality initiatives and standards that pertain to the creation and implementation of calibration procedures. He also discussed automated calibration procedures are available in the commercial marketplace and suggested various strategies to develop software validation methods to meet individual laboratory needs.

The meeting concluded with a general discussion on laboratory inter-comparison measurement programs, and desire to participate. Wayne Cummings, from the Fluke Corporation, will coordinate a 10 volt electronic cell MCP. Ron Smith, from the Johnson Space Center in Houston, volunteered to be the pivot laboratory and Chris Grachanen agreed to collect and report the results.

Attendees:

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Keith Scoggins</td>
<td>STP/NOC</td>
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<tr>
<td>Jim Patterson</td>
<td>Southwest Research Inst.</td>
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<td>Bob Trollinger</td>
<td>Acuda</td>
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<td>Wayne Cummings</td>
<td>Fluke</td>
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<td>Dong Lynde</td>
<td>On Time Support</td>
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<tr>
<td>Jeff Wilke</td>
<td>Measurement International</td>
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<td>Bryan Fisher</td>
<td>Interface Products</td>
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<td>Bob Vowell</td>
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<td>Dave Upton</td>
<td>EMA</td>
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<td>Bob Cummings</td>
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<td>Chris Grachanen</td>
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<td>Keith Barnick</td>
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<td>Ron Smith</td>
<td>AEC</td>
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<td>Dr. W. L. Smith</td>
<td>The Cal Lab</td>
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<td>Gary Ferron</td>
<td>Ferrin Group</td>
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<td>Tim McGlotha</td>
<td>GE Ind. System</td>
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<td>Robert Fritz</td>
<td>U.S. Air Force</td>
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<td>Peter Stormvortenmann</td>
<td>Roth Development</td>
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<td>Robert Elston</td>
<td>Morrison</td>
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<td>Pat Bass</td>
<td>EG&amp;G</td>
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<td>Solomon Franklin</td>
<td>City Public Service</td>
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<td>Luciano Guerra</td>
<td>SA-ALC/Keli AFB</td>
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<tr>
<td>Dave Sanders</td>
<td>Ontoscopy Services</td>
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<tr>
<td>Glen Weldon</td>
<td>DuroPore</td>
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<tr>
<td>Sam Canacho</td>
<td>DuroPore</td>
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<tr>
<td>Mike Biggs</td>
<td>Dia Marketing Assoc.</td>
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<tr>
<td>Bill Stone</td>
<td>TESCO</td>
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<tr>
<td>Erika Medina</td>
<td>TESCO</td>
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<td>Dale Poole</td>
<td>Testech</td>
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<tr>
<td>Paul Brown</td>
<td>Testech</td>
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Bryan Fisher, from Interface Products, describing how to use open architecture PC-based software for automating any calibration process utilizing Excel, Visual Basic, and other object-oriented components.

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June 9, 1998
Calabasas Inn
Calabasas, CA
Miguel Cerezo
Los Angeles Section Coordinator

- Fastener Quality Act
- International Accreditation
- Micropipette Calibration
- Impact on the Calibration Laboratory

The Los Angeles Section of NCSL Region 8 met on June 9, 1998 at the Calabasas Inn in Calabasas (San Fernando Valley) California. The day began with a continental breakfast and gathering time at 8:00 AM. Section Coordinator, Miguel Cerezo of Amgen facilitated an introduction to each other and the topic of the day. Twenty-two individuals representing twenty-two organizations attended.

The opening session of the day was a comprehensive report from the NCSL Board of Directors provided by Bill Quigley, NCSL President. Bill covered several topics at length: the 1998 Conference in Albuquerque, New Mexico, Education and Training, new NCSL publications, accreditation issues, Metrology-related standards, and new NCSL staffing and appointments.

First the Conference. With only about forty days to go, Bill said it appears to be another record-breaking Conference coming up in Albuquerque. Future conferences are planned for Charlotte - 99, Toronto - 00, Washington D.C. - 01, and Denver Area - 02. Lots of planning goes into this! Bill also announced the availability of the past seven years’ proceedings and the current year’s proceedings on a keyword/title/author searchable CD-ROM. Price will be moderate - about 20% of the hardcopy costs.

