New Century — New Challenges

Our Workshop and Symposium took place in Charlotte, NC. Even though we did not register a record attendance, we nevertheless considered the conference a success overall. Some inconveniences occurred with the hotels and the convention center, but as a whole we did receive a lot of positive feedback.

Several new arrangements were tried this year, such as four full days for the conference, as well as tutorials before and after the conference. Neither one of these approaches received 100% support, but then, that was not expected either. Yet, new and additional ideas have to be tried out to satisfy a broader, more diverse membership.

Several tough challenges remain. New items will be proposed, some of them will be tried, and of these some will not hit their mark. However, as a volunteer organization, we have to continue to extend ourselves to keep this a vibrant and innovative enterprise. We need to continue receiving your comments and ideas and ask for your indulgence if some ideas do not work out 100%.

Several very important speakers addressed the membership during the conference. Mr. Richard B. Priory, COB and CEO of Duke Energy Corporation, gave a very thought-provoking keynote address challenging all of us to improve measurement science in the power generating and power distribution industries. Dr. Bill Phillips (Nobel laureate) from NIST entertained us at the Monday luncheon with fascinating descriptions of laser cooling techniques for atoms. Just watching him act out the movements of atoms back and forth tired me out for the rest of the afternoon.

Dr. Karen Brown, new Deputy Director at NIST, was our speaker at the Tuesday luncheon. She outlined several key initiatives underway at NIST, addressing customer concerns and measurement technology support. Dr. Brown, together with Dr. Hector Nava-Jaimes, Director of CENAM, Mexico, then proceeded with signing a mutual recognition-of-measurement-capabilities agreement between the US and Mexico.

This agreement promises cooperation for development and maintenance of inter-comparison data, establishment and maintenance of mutual equivalences, joint development of measurement technologies and standards, joint development of and exchange of reference materials, establishment of mutual traceability, and other activities of mutual interest. Needless to say, this was a very ambitious and promising agreement.

We had, once again, a large contingent of international representatives and colleagues attending the conference. Many meetings were hosted by the NCSL in support of international committees and activities. Interactions between domestic and international NCSL members were ongoing and fruitful for the short and long term. A special appreciation is extended to Dr. Terry Quinn, director of the Bureau International des poids et Mesures (BIPM), for attending the conference. He and other European colleagues assured lively and productive interactions and communications.

Contacts with our colleagues from South America were refreshed and communications were solidified and enhanced. As always, our Asian friends were attending, perhaps not quite with the number of people we had gotten used to in the last few years, but nevertheless representing many countries. Hopefully, economies will improve in the near future allowing more of our colleagues to attend the various NCSL activities.

Before relinquishing this space to the incoming NCSL President for the year 2000, I would like to discuss briefly two issues that have been on my mind for quite some time. The first issue concerns a report published by NIST in May of 1998 which addresses Metrology-related costs in the U.S. Semiconductor industry. The report states that the U.S. Metrology-related cost on the supply side (i.e., total for metrology equipment supplied to the world by U.S. headquartered suppliers) was estimated in 1996 to be between $1.98 and $2.30 B, yes I mean billion dollars. This is just for the Semiconductor industry!

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EDITOR’S MESSAGE —

Welcome, Mary Hydo

With the loss of my long-time typesetter, Mike Nowicki, as he moves on to Northern California, we are extremely fortunate to have a newly-retired (from HP) person to volunteer to help out with this formidable task. Mary and I worked together at HP for probably a total of 25 years.

Mary plans to help me bring our typesetting processes into the digital age. For example, we want to get all our photographs up to digital JPEG scans so that we can stop shipping hand-copy paper all over the world. She thinks we can also establish an electronic-text publication and review process (which now involves FEDEXing 12 copies of 72-page editions) around the U.S.

(continued on page 16)
Norman Belecki—1999 Wildhack Award Winner

Norman Belecki, with the National Institute of Standards and Technology, Gaithersburg, MD, has received the 1999 William Wildhack Award from the National Conference of Standards Laboratories (NCSL). In the absence of Bill Quigley, who chaired the selection committee, the award was presented by NCSL International VP, Ed Nemeroff, on July 12, during the organization’s annual conference in Charlotte, NC. 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 NIST. 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 26th individual to be so honored.

Norman Belecki is Division Liaison Officer for the Accreditation and International Affairs of the Electricity Division of NIST. He is one of the best known metrology practitioners in both the national and international community. He has been recognized for both his technical and managerial contributions to our field including the Allan V. Astin Award 1986, the Andrew Woodington Award in 1985, and the U.S. Dept. of Commerce Silver Medal Award in 1982. He was promoted to the grade of Fellow in the Institute of Electrical and Electronic Engineers in 1998.

Mr. Belecki received his BS in Physics at Clarkson College (now University) in 1962. He earned his MSE in Metrology at George Washington University in 1967. He began his career in metrology in 1962 at the U.S. Air Force Guidance and Metrology Center in the primary standards area of voltage, resistance, capacitance, inductance and AC-DC difference. In 1970, he joined the National Bureau of Standards (now NIST), as a physicist in the Electricity Division. From 1972 through 1996, he served as Group Leader, Electrical Reference Standards Group, where he was responsible for the national standards of voltage and resistance.

Belecki has presented numerous invited talks and courses at the NCSL Annual Conferences, the Measurement Science Conferences, and the ASQ Measurement Quality Division Conferences. He has served as both program chairman for the IEEE Conference on Precision Electromagnetic Measurements in 1986 and Conference Chairman in 1998. He also serves as NCSL Liaison Delegate for the Conference on Precision Electromagnetic Measurements (CPEM).

He was one of the initial sponsors of NCSL’s first International Outreach Program, “Metrology for the Americas” in 1995.

Norm’s wife Linda is from Newell in southwestern PA and is the administrator of a real estate office near the Washington Beltway. She enjoys books and cooking. He reports that he is eternally grateful that she never objects to his buying yet another book on history, philosophy, or cognition, despite having 20 or 30 partly-read books lying all over the house.

In future retirement, he suggests that he might go back to school to take courses on these and other interesting topics. and maybe re-learn the math he used to enjoy, but never got to use. Meanwhile he is slowly working on redoing his landscaping.

His two children, two girls, who are the pride of his life, are busy at college. Christine has just entered her Sophomore year at the University of Maryland College of Medicine. Kathryn has just begun her Junior year at Williams College and is working toward her MD-PhD degree.

Since the Wildhack Award was redefined in 1976, previous winners have included: Dr. Ernest Ambler, Director of the U.S. National Bureau of Standards; Doug Strain, ESL, Inc.; Frank Mcginnis (deceased), Sperry Corp.; Jerry Hayes, U.S. Navy Metrology Engineering Ctr.; Dave Mitchell, Rockwell Corp.; Dr. Forrest Harris (deceased), U.S. NBS; Dr. Churchill Eisenhart (deceased), U.S. NBS; John M. Finke (deceased), Fluke Corporation; Dr. Andrew Dunn (deceased), National Research Council of Canada; Dr. Bruno Weinschel, Weinschel Engineering Co.; Dean Brungart, Teledyne Systems Co.; John Minck, Hewlett-Packard Co.; Dr. David W. Braudaway, Sandia Corp.; Peter M. Clifford, City University, London; David Packard (deceased), Hewlett-Packard Co.; Ed Nemeroff, Dantel/Wavetek; Dr. Joe Simmons (deceased), NIST; Graham Cameron, Canadian Department of Defence; Henry Sostman (deceased), Thermometry Consultant; J. Michael Suraci, Lockheed-Martin; Gary Davidson, Strand, Davidson and Staia; Robert Weber, Lockheed-Martin, and Dr. Klaus Jaeger, Lockheed-Martin.
PRESIDENT'S MESSAGE (continued from page 1)

 Needless to say these are impressive numbers. So the next obvious question is how big a metrology base do NCCL members represent? This, of course, is difficult to estimate; but we do have some tools at our disposal. Using some of the NCSL benchmarking data as well as demographics, we can get a clue. It has been documented that some metrology facilities carry an internal asset inventory of 8-10% compared to the overall work load supported. If, for example, a metrology laboratory supports $100M in test equipment, its own inventory amounts to $8-10M. (I am referring to acquisition cost and not book value.)

If I scale information available from several sources, then my estimate for test equipment supported by NCSL member organization amounts to an acquisition cost of $ 50B! (I could easily be underestimating this value by 100 or even 200 %.) This is the inventory we, the member laboratories support in the U.S. alone. Needless to say, NCSL represents a large industry in the U.S. and metrology constitutes an immense part of the economy.

The second issue of interest to me is in regard to adequate or fair representation by the U.S. and other countries and regions within metrology decision-making bodies like the Bureau International des poids et Mesures (BIPM), ISO, International Laboratory Accreditation Council (ILAC), Organisation Internationale de Metrogologie Legale (OIML), etc. Even though the Gross Domestic Product (GDP) of the U.S. is as large as that of all of Western Europe, the U.S. has one voice, as do any of the other countries.