The big news in Education and Training is that in light of the dwindled supply of technicians from military training, several new initiatives are underway to fill the void. Aurora Community College is preparing an internet-accessible program for metrology training. This should also be a boon for those of us responsible for ongoing training. Look for announcements in the upcoming
As far as new publications are concerned, Bill mentioned the new RP for deadweight pressure testers currently at the publishers, along with a catalog of intrinsic and derived standards. Also coming soon are focused documents on laboratory environments, and a guide for Measurement Comparison Programs. Bill’s discussion of documents dovetailed into a short discussion on the 150 or so organizations currently providing accreditation in the U.S. and why an umbrella organization (NACLA) is required to gain international recognition of U.S. accreditation programs.

Following Bill Quigley’s presentation, Jeffry Horlick of NIST provided a succinct analysis of the current laboratory accreditation situation in the United States and in the international arena. Having discriminated the fine distinction between “agreements” and “arrangements,” Jeff discussed the efforts to unite the 150 or more accrediting bodies in the United States under one body - NACLA - which will provide international credibility for American testing and calibration labs. Mr. Horlick cited a “failure” on the part of US industry to provide the required technical infrastructure for international competitiveness. Recommended reading: NVLAP PG-1-1998.

Following Mr. Horlick, Bernard Morris of ASL introduced a new device for use in calibrating PRTs and thermocouples. The device can be used to compare one PRT to another, a PRT to a thermocouple, or one thermocouple to another. All necessary data are contained in the unit’s firmware. Bernard’s presentation was so convincing, we all wanted one by the time he was finished. This is a great way for NCSL members to become familiar with new products.

Before lunch, the group gathered outside before a cascading waterfall at the suggestion of Barbara Tzur of Brylen Technologies. As you can see by the photos, the environment provides a beautiful venue for a local meeting.

At noon, the Calabasas Inn served a wonderful fillet of sole or Prime Rib luncheon to all attendees. After the luncheon, David Duff of A - Metrology - Z presented a discussion based on micropipette calibration. Dave’s topic served as a vehicle to explore critical issues in metrology: are there clear user requirements, what are the realistic uncertainties available in a given parameter, how does a given laboratory perform. These basic questions require constant review even in the most seasoned laboratories.

Following the luncheon, David Duff of A - Metrology - Z presented a technical program on the calibration and use of pipettes. Dave’s discussion addressed both the technical exigencies of micropipette work and more fundamental metrology issues such as clear definition of user requirements, adequate standards, environment, and training and the appropriate evaluation of measurement uncertainty. The discussion resulted in a good review of basic metrology principles.
Jeff Horlick of NiST tells the West Coast about laboratory accreditation.

May 21, 1998
Honeywell Air Transport Systems
Phoenix, AZ
Wayne Benda
Region 8 Coordinator

The twenty-ninth semiannual Phoenix/Tucson Section Seminar and Workshop was held at Honeywell’s Air Transport Systems facility in Phoenix, Arizona. Ed Nemeroff, Wavetek Test & Measurement, welcomed a group of 46 NCSL members and friends.

Ed Nemeroff, NCSL Vice President of International Division, gave the Board of Directors report. We learned of NCSL’s involvement with ISO-9000. Ed attends many international meetings and fielded questions concerning NCSL, ISO-9000 and metrification.

Richard Roddis, Wavetek San Diego, started a discussion on DC-LF Multifunction Calibrators by asking the group, “What is the definition of ‘Traceable’?” No one spoke up. (The room was full of metrologists, why the silence?...Wayne.) Richard used slides to answer this question (an unbroken chain of comparisons ending at NiST) and several others that lead into discussion of calibration of calibrators. Richard talked about uses for a transportable multifunction transfer standard. For more information try <www.wavetek.com/products/4950.html>.

Ed Nemeroff, Wavetek, led a discussion on NCSL’s quest to break down trade barriers in the world of metrology. One barrier is language. In going from English to Arabic an ISO “no test” became “shall test.” Egypt picked up the shall test requirement from the Arabic document, creating an unintended trade barrier.

One CEO told Ed that he had four products that were ISO 9000 certified. The USA is the only country that uses the word “Registration.” The rest of the world uses “Certification.” (If you recall, we discussed the translation of ISO-9000 documents from English to American at a past meeting...Wayne.)

Standards are used as protective documents. Some countries admit it (standards) is to protect local industry. Technical barriers to trade deprive consumers of choice. It is to protect consumers that quality standards are written. Metrology has a direct impact on quality. We (USA) have economic blocks. NAFTA is for Canada and Mexico.

FAA regulations require M&TE to be directly traceable to NIST. Not any other country’s national laboratory. So an airplane repaired in another country using M&TE of that country cannot return to the USA.

Another barrier is incomplete instruction. For example, when British Rail (BR) borrowed the windshield bird strike test standard from the FAA, the chicken went through the locomotive windshield, back of the cab, and embedded in the electrical panel. BR asked the FAA for help interpreting the standard. (BR to FAA, “The Bird Strike Test has a problem...”): FAA to BR, “Thaw the chicken.” You must include every detail in a standard.

NCSL is working with standards writing organizations worldwide with the goal of eliminating these barriers.

Mike Sharp, Honeywell, told us about Computer Interactive Training. The advantages are:

- Training on computer reduces training time on real systems.
- Computer training can be reviewed before calibrating instruments that have long cycles.
- Audio helps those students who are best with verbal instruction.
- Male and Female voices on computer add interest and make some female technicians more comfortable.
- Students can add comments to help instructional design engineers tune the training.
- Design engineers can look at test history and change program to improve understanding.
- Virtual equipment has same front panel as real equipment and behaves the same.
- Shipping virtual equipment is less expensive than real equipment.

Mike explained how to create computer interactive training. He used Honeywell’s experience as examples. You need both an instructional design expert and a subject matter expert. Two hundred hours work for one hour instruction is low. One company spends fifteen hundred hours per one hour instruction. Once a template is created, time for developing new instruction is greatly reduced. Graphics scanned from tech manuals can save development time.

Jim DeSanto, Community College of Aurora (CCA), talked about future plans for training metrology technicians. Fifty thousand metrology technicians were trained at Lowry Air Force Base be-
before it shut down. Jim and CCA have a plan under development to take over where Lowry left off. They have named the plan, "Partners for the Future." The plan makes use of your local community college's training, the Internet and CD ROMs. For the student it works like this:

1) Sign on with your local community college,
2) Take basic electronics, chemistry, physics, etc,
3) Sign on to CCA and take courses via CD ROM and Internet,
4) Fly to Colorado for hands on training,
5) Receive degree.

Jim is looking for colleges to sign on to this plan. Also companies to sponsor internships. He wants to add Chemical and Environmental Metrology to the curriculum. A four year degree program is also under consideration.


We took a break from all this serious meeting stuff by drawing for door prizes supplied by NCSL. There being no problems for our "I have a problem, what's your solution?" session, the meeting was adjourned.

Attendees:

Michael Backhurst
Mike Bair
Fred Beny
Scott Becher
Wayne Bensd
Scott Burton
Mike Chant
David Courtright
Steve Curry
Jay Cant
Jim De Santa
John Ellingston
Jim Emme
David Finney
Charles Garrison
Robert Greene
Lionel Heard
Doug Henry
Sgt. Allen Humphrey
Obaidul Islam
Robert Kutches
Hope Klans
Del Klauss
John Koper
Pat La Face
Raymond Malek
Jim Malone
Roy Martin
Jack McGory
Ed Nemeroft
Ken Newson
Ken Nield
Earl Olsen
William Quigley
Jim Renwick
Richard Ridgins
Bob Rogers
Rick Rosenblum
Mike Sevilla
Mike Sharp
Glenn Short
Honeywell IAC
DH Instruments
Palo Verde Nuclear Gen Sta
AZTEC
Raytheon Systems
CSI
Honeywell DSC
EF Data Corp
Moorea SSTG
Aeros Community College
Cable Systems International
Honeywell SCAS
Precision Measurement Inc
EMC Test Systems
Honeywell Inc ATS
Palo Verde Nuclear Gen Sta
Palo Verde Nuclear Gen StuY
Naval Warfare Assessment Station
AlliedSignal Engines
Palo Verde Nuclear Gen Sta
EMC Test Systems
Tektronix
TMS
FTI Flow Technology
Evergreen Air Center
Honeywell
Honeywell SCAS
Honeywell INC Canadian Support CTR
Wavelet
Honeywell
Honeywell SCAS
Fluke Corporation
Raytheon Systems
AZTEC
Wavelet
Honeywell
Wavelet
Raytheon Systems Company

Miles Smith
Tony Soto
Darrell Weeks
Ursula Zahnleier
Barry Zehm
Israel Zepeda
Aerolea SSTG
Honeywell BCAS
EF Data Corp
Palo Verde Nuclear Gen Sta
Palo Verde Nuclear Gen Sta
Burr Brown

Ed Nemeroft (r), NCSL International VP, presents Regional Coordinator plaque to Prof. Dr. Ahmed A. El Sayed, Chief Executive of the Egyptian National Laboratory Accreditation Bureau. The presentation was made at the Egyptian National Institute for Standards during one of Ed's trips to Egypt. The first Egyptian Regional Area meeting is being planned for November.