Several of my colleagues have argued in favor of one vote per country and treating the U.S. as 50 countries. If we do so, and in addition arbitrarily cut off any country or state with a GDP or GSP (Gross State Product) of less than $100 B, using data from 1997 and 1996, we would start at the low end with Kentucky, Finland, and Alabama and end up at the high end with Italy, France and Germany for a total of 44 countries and states. (24 of these would be U.S. states.) Of course this would not receive approval since Canada could argue for provinces and Germany for states within their borders. (Other countries like United Kingdom, France, Spain, etc. could argue similarly.)

Another possibility would be to argue in units of GDP. Once again using $100 B as a unit, Europe (I am only counting western Europe) would come in with 79 votes and the U.S. with a GDP of over $8.1T with 81, Canada and Mexico each with 7. Clearly that does not make sense either. (The reader should keep in mind that all these GDP and GSP estimates are 2 to 3 years old and certain relative estimates might be off by ± 10%. This does, however, not take anything away from the overall arguments.)

Now let us argue in terms of Metrology regions. Many of the European countries are under the EA umbrella for a total GDP of about $7.9T. The U.S. plus Canada and Mexico (NORAMET region) come in with a combined GDP of about $9.3T. Now we are beginning to see some equivalence. My proposal would therefore be to have equal number of votes for the EA and NORAMET.

Other parts of the world have to be discussed also. Clearly the Asia Pacific region (APMP) can hold its own. Others like Central America countries (CAMET) and Caribbean countries (CARIOMET) each have a combined GDP of about $100 B. Andean countries (ANDIMET) have a combined GDP of about $500 B, and the south of South America countries (SURAMET) have a combined GDP of about $1.3 T. If all these metrology regions pool their accounts, they would still be only at a fourth of that of the EA or NORAMET.

This still leaves Southern Africa (SADCNET) and Russia with other countries of the FSU (COOMET). Even areas not organized into metrology regions like the Near East, North and Central Africa, etc. can not be ignored.

In summary, this is not an easy task to consider; yet it needs discussion, if not now, then in the near future. Perhaps such discussions are taking place today. However, we in the industrial community do not hear enough about it and most likely are not adequately represented. Yet, as mentioned above, industrial metrology represents a large percentage of the world economy.

There have been recommendations to have all the Americas, organized under Sistema Interamericano de Metrologia (SIM), be allowed only one vote on worldwide metrology issues. We are now talking about a combined GDP of $11.5T, far above any other metrology region. Since metrology effects worldwide economies directly, this does not make sense to me. The Americas should then argue for EA to combine with most of COOMET, all the part up to the Ural Mountains.

Essentially we would be getting back to 6 continents; namely Europe, Asia, Africa, America, Australia plus New Zealand and Oceania. (This would put our friends from Australia and New Zealand and Southern Africa in a very pretty position, not acceptable to other regions, I am sure.) I do not have the answer but NORAMET as a whole and the U.S. in particular deserves a more numerous representation at these metrology decision-making bodies.

My term of office comes to an end in a few short weeks, at the end of the calendar year. I would like to thank all the volunteers and the NCSL staff that worked so diligently during this last year supporting the NCSL efforts. It has been a pleasure being considered one of your colleagues. A lot of hard work lies ahead but together you will triumph and as I move to the sidelines I will cheer you on as one of the greybeards.

Finally, I'd like to thank all of you, the NCSL members, for allowing me to serve as your president this year. Your support was the key to making this a successful year for me and I hope for the NCSL also. The Board of Directors has been extremely helpful in passing several key initiatives. I especially want to thank all Board and committee members, as well as all the regional and sectional coordinators, for supporting our initiatives, for engaging us in some very detailed dialogues, and for challenging us on a continuous basis.

Continued dialogues and interactions will make this organization grow in the next millennium. Please extend your support and courtesy to Dave Abell, our year 2000 President. With best wishes to all of you and good luck surviving the Y2k bug early in the year 2000.

Klaus Jaeger
NCSL President
Keynote Address: NCSL Conference 1999, Charlotte, NC

Thank you, Dr. Jaeger. Thank you for the invitation and the opportunity to speak to you today.

Let me also extend to you a warm welcome to Charlotte. Many people don't realize it, but from time to time our hard-working city has set in motion some big events.

A year before the British colonies' Declaration of Independence sparked the American Revolution, the Mecklenburg Declaration was written and signed by independence-minded patriots in Charlotte.

Charlotte has been an epicenter of a national reshaping of our banking and financial industries. Today it is the second largest banking center in the United States. Only New York City is bigger.

And NASCAR auto racing is ignoring all the speed limits as it passes all other sports in growth in popularity. Our Charlotte Motor Speedway hosts the third largest sporting event in the U.S., the Coca-Cola 600. Many people believe that Charlotte is where the sport first gained the broad appeal that launched this explosion in popularity.

But today I want to focus on a watershed event that took place in France two hundred years ago, almost to the week. It was an event with huge repercussions for society, business and industry. It was an event that I know you can appreciate. And as a CEO who is also an engineer, I can tell you that I appreciate the importance of this event as well.

I haven't seen this particular bicentennial mentioned on the news or highlighted in a blurb in USA Today. But I can argue that more people should know about it. More people should appreciate what it means to the world today. It continues to have enormous significance for the world we live in, and the world we're shaping. And I think you all would agree.

Have I got your interest?

In June, 1799, the French Academy of Sciences, after more than two years of work, proposed the final standards for metric measures of length and mass.

Coming out of the French Revolution, the French Academy's work in developing the metric system must be regarded as a cornerstone of the world we know today. Thousands of scientific and technological successes are built on what they began 200 years ago.

That's how I see it. But history can be viewed from many points of view. Look at the Roman Empire for instance.

We know that the Pax Romana—the period of peace and expanded trade of the Roman Empire—was enforced by Roman Legions.

The history of the Roman Empire that comes down to us is often told from the political or military point of view. Just like today, the Emperors get the headlines, and the generals get the glory. But those Roman legions were dispatched and mobilized over an unprecedented system of Roman highways—made possible by Roman engineers and a sophisticated system of measures and standards.

Although it was not very sophisticated by today's standards, the Roman precursor of our "mile" was subdivided into 1000 paces. Each "pace" was actually a double step and was "approximately" five feet in length.

But the Roman system was arguably the best system of its time. It drew on systems developed by Mesopotamians and Greeks. And we know this to be true: The Roman systems of standards and measures were absolutely essential to trade and the diffusion of people and ideas throughout the empire.

History—told from the point of view of engineers and metrologists—records that with the decline and fall of the Roman Empire came a decline in systems of measurement for all of Western Civilization.

Which brings me to the simple message I'd like to bring you this morning. It's a message of encouragement from an engineer/businessman who appreciates and recognizes the importance of what you're doing.

My message is this: Continue your outreach and growth in the world arena.

Like your predecessors in the French Academy of Sciences or those long-ago Roman empire-builders, you're making history. We must face the fact that it won't be the headlines of history, but you are shaping world events. You are making history.

Your conference theme asks a good question. And the beginning of a new century—much less a new millennium—is an opportune time to ask, "Are we ready?"

I believe you are. Gary Shuler, who serves your organization and our company so well, tells me you have definitely adopted a global perspective. I believe your willingness to expand your work to every part of the world secures you an important role in the next century.

Gary tells me your membership now comes from 45 countries, and that international membership last year grew by almost five percent. He tells me that standards laboratories from various countries now recognize the value of these forums and workshops. He tells me you are helping to establish metrology organizations and labs in Egypt, Panama and Switzerland.

What all this tells me is that you're on the right track. From the perspective of our company—Duke Energy—let me tell you why I believe this.

Just over ten years ago, we began to prepare our company for deregulation and competition. Those two words—deregulation
and competition—summed up for us the many and far-reaching changes coming to the electric utility industry.

At that time we were called Duke Power Company. We served about a million and a half customers in a 20,000-square-mile "service territory" here in North Carolina and South Carolina. We generated electricity, we transmitted it and sold it to our wholesale and retail customers. There's a story out of our corporate history that's worth telling to you.

More than others, you can appreciate the importance of how you measure your business. In our early days, we described the size of our business in terms of the number of "meters" we served.

I realize this is sort of a put for meterologists, but that's how we looked at our customers—as meters. Later, we evolved in our outlook and began to refer to them as "ratepayers." Fortunately, by 1989 we recognized them as customers. And we recognized that our future would be built on earning their loyalty and respect.

As Duke Power, we began to look at all parts of our existing business and ask how could we do them better. How could we provide better service? How could we lower our costs? What were new products and services that we could bring to the marketplace?

But then another question began to emerge. We began to understand that successful companies of the future would be growing companies.

Companies that chose not to grow and adapt would stagnate and eventually fail by the wayside. So then a fundamental question became, "How can we grow the business?" In the ensuing decade we marketed our engineering and environmental expertise in more than 50 countries. We have designed and built power plants from the U.S. to Indonesia. We have led the convergence of gas and electricity through our merger with PanEnergy to create the ninth-largest energy company in the world.

We have set our sights squarely on continued growth strategies—and these are global strategies. So today, at the end of a century and a millennium, our company—like your organization—must ask the tough questions.

But—unlike a decade ago, we now ask the questions in the context of global events and trends.

We're telling our shareholders and our employees a lot about our ambitions and strategies as we go. We're telling them that we've targeted several key markets, including Latin America, Europe and Australia/Pacific Rim. These markets offer opportunity for diverse reasons: deregulation, privatization, or long-term high rates of economic growth.

In Europe, for example, it's the combination of privatization, deregulation and the creation of a truly continent-wide currency and marketplace.

In Europe, you could say that Duke Energy has a "European strategy." Well, guess what. So do a lot of other American companies. And there are some big European companies that also have a "European strategy"—only it's a European strategy of expansion and growth in U.S. markets.

The pace of change is impressive. Here's a few of our industry headlines. All of these have been announced just since you were making your plans to celebrate New Year's Eve, 1998:

- Germany's largest independent power producer and an American company announced a partnership to build or buy 6,000 megawatts of generating capacity in the U.S.
- A Houston, Texas-based company announced its purchase of a 40-percent interest in a Dutch power generation company, to establish a "foothold" in Europe.
- A Scottish power company proposed a merger with a big utility in the Northwest U.S.
- A British company announced a $3.2 billion merger/acquisition with one of the biggest Northeast U.S. utilities—bringing old England to New England.
- Duke Energy recently completed acquisitions of both natural gas and electricity assets in Australia. And earlier this year we made an aggressive effort to buy significant holdings in Latin America. Ultimately those holdings went to a much higher yield—from a Spanish company that already had significant interest in the company.

A business like Duke Energy now keeps a world map on the wall. The boundaries are still on the map, but they have a much different meaning than before.

The boundaries define the geography of the countries, but they also define our opportunities.

Relatively speaking, this has happened in the blink of an eye. Companies from every continent are seeking to parlay their strengths in every market of the world.

In our business, if you are serious about growth—if you are serious about being ready in the new century and the new millennium—you must be willing to work in a world where boundaries define markets. Boundaries no longer represent iron curtains, or barbed-wire fences, or Great Walls.

And that is why I encourage your global outreach and aspirations. We need you. The world of business, industry and commerce need you.

Look at all the ways people are working to link the world together. There is capital and expertise ready to be deployed to every market on the globe. Politicians, financiers, bankers and others are working around the clock to shore up financial systems and currencies. This gives business a financial foundation to build on.

Information technology is being deployed to link us. Here's an example. We built a power plant in Indonesia. Project engineers worked here in Charlotte. Owners were in the U.S. and Japan. Vendors and suppliers were from all over the world. Project managers were on site in Indonesia.

We put in place an interactive, real-time system to link everyone. Data, engineering drawings, digital images, written communications—all could be moved at the speed of light among all the parties.

Advances such as these create tremendous opportunity and need for your work. Just as we need that financial foundation to succeed, we need a foundation of international standards and measures. It is every bit as crucial as a sound financial system.

We need the assurance—the certainty—that we can develop and operate energy assets and deliver energy services. To support that we need complete confidence in every aspect of measures and standards and performance. And in the coming century that applies to any country in the world.
There’s another reason this is crucial—it’s called “leapfrogging.”

It’s well documented that in some markets, wireless communications technology has leapfrogged its predecessor—wire-based telecommunications. In some developing countries, people are able to bypass the decades of technological evolution that we experienced here.

We will see similar events in the energy industry. The energy infrastructure we build today must meet standards of a new century, a new millennium.

It must be clean and environmentally friendly. The world has rapidly converged on exacting standards for nuclear power plants. International treaties will continue to raise the bar for fossil-fueled plants. Such trends have big impacts on our industry.

First, of course, we must design and build cleaner burning plants. But it also has market impacts. The issue of emissions has made clean-burning natural gas a strongly preferred fuel source for power generation. This in turn has helped drive a mega-trend in our industry: the convergence of natural gas and electricity providers into a new kind of energy provider.

In the 21st century, there is going to be one bedrock expectation of energy: High quality combined with total reliability. Societies and economies today demand energy systems that don’t even permit a computer to blink off and on. Behind every manufacturing and service process we can now see higher standards and expectations than ever before.

This applies equally to countries such as the U.S., where we already have a well-established energy infrastructure. Over the next 20 years, we will have to build power generation capacity equal to half of the existing capacity in the U.S. today.

Worldwide, there is a huge job ahead of us in building, enhancing and operating our energy infrastructure.

Of course our industry is not unique in this regard. We could convene a business roundtable of executives from right here in Charlotte—from textiles, from steel, or communications technology. All would agree: Standards must be more exacting and more thorough than at any time in history. And there will be no double standards, anywhere. There won’t be one standard for North Carolina and another standard for Peru or the Czech Republic.

There are businesses here in Charlotte that prominently display their ISO certification on the exterior of their buildings. The unwritten message to me is this. Those companies are certainly prepared for—and probably engaged in—the global marketplace.

I believe this is one area where much of your good work has succeeded in achieving a broader recognition. Through the ISO a lot of good businesses have been made better businesses by working to achieve ISO certification.

Also, I believe that much of your ongoing work becomes part of the international “language” of business. It becomes comparable to geometry, or physics, or the metric system. No matter what language you speak, universal standards and measures can be expressed in universally understood terms and units.

As a company that wants to secure new customers, new partners and new suppliers around the world, I can tell you that Duke Energy needs your work. In order for us to grow and prosper, we need you to reach out to every country. We need you to build that foundation.

There’s a paradox we face, here at the end of a millennium. We are working to secure our future in what is essentially a global revolution. This is true wherever we work—in science, business, academics. And the paradox is this: At the same time the world has become so “small” the challenges have become so large.

All of us are pulled in opposing directions. We must focus on the thousands of details of the daily demands of business. At the same time we must create strategies and long-range plans to help us navigate what we call the “mega trends” of the world.

The much-discussed Y2K problem can serve as a cautionary tale. It comes wrapped in the grand package of a new millennium. It has the potential to disrupt life and society in every developed country. And yet, as the old saying goes, “the devil is in the details.” With Y2K, the name itself draws our attention to a new millennium, but the work must get down to the smallest details and standards.

Your organization clearly demonstrates the challenge. At the same time you must plan and arrange this workshop and symposium, you face the challenge of growth and expansion around the world.

And there’s one more thing we can do. We can lead. At Duke Energy we work to combine bold strategy with decisive action. Our aim is to determine the pace and shape of change in our industry. Another way of saying this is that we do not want to be overtaken by change.

I encourage you to set the same pace—to get out ahead of events. When we arrive at a new milestone in our business, we need you to have arrived there ahead of us.

I began my remarks by recalling a group of French scientists and academics. Their actions exactly 200 years ago were not the big news of the day. What they did can be directly linked to the French Revolution, yet nobody will ever immortalize their actions in a book or a movie.

But we recognize the lasting importance, and we see the direct linkage of their good work and foresight to our own success today. I believe that 200 years from now, your ongoing work will be recognized and recorded. But let’s face it. Those who know your history will be a very select group.

For the rest of the earth’s billions of people, the benefits of your work will be there:

• Industrial productivity.
• Abundant energy.
• Travel and the free flow of information.

And who knows, perhaps there will be a gathering somewhere. It will be in some way linked to this gathering, as you are linked to that long-ago meeting of the French Academy of Sciences.

Perhaps a grateful business leader will point to your contributions and your good work. In doing this he will express his thanks and encouragement to keep up the good work and expand it.

In so doing, he will add his voice to mine. Thank you for all you do, and may your success and growth encounter no boundaries.
BEST PAPER WINNERS AND AWARDS

DR. ALLEN V. ASTIN AWARD WINNER AND BEST INVITED PAPER
Reference Standards, Uncertainties, and the Future of the NIST Electronic Kilogram
Presenter and Author:
Dr. Richard Steiner
NIST

BEST APPLIED TECHNOLOGY PAPER
Low Signal Strength a Problem? Try an ALL-Wave Antenna from 1936!
Presenter and Author:
Dr. David Braudaway
Sandia National Labs (retired)

BEST THEORETICAL PAPER
The Dissemination of Gravimetric Gas Flow Measurements Through an LFE Calibration Chain
Presenter and Author:
Michael Bair
DH Instruments

BEST MANAGEMENT AND QUALITY PAPER
The Global MRA Between NMIS for Measurement Standards and Calibration Certificates—An Asia-Pacific Perspective
Presenter and Authors:
Dr. Barry D. Inglis (P & A) and Dr. Angela Samuels (A)
National Measurement Lab, CSIRO, Australia

THE JOE D. SIMMONS MEMORIAL SCHOLARSHIP AWARD WINNER
ADELE A. BAILAR
Student — Community College of Aurora
Aurora, CO

The Joe D. Simmons Memorial Scholarship Award was presented to Adele A. Bailar by Mike Suraci, VP, Education & Training at the NCSL Member Delegates Meeting on July 13, 1999, held in Charlotte, NC, during the 1999 NCSL Workshop and Symposium.