Ed Nemeroft (r), NCSL International VP, presents Regional Coordinator plaque to Prof. Dr. Ahmed A. El Sayed, Chief Executive of the Egyptian National Laboratory Accreditation Bureau. The presentation was made at the Egyptian National Institute for Standards during one of Ed's trips to Egypt. The first Egyptian Regional Area meeting is being planned for November.

Indian Institute of Quality Management (IIQM), Jaipur, (NCSL member) a training institution under STQC Dte. has joined hands with Birla Institute of Technology and Science (BITS), Pilani, a premier Institution in Science & Technology Education in the country in bringing MS programme in Quality Management. BITS has approved the conduct of MS Programme in Quality Management in association with IIQM, under their "Off Campus Distance Learning Collaborative Programme." Quality Management as a discipline of knowledge is an emerging concept and the programme will be of great help to quality professionals working in industry and laboratories in enhancing their professional skills and knowledge. The programme consists of two semesters of course work and one semester of dissertation work. Successful candidates will be awarded MS degree by BITS, Pilani.

CERTIFICATION ACTIVITIES

PHILIPS CALCUTTA (LB) AWARDED FIRST CERTIFICATE UNDER THE STQC EMS CERTIFICATION SCHEME

Standardisation Testing & Quality Certification Directorate (STQC) (NCSL region #13 coordinator) has launched Environ-
mental Management System Certification Scheme (ISO 14000) based on the requests received from our ISO 9000 certified clients. The first certification under the scheme has been awarded to M/s Philips India Limited (LBU) Calcutta recently. Incidentally, the first certificate under the other Certification Schemes of STQC like ISO 9000 (QMS), Safety and EMC were also awarded to Philips Unit.

STQC acknowledges the support and encouragement given by the Philips India Limited to their Certification Services and is proud to be associated with them. Launching of EMS Certification Scheme is a step further to achieve the objectives of STQC in providing one stop solution to electronic industries in meeting their quality requirements and assist them in becoming globally competitive.

STQC GETS INTERNATIONAL APPROVAL FOR PHOTOVOLTAIC PRODUCTS

An international organisation viz. PV-GAP (Global Approval Programme for Photovoltaic) has been established recently at Geneva for Standardisation, Testing & Certification of Photovoltaic products at international level.

PV-GAP has an agreement with International Electro Technical Commission (IEC), Geneva for Testing and Certification of PV products under this programme. STQC by virtue of being National Supervisory Inspectorate (NSI) in India for IEC Certification scheme (IECQ) is authorized to test and certify Indian PV products under this programme based on initiative taken up by STQC Directorate in the IECQ meeting last year. STQC has already established comprehensive test facilities for PV products and systems at Bangalore & Calcutta in collaboration with Ministry of Non-conventional Energy Sources (MNES), which will be used to certify PV products under this programme.

India is among four countries along with USA, France & Germany to get this international recognition. Indian manufacturers of Photovoltaic products can now get international approval for their products through STQC. This is considered another step further in providing one-stop solution to all the quality related requirements of Indian Electronic Industry under STQC umbrella and makes them globally competitive.

SETE SERVICES EXTENDED TO PRASAR BHARTI AND DOORDARSHAN

Centre for Electronics Test Engineering (CETE), Calcutta a training centre of Society for Electronics Test Engineering (SETE) under STQC Directorate has been identified by All India Radio (AIR) and Doordarshan (DD) a national TV channel for providing training to their staff and officers. A total of 29 participants were delegated by Prasar Bharti Broadcasting Corporation of India and Doordarshan, New Delhi, during the month of June to attend training courses on Zero Defect Soldering and Computer Aided Testing. Apart from it, five other courses have identified by AIR / DD which will be conducted in the forthcoming months.

CETE Calcutta has the distinction of being the accredited training centre of M/s Allen Bradley and M/s. Siemens for training courses on programmable controllers.