The winner is a student at the Community College of Aurora in Aurora, Colorado. Adele is pursuing an Associate of Applied Science degree in Metrology.

James DeSanto, the Director of the Metrology Program at Aurora Community College, stated in his letter of endorsement: “Adele Bailar has been enrolled in the Metrology Program since Summer of 1998. She is a very good student, and works hard at her studies. Adele will make a very good metrologist.”

The award consists of $1500 to be used for her expenses at the school.

The Joe D. Simmons Memorial Scholarship Award is to stand in perpetuity as a Memorial to Dr. Joe D. Simmons, who, as Chief of the NIST Calibration Program, NIST liaison to the National Conference of Standards Laboratories, and the recipient of many awards, promoted institutional support for Metrology as the cornerstone of Quality.

Founding Institutional Sponsors of the Scholarship are the Measurement Quality Division of the American Society for Quality, the Measurement Science Conference and the National Conference of Standards Laboratories.
Klaus Jaeger introduces luncheon speaker and Nobel Laureate, Dr. William Phillips of NIST, who spoke on "Colder Atoms: Better Measurements."

Dr. Karen Brown, NIST Deputy Director, speaks at the Tuesday luncheon.

Jeff Walden, Navy Primary Standards Lab, presents their committee's incentive prize for the U.S. Measurements Requirements questionnaire.

A well-attended technical paper draws close attention from the big audience.

Dr. Dick Pettit, Sandia National Lab, clarifies a point at one of the technical sessions.
The 1999 Conference Committee, who made it all happen; Dave Nebel, Craig Guika, Tony Anderson, Joan Wilshire, Mike Suraci, JoAnn Knowles, Klaus Jaeger, Doris Schaffner, Gary Stader and Charlie Motzko. Congratulations and Kudos and 5 AttaBoys (or AttaGirl, or AttaWoman) each.

In the exhibit area. Dave Abell, HP and Ed Pritchard. Lockheed-Martin, meet Melissa Larson, Senior Editor of Quality Magazine.

Luncheon humorist, Jeanne Robertson of "Eye of Blue," taunts this stellar NCSL lineup: Dave Nebel, Ed Nemeroff, Jim Ingram, Dave Abell, Klaus Jaeger and Ed Pritchard. Ms. Robertson is an former Miss North Carolina.

Two of Australia's finest, Kerri Rath and Dr. Angela Samuel, at their APMP booth. Is that kiwi they are eating, or a taco? Dr. Samuel is the APMP Liaison Delegate to NCSL.

Presenting Mr. NVLAP, Doug Faison of NIST at his booth.

Is this world specialized or what? Here's where you go when you need your pipettes calibrated.
Entertainment time at the NCSL Banquet.

Some metrologists forget their data and processes for an evening of strenuous exercise.

Dianne Costlow, Nava, Corona, and Ray Kotowski of NASA discuss some metrology principles.

Impresario Joe Buffalino has managed the NCSL entertainment for several years and does a great job. Here he neighbors with the band's singer.

Party time. Photographer Joe Buffalino catches a group in between their wine tasting.

Sharrill Ditman, NIST, Dr. Alan Robertson, NRC, Canada. Dr. Katharine Gebbie, NIST and Ed Nemereo of Wavelek share some conversation at the President's reception.
Scenes from the Annual Conference

During the conference, Dr. Héctor Nava Jaimes, Director General of Mexico's Centro Nacional de Metrologia (CENAM), and Dr. Karen H. Brown of NIST sign a Memorandum of Agreement.

The NCSL Board holds an abbreviated meeting during the conference gathering. (l to r) Gary Hysert, Graham Cameron, Harry Moody, Jerry Hayes and Woody Tramel.

The "International Dinner" event was staged at the Charlotte Speedway. Is Woody Tramel of Wyle Labs, making off with a steering wheel?

Mel Whitten wins the garment bag at the Region/Section Coordinator's Workshop for an undisclosed achievement. V.P. Jim Patterson makes the presentation.

Steve Stahley looks like he has a job waiting if he ever leaves his day job at Cummins Engine.
Scenes from the Annual Conference

At the end of it all, the judges have a mad scramble to score the winning papers. Charlie Motzko runs the numbers without the aid of a computer.

Atul Krishna Datta, National Test House, India, claims his #1 door prize, a digital camera. (Hope the U.S. VHS format works in India.) Mike Suraci, Lockheed, and Margaret Musick of NIST preside over this popular event.

Larry Roden of Guidant/CRM, wins door prize #2, a camcorder kit.

And, finally, a tip of our hat to our group elders, (NCSSL Past-Presidents). Klaus Jaeger, Bill Simmons, Mike Suraci, Ralph Bertermann, Tony Anderson, Jim Ingram, Ed Nemeroff, Graham Cameron and Jerry Hayes.
METROLOGY CALENDAR

NCSL MEETINGS

July 16–20, 2000
NCSL Workshop & Symposium
Westin Harbour Castle, Toronto, ON, Canada
CONTACT: NCSL Business Office, (303) 440-3339
FAX: (303) 440-3384
e-mail: <ncsl-staff@ncsl-hq.org>

INDUSTRY/GOVERNMENT MEETINGS

October 13–15, 1999
Council on Ionizing Radiation Measurements and
Standards — 8th Annual Meeting
NIST, Gaithersburg, MD
CONTACT: Bert Coursey, (301) 975-5584
Fax: (301) 869-7682
E-mail: <bert.coursey@nist.gov>
Homepage: <http://crms.tis.doe.gov/>
Electronic Registration: https://sales.nist.gov/
conf/secure/CONF132/
conf_register.htm>

October 18–21, 1999
22nd Natl. Information Systems Security Conference
Hyatt Regency Crystal City, Arlington, VA
CONTACT: Ellen Flehavin, (301) 975-3871
Fax: (301) 948-0279
E-mail: <ellen.flehavin@nist.gov>
Homepage: <http://csrc.nist.gov/nissc/
welcome.htm>

October 19–22, 1999
1999 Precision Thermometry Workshop
NIST, Gaithersburg, MD
CONTACT: Andrea Swiger, (301) 975-4800
E-mail: <andrea.swiger@nist.gov>
Electronic Registration: https://sales.nist.gov/
conf/secure/CONF109/
conf_register.htm>

October 18–22, 1999
Conference on Bioassay, Analytical and Environmental
Radiochemistry (BAER '99)
NIST, Gaithersburg, MD
CONTACT: Kenneth Inn, (301) 975-5541
Fax: (301) 869-7682
E-mail: <kenneth.inn@nist.gov>
Electronic Registration: https://sales.nist.gov/
conf/secure/CONF143/
conf_register.htm>

November 1–2, 1999
Industrial Virtual Reality Symposium
University of Illinois, Chicago, IL
CONTACT: Pat Banerjee, (312) 996-5599
Fax: (312) 413-0447
E-mail: <banerjee@uic.edu>

November 15–17, 1999
ATP National Meeting
DoubleTree Hotel, San Jose, CA
CONTACT: Rex Pelto, (301) 975-3918
E-mail: <rex.pelto@nist.gov>
Homepage: <http://www.atp.nist.gov/
nationalmeeting/fall_99.htm>
Electronic Registration: https://sales.nist.gov/
conf/secure/CONF141/
conf_register.htm>

REGION MEETINGS

REGION 12

Canadian Region Fall Meeting, Oct. 14–15, 1999
National Research Council of Canada, Ottawa, ON
CONTACT: Satoshi Nishio, (604) 431-8882
Fax: (604) 431-8714
E-mail: <nishio@millr.bc.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 ncsl-staff@ncsl-hq.org
MEASUREMENT SYSTEM
SHORT COURSES

SPRING TRAINING FOR MEASUREMENT ENGINEERS IN ARIZONA

Two Short Courses:
The Engineering of Measurement Systems for Test and Evaluation
March 6–10, 2000

The Dynamics of Measurement Systems for Test and Evaluation
March 13–17, 2000

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

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

For the 39th year, your engineers, scientists and managers can
learn now 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,
exposions, 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?

Cost: $1400, one week; $2650, two weeks

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>

UNCERTAINTY TRAINING

Nov. 2–5, 1999
Long Beach Marriott, Long Beach, CA

Cost: $1395

Includes course notebook, UncertaintyAnalyzer and SPCView
software.

Designed to provide metrologists and other professionals
in measurement-intensive areas a working background in
uncertainty and SPC analysis concepts, along with skill in
using state-of-the-art analysis software. Methods, principles
and applications are in accordance with ISO Guide 25,
Technical Note 1297 and the ISO Guide to the Expression of
Uncertainty in Measurement.

Registered copies of software applications will be distributed
at the beginning of the course. Students are required to bring
laptop or other portable computers for running the software
during class sessions to analyze a variety of uncertainty and
process control problems. All attendees are encouraged to
bring problems relevant to their workplace.

Contact:

Dr. Howard Casrul
Integrated Sciences Group
14608 Casitas Canyon Road, Bakersfield, CA 93306
1-661-872-1683
<isgmax@lightspeed.net>
<http://www.isgmax.com>

LIQUID AND GAS FLOW
MEASUREMENT COURSES

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

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

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

Course Objectives:

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

Contact:

Flow Dynamics, Inc.
7419 E. Helm Drive, Scottsdale, AZ 85200
Phone: 602 948 3789
FAX: 602 948 3610
Email: <dynamic@dancris.com>
NCSL TRAINING INFORMATION DIRECTORY IS NOW WEB-BASED ONLY

NCSL has been publishing an annual Training Information Directory for the past twenty years. It provides a listing of training courses, educational materials and training aids in the fields of metrology and calibration. The directory is provided only as a convenience for NCSL member organizations and does not serve as an endorsement by NCSL as to completeness and adequacy of listed courses or materials.

The directory has also been available as a feature on the NCSL Website during the past three years. Recently, the NCSL Board of Directors decided to begin publishing this information in electronic version only on the website, beginning with the Year 2000 edition. The Training Information Directory Committee is now soliciting information for the next quarterly update in October. The web-based directory can now be updated regularly as information becomes available and training course sponsors will be solicited at least once each quarter.

You may visit the NCSL website at <http://www.ncsl-hq.org> and find the Training Information Directory under Highlights / Training Info. Dir. After selecting a training category, you can search the database for and list information by discipline, title, sponsor or any keyword in any field. NCSL members who have no means of accessing the Internet may ask for assistance from the NSCL business office.

EDITOR’S MESSAGE (continued from page 2)

The NACLA Invitation

It’s obvious to me every issue as I receive and edit the increasing amount of manuscript material that comes in from our NCSL Liaison Delegates. NCSL has broadened its reach, organizationally and internationally, to work with standards and accreditation agencies worldwide. Ed Nemeroff’s trip report to WTO and ISO (page 19) is just one example.

I was also requested to run an invitation from NACLA, to reach organizations and individual companies who have interests in international accreditation. See page 47. Not only is our NCSL membership now involved in these cooperation matters, but an increasing number of our own members now come from the ranks of those organizations.

A Directory for Retired NCSL Members

Last issue, I proposed establishing a coordinator for maintaining email addresses for retired NCSL member delegates who wish to remain in touch with old friends. Harry Haymes has volunteered to be that coordinator. And by the way, Harry has asked me to change his email address to <chahta@sprintmail.com>.

The response has been overwhelming so far. So, please contact any of your organization’s retired member delegates to see if they wish to be added to Harry’s List.

John Minck
NCSL Editor
Call for Papers
for the
THE 2000 NCSL WORKSHOP
AND SYMPOSIUM

July 16–20, 2000
Toronto, ON, Canada

Metrology, Intangible Imbedded Support?

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

Papers, Panels and Workshops
Suggested Topics

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

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

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

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

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

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

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

Abstracts are required for Workshops, Panels, and Papers.

Due Dates

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

Abstracts of 100 words or less and camera-ready manuscripts should be sent to:
Dave Nebel
NCSL Technical Program
1370 Black Oak Dr.
Centerville, OH 45459-5411
Office Phone: (937) 436-1888
FAX: (937) 436-2131
e-mail: DENebel@aol.com
Home Phone: (937) 435-5231
CPEM 2000
14–19 May 2000
Sydney Hilton Hotel — Sydney, Australia

The year 2000 marks the first occasion on which the renowned biennial Conference on Precision Electromagnetic Measurements (CPEM) will be held in the Southern Hemisphere in Sydney, Australia.

CPEM has established itself as the foremost international conference series in the electrical metrology. It embraces the basic physics of fundamental constants, the platform for many of the major breakthroughs in metrology, and the engineering and technology that drives associated advances in instrumentation. Over its 44 year history the Conference has evolved and adapted to the changing nature of a dynamic field.

The Conference attracts from 400–600 of the world’s foremost engineers, scientists and technologists to discuss issues at the leading edge of measurement technology.

Australia is proud and honoured to host this prestigious conference. On behalf of the Organising Committee, it is my pleasure to invite you to CPEM 2000, in Sydney “down under.”

Barry Inglis,
Conference Chairman

CPEM 2000 seeks to continue the tradition of providing a leading-edge technical program. Summary Papers are invited on the following subjects:

- Automated systems, software/firmware validation
- DC and low frequency
- Electromagnetic compatibility
- Fundamental constants
- International traceability
- Lasers and optoelectronics
- RF/microwave/millimetre-wave
- Cryoelectronics
- New sensors
- Optical metrology
- Power and energy
- Quantum metrology
- Realisation of units
- Time and frequency

Deadline for Submissions:
10 December 1999

SPONSORSHIP AND TRADE EXHIBITION

A comprehensive trade exhibition showing the latest in technology, techniques and trade publications will be held in conjunction with the Conference.

Any company wishing to participate in the trade exhibition is encouraged to contact the CPEM 2000 Secretariat.

TIMETABLE AND DEADLINES

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<td>10 December 1999</td>
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<tr>
<td>Notification of Acceptance of Summary Papers</td>
<td>31 January 2000</td>
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<tr>
<td>Early Registration</td>
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<td>On-Site Registration Fee Applies</td>
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<td>Accommodation Bookings: Deposit non-refundable at</td>
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CONTACT FOR COMMUNICATIONS AND REGISTRATION INFORMATION

CPEM 2000 SECRETARIAT, GPO BOX 128, SYDNEY, NSW 2000, AUSTRALIA
PH: + 61 2 9262 2277 – FAX: + 61 2 9262 3135
<CP EM2000@TOU RHOSTS.COM.AU> –
<WWW.TOURHOSTS.COM.AU/CP EM2000>

CPEM 2000 IS PROUDLY HOSTED BY THE NATIONAL MEASUREMENT LABORATORY NATIONAL FACILITY, CSIRO TELECOMMUNICATIONS AND INDUSTRIAL PHYSICS, AUSTRALIA, AND JOINTLY ORGANISED WITH THE MEASUREMENT STANDARDS LABORATORY, INDUSTRIAL RESEARCH, NEW ZEALAND.

OFFICIAL CONFERENCE LANGUAGE IS ENGLISH — NO TRANSLATION SERVICES WILL BE AVAILABLE
Report on Visit to the World Trade Organization (WTO), and the
International Standards Organization (ISO), Geneva, Switzerland

by Ed Nemeroff, NCSL Vice President—International

Introduction

Early this year I was invited to participate and speak at the
World Trade Organization Symposium on Conformity
Assessment and its impact on global trade. The symposium
was held at WTO world headquarters, Geneva Switzerland,
June 8-9. While in Geneva, I had the opportunity to visit ISO
world headquarters.

WTO Symposium

WTO — General Assembly Meeting Room

The Symposium was divided into five sessions. In each session,
speakers introduced the issues. This was followed by a panel
made up of stakeholders from the business community, regula­
tory officials and conformity assessment bodies. Each member
of the panels made a presentation on their area of expertise and
interest. This lead to an exchange of views and debate amongst
speakers, panelist and participants. Attendees included 34 invited
speakers and about 150 member delegates to the WTO from over
120 nations.

The Five parts of the symposium included:
1. Introduction—The TBT agreement
2. Relevant International Guides and Recommendations on
Conformity Assessment
3. Various Types of Conformity Assessment Procedures and
their Conditions of application
4. Approaches with repOil to Recognition of the Results of
conformity Assessment procedures.
5. Role of International and Regional Systems for
Conformity assessment

My talk was in this session. (see slides pages 22–25) The session
focused on accreditation. Speakers included:

Dr. Robert Kaars—
Bureau International des Poids et Mesures—BIPM

Dr. Belinda Collins, NIST—
International Laboratory Accreditation Cooperation—ILAC

Dr. Takashi Ohito—
International Accreditation Forum—IAC

Mr. C.J. Johnson—
IEC Conformity Assessment Board—IEC

Mr. John Gilmore—
Asia Pacific Laboratory Accreditation Cooperation—APLAC

Mr. Beer Buddo—
Trip Report to ISO and WTO

South African Development Community Cooperation on Accreditation—SADCA

Mr. Lars Ettarp—European Cooperation for Accreditation—EA

Mr. Ed Nemeroff—NCSL

This session, as with the others, was very active with many Q&A. There were questions about NCSL, cost, and membership. I gave out our brochures. I feel that NCSL is now somewhat known to this group.

ISO VISIT

ISO World Headquarters, Geneva, Switzerland

I intended to pick up some brochures and possibly introduce myself to someone. I went to the reception area, told them who I was and could I get some information on the history of ISO etc. The receptionist contacted the public relations department and was told that someone would bring me some information. Roger Frost, the ISO Public Relations Officer brought me some basic information, told me he only had a few minutes.