CETE CALCUTTA INTRODUCES NDT TRAINING COURSES

CETE, Calcutta has introduced this subject through a two day workshop in Non Destructive Evaluation Technique during 10-11 March 98 with joint collaboration with the Indian society for Non Destructive Testing, Calcutta Chapter, and Fraunhofer Institute of Non Destructive Testing, Germany. The centre will take up Ultrasonics and Eddy Current techniques to start with. Two of our engineers have already acquired ultrasonics Testing (UT) level I certification.

CETE, CALCUTTA STRENGTHENS ACTIVITIES FURTHER WITH SIDBI

After initial success with SIDBI (STUP programme) CETE, Calcutta has already conducted this year a course in Calibration during May 98 and plans to conduct more programmes during 1998-99 in the following areas - Dimensional Metrology, Zero Defect Soldering, Rework/Repair of PCB, Repair / Maintenance of Test and Measuring Instruments, Energy Management and DC Drive.

NCSL WORKSHOP & SYMPOSIUM - 1998

NCSL India region has been actively participating at the annual NCSL Workshop and Symposium every year. The following four officers from different member organizations represented Region 13 this year:

1. Mr. A K Datta, Director General, National Test House, Calcutta.
2. Mr. P Dakshinamurthy, Deputy Director General, Bureau of Indian Standards, New Delhi
3. Dr. K. Ramani, Principal Director, Institute for Design of Electrical Measuring Instruments, Mumbai.
4. Dr. C Muralikrishna Kumar, Additional Director, STQC Dte., New Delhi.

Mr. Datta and Dr. Kumar also attended the NCSL Board of Directors meeting on 19th, and 24th July. At the BOD meeting, they presented India region report and also apprised the members about the forthcoming national conference of Test Engineering & Metrology. See the information on the TEAM conference in India on page 16.

Forty-one people were in attendance at the Chicago Section meeting. Baxter Healthcare provided excellent facilities, refreshments and lunch.

Our first speaker was Jim Erickson of Blue Mountain Quality Resources. Jim discussed Intranet applications in the Calibration Lab. The talk really opened my eyes to the current, and in particular, future potential of Intranet technology in Metrology systems.