Within a few minutes, he invited me to his office for coffee and wanted to introduce me to other members of the organization. Hours later, we agreed that it would be good if we maintained on-going communications between NCSL and ISO. We will start by exchanging newsletters. NCSL is now on the ISO mailing list to receive their newsletter as well as all news announcements. We, in turn, will provide them with complementary copies of our newsletter. In addition, Roger has agreed to provide a short written message to NCSL members (see next page).

I mentioned to Roger that many Americans did not understand the ISO process of developing new standards and that the US had only one vote and that was through ANSI. Roger acknowledged this but stated we do have an impact. He showed me data on ISO member bodies’ contribution to the standards process, i.e. member bodies that held secretariats and convenorships of technical committees, subcommittees and working groups. At the end of 1998, the US through ANSI had 135 secretariats and 446 convenorships. Only DIN (Germany) had more secretariats.

One of the people that I met was John Donaldson. He is an ANSI VP and the Chair of CASCO (Committee on Conformance Assessment). He was in Geneva also as a speaker at the WTO symposium.

We spoke of 17025—Latest information: The final draft version (FDIS) was to be sent to members in early July for vote. (This has now been delayed). This will be a yes-no only, no comments nor any more changes. John believes it will pass by a large majority. It should then be issued as a standard before the end of the year. I had other questions that were discussed with Dr. Belinda Collins and John Gilmore.

My questions to them were:

Question: What should NCSL do about Z540 once 17025 becomes an international standard?

Response: They feel that Z540 filled a need. With 17025, they would like to see NCSL formally recognize the new standard and withdraw Z540 at that time. We should consider this, if NCSL is ready to be part of the international conformance assessment world, and we should play by international rules.

Question: We had heard that there was going to be a handbook of sorts concerning the interpretation of 17025 by ILAC.

Response: Gilmore confirmed this, and added that they were thinking about possibly two documents. One for use by users and one for use by accreditors. This project is well underway.

Since returning, I have received a message from Roger confirming our meeting and thanking me for visiting ISO. I intend to keep this dialog going.

SUMMARY

The visit to ISO and participating in the WTO symposium hopefully has enhanced the image and increased visibility of NCSL, as we truly become an international organization. There is much more to be done as we continue to grow and gain global recognition.
A Letter to NCSL from the ISO

by Roger Frost, Press Officer of ISO
(International Organization for Standardization)
and Editor, ISO 9000 + ISO 14000 News

I am most grateful to the NCSL Newsletter for the kind invitation to "guest" in your publication and would like to take the opportunity to thank NCSL members for the support you give ISO by making use of some of our Guides and Standards. Some of you actually participate in the development of these documents by contributing your expert experience and knowledge. To you—a double dose of thanks!

One recent project I have been working on is to describe what ISO is and what it does in as simple terms as possible for posting on our Web site (www.iso.ch) in the form of Frequently Asked Questions. I should like to quote from one of these which refers to that strange-sounding practice, "conformity assessment." After a FAQ defining "conformity assessment," the next one reads as follows:

**Question:** Why is conformity assessment so important?

**Answer:** Today, most sophisticated products require testing for conformance with specifications or compliance with safety or other regulations before they can be put on many markets. Even simpler products may require supporting technical documentation that includes test data. With so much trade taking place across borders, it may just not be practical for these activities to be carried out by suppliers and customers. In addition, national legislation may require such testing to be carried out by independent bodies, particularly when the products concerned have health or environmental implications. In fact, conformity assessment has become an important component of world trade which is most often carried out by specialist organizations, such as inspection and certification bodies and testing laboratories.

I do not for a moment think that NCSL members will have learned anything new from that. After all, this is your bread and butter! However, the significant point is that, for the reasons given in the answer to the above FAQ, conformity assessment is no longer the almost exclusive concern of the specialists, but is now beginning to impinge on the consciousness of trade officials, businessmen and even consumers—which is why it figures in the list of FAQs to ISO.

As your work assumes a greater public profile, so the importance grows of the documents you use as sources of requirements, procedures, practices and so on to guarantee consistency and coherence. The ISO/IEC Guides on conformity assessment activities and the organizations that perform them represent one of the principal such sources.

Have you ever been confused about the difference between ISO standards and Guides? An explanation is in order!

ISO standards are developed according to strict rules designed to ensure that the process is transparent and fair. The Guides on conformity assessment were originally intended to be used, as their name suggests, as guideline documents, rather than as strict specifications, and the procedure for developing them reflects this. In practice, the ISO/IEC Guides have turned out to be so well respected that a number have been adopted by governments as standards, sometimes making their use mandatory. As a result, ISO now has a process for transforming some of these Guides into International Standards to reflect their status in world trade and governmental legislation.

An ISO/IEC Guide with which you will all be familiar is Guide 25. Even within ISO, we just do not know precisely how extensive is the use made of Guide 25—but we can safely say that this Guide is ubiquitous. Therefore, it is not surprising that Guide 25 is to become a fully fledged International Standard befitting of its status.

ISO/CASCO (Committee on conformity assessment) is developing the revision of Guide 25:1990 as ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories.

ISO/IEC 17025, which is currently at the stage of Final Draft International Standard, builds on the extensive experience in the implementation of Guide 25. It contains all the requirements that testing and calibration laboratories have to meet if they wish to demonstrate that they operate a quality system, are technically competent, and are able to generate technically valid results.

The growth in the use of quality systems generally has increased the need to ensure that laboratories which form part of larger organizations, or offer other services, can operate to a quality system that is seen as compliant with ISO 9001:1994 or ISO 9002:1994, as well as with ISO/IEC 17025 itself. Therefore, care has been taken to incorporate all those requirements of ISO 9001 and ISO 9002 that are relevant to the scope of testing and calibration services covered by the laboratory's quality system. When the Year 2000 revisions of the ISO 9000 standards are published, it may be necessary to revise ISO/IEC 17025.

This proposed International Standard is not intended for certification/registration purposes, but it might be used by accreditation bodies as the criteria document for the accreditation of laboratories. This will be clearly indicated in the Scope of the published International Standard.

ISO/IEC 17025 should be published in late 1999 or early 2000. NCSL members will have a new tool to put to use in the new millennium!

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**LATEST ISO SURVEY**

For your information, the latest edition of The ISO Survey of ISO 90000 and ISO 14000 Certificates has just been posted on the ISO Website.

<http://www.iso.ch/presse/8thcycle.htm>

Roger Frost
ISO Press Officer
NCSL Presentation Made at WTO Symposium

by Ed Nemeroff

National Conference of Standards Laboratories

Presented at the World Trade Organization Symposium on Conformity Assessment
Geneva, Switzerland - June, 1996

NCSL

Celebrating 39 years
Serving the world of measurement science in 45 countries

NCSL Strategic Vision

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

Industries Served by NCSL

National laboratories  National Defense
Biomedical  Pharmaceutical
Utilities  Photographic
Petroleum  Computer
Automotive  Process Control
Electronic instruments  Avionics
Telecommunications  Scientific Instruments
Aircraft & Aerospace  Consumer Electronics
Service organizations  Semiconductor
Chemical  R&D Organizations
Transportation

A New Challenge for NCSL & The United States
International Trade

Differences in conformity assessment, standards and certification requirements from one country to another, can be used as Technical Barriers to Trade.

Calibration & metrology have a direct impact on quality, product integrity and global trade.

Today it is vitally impossible to underestimate the importance of conformity assessment, specifically metrology, accreditation and standards in the development of economic policies.

To quote the Executive Secretariat of the Interamerican Metrology System (SIM) in the Organization of American States:

"The OAS, sees very clearly the fact that all countries in the region faced with globalization, and in order to promote interamerican trade, must work towards full scale modernization using high technology, and fully supporting the quality chain.

The quality chain involves Metrology, Standardization, Accreditation and Quality Management."

The 20th Century

The Global market for high tech - high performance instrumentation and test equipment has grown considerably over the past 30 years.

In the US, this was stimulated by major aerospace programs and above normal defense budgets.

The 21st Century

Now with the cold war over, cut backs in defense and NASA budgets, US industry has seen a major decrease in direct government spending and from government contractors in this area.

The drivers for high Tech industries in the 21st century will be conformity assessment - quality standards and regulations that affect global trade.
The 21st Century

In view of ever increasing globalization of economy, the removal of barriers to trade has become a central political task. An important contribution to this objective can be made by harmonizing legal regulations, documentary standards, accreditation and metrology on an international level.

Worldwide Agreements For Free Trade

The U.S. Economy

Today the U.S. Economy is dependent on international trade for survival.
In the late 1970's standards related activities affected an estimated $69 billion of U.S. Exports

U.S. Exports Affected by Standards Activities

1985 = $218 billion
1993 = $464 billion
1996 = $680 billion
This is a major influence on the U.S. GDP.

Source: Department of Commerce

The NCSL Opinion - Position on Accreditation

The majority of NCSL members feel that Accreditation:
• Well established, Well recognized in Europe and in the Asia Pacific area.
• Accreditation in the U.S. is required and needed by both government and private sector.