(Continued on page 23)
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<td>Larry D. Warner</td>
<td>Fluke Corporation</td>
<td>Everett, WA 98206-9090</td>
<td>(425) 356-5195</td>
<td><a href="mailto:lwwarner@pc.fluke.com">lwwarner@pc.fluke.com</a></td>
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<td>Robert Benitez</td>
<td>Fluke Corporation</td>
<td>Guadalupe, N.L. 67160 Mexico</td>
<td>01-52-83-378376</td>
<td><a href="mailto:Lunar_Benitez@pc.fluke.com">Lunar_Benitez@pc.fluke.com</a></td>
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<td>Mike Hutchins</td>
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<td>Wokingham, Berkshire RG11 5D England</td>
<td>01-441-189-696622</td>
<td><a href="mailto:mike_hutchins@hp.com">mike_hutchins@hp.com</a></td>
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<td>Grisha Deitch</td>
<td>Ministry of Industry and Trade</td>
<td>Jerusalem, Israel</td>
<td>011-972-2-6236303</td>
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<td>Nigal Jou</td>
<td>Center for Meas. Stds. ITRI</td>
<td>Hsinchu, Taiwan 30042 R.O.C.</td>
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<td>Katsumi Yokoi</td>
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<td>Tokyo, Japan</td>
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<td>Kurt Jensen</td>
<td>Hewlett-Packard A/S</td>
<td>Kogevejen 25</td>
<td>011-45-4599-1275</td>
<td><a href="mailto:KJENSEN@kcp.com">KJENSEN@kcp.com</a></td>
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<td>Jean Claude Krynicki</td>
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<td>Les Ulis, 91947 France</td>
<td>011-69-826127</td>
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<td>Satoshi Nishie</td>
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<td>604 341-8682</td>
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<td>Dr. T.M. Plantenga</td>
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<td>2600 AR Delft, The Netherlands</td>
<td>31-15-269-15-01</td>
<td><a href="mailto:trimplantenga@nmi.nl">trimplantenga@nmi.nl</a></td>
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<td>Prof. Dr. Ahmed A. El Sayed</td>
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<td>Loroy Britain</td>
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<td>Charles Rheault</td>
<td>Lockheed Martin</td>
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<td>612 456-4780</td>
<td><a href="mailto:charles.e.rheault@lmco.com">charles.e.rheault@lmco.com</a></td>
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<td>Tom Wallrich</td>
<td>NSC Technologies</td>
<td>Mt. Prospect, IL 60056</td>
<td>847 500-2321</td>
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<td>Glenn Thompson</td>
<td>Monsanto</td>
<td>700 Chesterfield Village Pkwy.</td>
<td>630 737-6098</td>
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<tr>
<td>Marilyn Ross</td>
<td>Dept. Natl. Defense</td>
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<tr>
<td>DETE-12</td>
<td>Ottawa, ON K1A 0K2 Canada</td>
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<tr>
<td>(619) 994-1189 FAX (619) 997-2523</td>
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<td>Wayne Sampson</td>
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</tr>
<tr>
<td>473A Windmill Rd.</td>
<td>Dartmouth, NS B3B 1B2 Canada</td>
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<tr>
<td>(902) 468-3344 FAX (902) 468-1203</td>
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<td>Adrien Michaud</td>
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<tr>
<td>6000 Dr. Gerhard Philips Blvd.</td>
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<td>(514) 748-3000 x4074 FAX (514) 748-3149</td>
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<tr>
<td>e-mail: <a href="mailto:amichaud@mtl.marconi.ca">amichaud@mtl.marconi.ca</a></td>
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<td>George Parker</td>
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<td>25 Cityview Dr.</td>
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<tr>
<td>Etobicoke, ON M9W 5A7 Canada</td>
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<td>Okhla Industrial Area Phase II</td>
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<tr>
<td>New Delhi, 110 20 India</td>
<td>(91)(11) 683 6219 FAX (91)(11) 682 1583</td>
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<td>e-mail: <a href="mailto:akdatta@xm.doe.ernet.in">akdatta@xm.doe.ernet.in</a></td>
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<td>Dr. (Mrs.) Bhami Iyer</td>
<td>Central Inst. for Res. on Cotton Tech. (ICAR)</td>
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<tr>
<td>Adenwala Road, Matunga</td>
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<td>B.K. Srinivas</td>
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<td>Electronics Division</td>
<td>P.B. No. 2606, Mysore Road</td>
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<tr>
<td>Bangalore, Karnataka - 560 028, India</td>
<td>011-91(80)-624290 FAX:011-91(80)-6610137</td>
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**LIAISON DELEGATES**

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<tr>
<th>902 GIDEP</th>
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<tr>
<td>Jim Carlton</td>
<td>GIDEP Operations Center</td>
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<td>P.O. Box 8000</td>
<td>Corona, CA 91718-8000</td>
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<td>(909) 273-4577 FAX (909) 273-5200</td>
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<td>e-mail: <a href="mailto:carlton.jim@corona.navy.mil">carlton.jim@corona.navy.mil</a></td>
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<td>NIST</td>
<td>MS: 164</td>
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<td>Bldg. 820, Rm 289</td>
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<tr>
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<td>TBA</td>
<td>Norman B. Belecki</td>
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<td>CPEM*</td>
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<td>IEEE I&amp;M*</td>
<td>Dr. David Braudaway</td>
<td>Dr. David Braudaway</td>
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<td>(505) 281-3691 FAX: same (call first)</td>
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<td>ASTM*</td>
<td>Peter S. Unger</td>
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<td>CORM*</td>
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DEFINITIONS OF ACRONYMS OF LIAISON ORGANIZATIONS

A2LA American Association for Laboratory Accreditation
AIA Aerospace Industries Association
AMMAC Asociacion Mexicana de Metrologia (Mexican Association of Metrology)
ANSI American National Standards Institute
APLAC Asia Pacific Laboratory Accreditation Cooperation
ASQ American Society for Quality
ASTM American Society for Testing and Materials
CORM Council for Optical Radiation Measurements
CEM Conference on Precision Electromagnetic Measurement
EA European cooperation for Accreditation
IEEE I&M Institute of Electrical & Electronics Engineers Instrumentation & Measurement
IMEKO Internationale Messtechnische Konfederation (International Measurement Confederation)
ISA Instrument Society of America
MSC Measurement Science Conference
NACC North American Calibration Cooperation
NAPT National Association for Proficiency Testing
NORAMET North American Metrology Cooperation
OIML Organisation internationale de Metrologie Legale (International Organization for Legal Metrology)
SIM Sistema Interamericano de Metrologia

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