The NCSL Opinion - Position on Accreditation

• The present US system is fragmented.
• Only partially accepted internationally.
• Not totally accepted within the US.
• There are more than 150 U.S. accrediting agencies today.
• Their accreditation practices are not uniform and most do not conform to internationally accepted guides.
The NCSL Opinion - Position on Accreditation

- Although there are over 150 accrediting bodies presently in the United States, two organizations are at the forefront and have taken a leadership position. These two are ILAC recognized.
  1. NVLAP - National Voluntary Laboratory Accreditation Program. NVLAP is an organization within NIST.
  2. A2LA - American Association for Laboratory accreditation. A private sector - not for profit organization.

The future for the U.S.A.

The US needs a coordinated accreditation system for calibration & testing laboratories that is international accepted and recognized.

The vast majority of NCSL member organizations and the Board of Directors fully support the activities of the newly formed NACLA, the National Cooperation for Laboratory Accreditation.

NACLA Will:

- Coordinate laboratory accreditation activities in the United States.
- Develop and represent the U.S. position for regional and international accreditation.
- Recognize competent accreditors.
- Use appropriate international guides (ISO 25 & 58 and when issued 17025) as basis for activities.
- Work towards achieving international acceptance of an effective U.S. system.

To Truly Have an International Measurement Community

We need One Measurement to Achieve World-wide Acceptance

- One world-wide Regulation
- One world-wide Written Standard
- One world-wide Accreditation
- One measurement system based on world-wide Traceability

NCSL and the International Measurement Science Community Partners in preparing for the Next Millennium.
NRC/INMS Representative’s Report

By Gary Hysert, NRC

New Director-General

On 9 April 1999, Dr. Peter Hackett, NRC Vice-President of Research, announced the appointment of Dr. Janusz Lusztyk as Director-General of the Institute for National Measurement Standards, effective 26 April, 1999. Dr. Lusztyk joined NRC in 1982 as a Research Associate in the Division of Chemistry. He joined the Steacie Institute for Molecular Sciences as a Senior Research Officer, and progressively assumed positions of increasing responsibility, including Leader of the Organic Reaction Dynamics Group and Leader of the Chemical Biology Program.

During the course of his career at NRC, Janusz contributed significantly to the fundamental understanding of free radicals. He was recognized for his work in 1995 and in 1997 as Vice-Chairman and as Chairman of the Gordon Conference on Free Radical Reactions. Janusz has also received several awards, including an AKZO-Nobel Industrial Research Grant in 1992, an NSERC Collaborative Grant in 1995 and the Chemical Institute of Canada IUPAC Award in 1989. He recently became a Fellow of the Chemical Institute of Canada. He has co-authored over 100 publications.

International Activities

NRC/INMS would like to sign a formal agreement with NIST in which we mutually recognize the validity of each other’s calibration and measurement certificates. This has been discussed and agreed to in principle with NIST’s upper management. Such a formal agreement would, we believe, be very valuable to clients of both Institutes and would provide an underpinning and technical basis for wider agreements related to trade, commerce and regulatory affairs. The competent authorities in each country could sign such wider agreements with more confidence if the National Metrology Institutes (NMIs) had already documented their agreement and mutual recognition. We are working on three approaches to such an agreement.

The first is the global agreement “Mutual Recognition of National Measurement Standards and of Calibration and Measurement Certificates Issued by National Metrology Institutes” being developed by the Comité International des Poids et Mesures (CIPM) under the Metre Convention. A draft of this agreement has been agreed to in principle and initiated by representatives of 41 NMIs. Approval and signature of the final version is planned for October 1999. The agreement will establish the degree of equivalence of national measurement standards by means of a series of key comparisons and will provide for the mutual recognition of calibration and measurement certificates issued by NMIs. This mutual recognition will be based on the results of the key comparisons and on the operation of a quality system. Some supplementary comparisons may also be required in some situations.

A second approach, suggested by NIST and strongly supported by NRC and CENAM, is a trilateral agreement under the auspices of NORAMET. Such an agreement, entitled “NORAMET Memorandum of Agreement on Calibration and Measurement Certificates of National Metrology Institutes”, has been developed and approved by the NORAMET delegates from the three member NMIs. It is currently undergoing the formal approval process in each country.

The NORAMET agreement emphasizes the importance of the strong trading relations between the three member countries and allows the inclusion of specific calibration and measurement capabilities not covered by the CIPM agreement. It will also be used to demonstrate to the other signatories of the CIPM agreement the high level of mutual confidence that already exists between the NORAMET NMIs. Because of this existing mutual confidence and the exchanges of visits and information that take place on a frequent and ongoing basis, the NORAMET agreement does not call for the operation of a formal quality system.

A third approach is the signing of a bilateral agreement involving only NIST and NRC. While NRC does not favor developing and signing bilateral agreements with other NMIs in the world, preferring the efficiency of a multilateral agreement, it is ready to sign a bilateral agreement with NIST because of the exceptionally high volume of trade between our two countries. This is especially true because NIST has found that, for trade purposes, bilateral agreements are preferable because of different regulations in each country. NIST has developed a draft “Memorandum for Recognizing Measurement Equivalence Between NIST and NRC for Cooperation in the Fields of Metrology and Measurement Standards” whereby the two Institutes would provide a mechanism for cooperation in measurement technologies and measurement standards.

Activities under the proposed arrangement “may consist of exchanges of technical information, reference data and materials, calibrations, and measurement standards; exchange visits; performance of comparisons as needed to ensure measurement equivalence; mutually agree to the acceptance of calibration certificates; cooperative research in disciplines of mutual interest; and other forms of cooperative activities as mutually agreed.” Development of the agreement has been suspended pending the development of the trilateral NORAMET agreement, but NRC is still willing to sign this additional bilateral agreement if NIST feels this is more useful for trade purposes.

CLAS Activities Report

The full evaluation of the Canadian Laboratory Accreditation System by APLAC and NACC for compliance with the relevant requirements of ISO/IEC Guide 58 was carried out in May 1999. Within this system, the accreditation of calibration laboratories is carried out under a Partnership Agreement between SCC/PALCAN and NRC/CLAS. The assessment of NRC/CLAS was carried out by a NACC team led by Doug Faison of NVLAP, serving as the Calibration Expert team member for APLAC and NACC. Dr. Miguel Villcissid of CENAM and Victor Angeles of EMA observed the process.

A review of the concerns from the pre-evaluation report (conducted May 1998), and the CLAS response to them, was conducted. The major areas of concern were with the formal Partner Agreement, the lack of formal Quality System documentation and the inability of applicant laboratories to clearly
identify and understand the application/evaluation process.
While there are still a few specific issues to be dealt with,
these concerns have been appropriately addressed. The
agreement has been formalized, the documented Quality
System is generally in place and specific reference documents
have been (or are being) amended to reflect the current
application/evaluation process. CLAS was commended for
the great progress made over the past year in the documentation
of their Quality System.

A technical on-site assessment was observed. The assessment
team was led by CLAS Technical Advisor Mike Portugas,
with Dr. Jennifer Dockers of INMS serving as the Measurement
Expert. This procedure went very well. There were no issues
resulting from this observation. Much discussion was held in
review of the many aspects of the assessment process. A short
review of three laboratory files was conducted.

A review of the proficiency testing records had been conducted
during the pre-evaluation and was not repeated this time. Once
the findings have been adequately addressed and resolved, the
CLAS program as it relates to the SCC/PALCAN—NRC/CLAS
Partner Agreement will be compliant with the requirements of
APLAC and NACC (as interpreted by this evaluator). Final
acceptance will, of course, be based on the review of the entire
SCC/PALCAN program. It is expected that Canada will become
a signatory to the APLAC Multi-lateral Agreement by the end
of 1999. This will mean that reports from Canadian accredited
program and testing laboratories can be accepted in client
countries signatory to the APLAC MLA.

Currently, there are 16 SCC-accredited, CLAS-certified calibration
laboratories, with two others having completed the process
and awaiting final approval. In addition, more than a dozen other
calibration laboratories are at various stages of CLAS
assessment. It is interesting to note that some of these applicant labs
are located in the USA and are seeking accreditation as a result of
QS 9000-based pressure from their clients.

It is not clear why these organizations are seeking SCC/CLAS
accreditation rather than A2LA or NVLAP accreditation
although the length of the line-up in the USA has been heard
in some quarters. It certainly will not take less time to get an
SCC/CLAS Guide 25 accreditation and it is not cheaper, even
if the fee quotations are in Canadian dollars!

Dimensional Metrology at INMS

The Dimensional Metrology Program provides comprehensive
accreditation of the highest accuracy dimensional measurement
in the area of dimensional metrology. The Program also publishes and distributes documentation on specific issues impacting dimensional measurements.

In the area of length metrology, the SI metre is defined as the
length of the path travelled by light in vacuum during a time interval of 1/299,792,458 of a second. NRC realizes the definition of the metre by performing dimensional measurements using the technique of optical interferometry. Interferometry offers a measuring method to determine the number of wavelengths of light that span the length of the gage block. Gage blocks are the material artifacts that provide traceability to the definition of the metre—the first link in the chain of transfer standards for industry.

At INMS, the Dimensional Metrology Program provides calibration services, traceable to the national measurement standards of Canada, for best quality gage blocks and length bars with an expanded uncertainty of (20+0.3L)mm, for L in millimeters (k = 2) for clients such as other calibration laboratories and the aerospace and automotive industries. As well, the Dimensional Metrology program is participating in the CCL key comparisons for short and long gage blocks.

NRC has a legislated mandate for research in support of national measurement standards and provides a critical national focus for expertise in precision measurement systems. This expertise has been instrumental in encouraging quality standards in manufacturing industries including aerospace, automotive, and tool and die. NRC researchers are key players in the Association for Coordinate Metrology Canada which brings together machine operators, inspectors, quality control engineers, production engineers, and equipment suppliers to share technical knowledge on issues such as the operation of coordinate measuring machines (CMMs).

CMM calibration is an integral factor in the Big Three automakers' QS-9000 supplier quality program that is directly affecting some 600 tier-one auto industry suppliers in Canada and the thousands of firms that work with them. The ACMC brings information to its members through newsletters and conferences, and shares expertise and problem solutions through hands-on seminars and special users programs.

Through a nation-wide CMM measurement assurance program, ACMC members can gain access to a calibrated artifact which, when used in the prescribed manner, enables measurements made of this artifact on the member's CMM to be traceable to national and international standards. NRC now has such an artifact available—a 320 mm x 320 mm ball plate containing 25 ceramic balls.

The balls are positioned at nominal intervals of 60 mm in a
5 x 5 array in the neutral plane of the plate. The coordinate position of each ball has been determined from measurements made on a high precision coordinate measuring machine with direct reference to interferometrically calibrated length standards. The ball plate has also been measured by NIST.

The ball plate is available to ACMC members for CMM applications on a fee-for-service basis. The ball plate is supplied with specific instructions for its use along with data sheets for recording measurement results. Measurement results are forwarded to NRC for assessment. The price for the use of the ball plate for one week is $400. The program, sponsored by NRC, is advantageous to small and medium size companies whose budgets do not allow for purchase and maintenance of such artifacts—the initial price is approximately $20,000 and calibration costs are approximately $10,000.
COMMITTEE NEWS

STANDARDS POLICY
Anthony Anderson, V.P.

Activities:

INTERNATIONAL LABORATORY ACCREDITATION COOPERATION (ILAC) ACTIVITIES

There have been no meetings of the ILAC Laboratory Liaison Committee (LLC) since the last NCSL Board meeting. There was an ILAC Executive meeting in Charlotte. As I reported in my last board report, the Accreditation Policy Committee (APC) of ILAC is working on the creation of an ILAC MLA. This work is progressing quite rapidly.

The next ILAC LLC meeting will be in conjunction with the ILAC General Assembly meeting in Rio de Janeiro in October.

NATIONAL COOPERATION FOR LABORATORY ACCREDITATION (NACLA) ACTIVITIES

I attended a NACLA Board of Directors meeting on May 27, 1999 held at the National Institute of Standards and Technology (NIST). The highlight of the meeting was the announcement that four applications for NACLA recognition had been received from accreditors. The applications will be processed by the Recognition Committee and assessor teams will be put together to carry out the work. Following the successful assessor training course and examination carried out in March, NACLA now has a pool of qualified assessors to choose from.

Membership in NACLA continues to grow and is now over 70 organizations. There was a NACLA Board of Directors meeting just before the conference.

For our member’s information, Belinda Collins, Chairman of ILAC and member of the Board of NACLA has informed me that The 1999 Edition of SP 739 Directory of Federal Government Certification and Related Programs is now available on the NIST website at <http://ts.nist.gov/gsp>.

SITE SELECTION

A contract has been accepted and signed for the 2003 and 2006 Conferences to be held at the MGM Grand in Las Vegas. A contract with Salt Lake City has been signed for 2004.

Committee Activities:

U.S. GOVERNMENT AFFAIRS
Mike Suraei

Mike presented his report to the Board.

INTERNATIONAL MEASUREMENTS COORDINATION
Graham Cameron

Graham presented his report at the board meeting.

ANSI SECRETARIAT
Craig Guzka

I have informed ANSI that the Secretariat has been moved back to the Boulder Office and Craig Guzka is now responsible for fulfilling this activity.

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MEASUREMENT SCIENCE AND TECHNOLOGY
Richard B. Pettitt, V.P.

Committee Activities:

AUTOMATIC TEST AND CALIBRATION SYSTEMS
Clyde Orrison

The committee has no new activities to report.

MEASUREMENT COMPARISON PROGRAMS
Jim Wheeler

I am trying to accumulate final round robin reports for inclusion in a repository for ILC reports. I would like all final reports to be sent to me in Word format by e-mail, FAX, or by mail. When finalized, our committee’s Long Range Plan may be seen on the NCSL MCP Committee Webpage at <www.ncsl-hq.org>.

Thanks to Mike Cruz, Navy Primary Standards Laboratory, for presenting plaques to the ILC RP writing group at the 1999 NCSL Charlotte Tuesday luncheon. Thanks to Larry Tarr, Army Primary Standards Laboratory, for chairing the MCP committee meeting at NCSL. Larry’s meeting minutes may be seen on the NCSL MCP committee webpage at <www.ncsl-hq.org>.

Jeff Gust, GTE, provided me with the following report on the Thomas 1 Ohm ILC. “As of July 29th, 1999, 12 of the 20 laboratories have completed the measurement of the artifact. The thirteenth lab is scheduled to receive the artifact next week. We had one laboratory drop out of the ILC prior to measuring the artifact and we had the first alternate make measurements. The ILC was originally scheduled to be completed at this time, but we had a couple of laboratories take longer than expected to complete the measurements. The completion date is now estimated to be on or before the end of 1999.”

“As upon receipt of closing data from NIST on the artifact, a report will be generated for each laboratory, indicating their measurement results. The formal report of the ILC results will be reported at the 2000 NCSL conference in Toronto. I will be contacting each of the laboratories who have not measured the artifact in the near future for scheduling. If there are any further questions, please feel free to contact me at (219) 428-6504. Please note that my email address has now changed to <jeff.gust@supply.gte.com>.”

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Albert Lee, NIST Gaithersburg, reports that the Pressure ILC will conclude in the Fall of 1999. There were 20 participants with the NIST Pressure and Vacuum Group piloting the effort. A report will be given at NCSC 2000 in Toronto. Albert says the data analysis and report preparation should be completed by May of 2000. The artifact is a 2000 psi transducer. Albert can be reached at (301) 975-2857, FAX (301) 208-6962 or e-mail <albert.lee@nist.gov>.

William Miller <william.b.miller@lmco.com>, Lockheed Martin, reports that measurements should be completed by November 1999, in support of the NCSC 1999 Josephson Junction ILC. Bill also says this date is dependent on international participation. Several countries have already performed measurements and some are in the works. The ILC began January 1999. Eighteen Laboratories have agreed to participate in the ILC as of August 1999. Bill states that the report will be given at NCSC 2000 in Toronto. The artifacts are 4 Fluke 732B DC Standards, 10 V zener voltage outputs.

Steve Morse, Superior Gage Service, is coordinating a Cylindrical Ring Gage and Plug Round Robin. The ILC began in Nov 1998. The artifacts are 6 rings and 6 plugs. Steve can be contacted at <T.MORSE@WORLDNET.ATT.NET> or by FAX at (918) 458-4710. John Stoup is the contact at NIST Gaithersburg.

The webpage entitled “NCSC MCP Committee Homepage” residing on AOL for the past 4 years is no longer available. I am planning to offer more documentation on the NCSC webpage run by Craig Gulka, NCSC Business Manager and NCSC Webmaster. Let me know what you would like to see from the MCP committee on the webpage <www.ncsl-hq.org>. One suggestion would be to have examples for ILCs available. Craig Gulka helped me put a MCP Committee database of past committee articles on the server. It can be sorted by measurement area. It can be found under Highlights on the left hand menu screen.

John Cable, Allied Signal, <jcable@kcp.com>, coordinates the IEEE Microwave Theory and Techniques ARPTG round robins in support of automatic network analyzers. The following connector types are supported in the round robin effort. Thanks to John Cable for providing this information. The 2.92 mm K-connector kit coordinator is Ron Guzman, Anritsu. Ron can be reached at (408) 778-2000 ext. 4403, FAX (408) 778-4010 or e-mail <rguzman@nanog.us.anritsu.com>. The Type N connector kit coordinator is John Cable, Allied Signal, Phone (816) 997-4361 or FAX (816) 997-3856 or e-mail <jcable@kcp.com>.

The GPC-7 coordinator is Yeou-Song (Brian) Lee at HP Golden Gate Standards Lab. His phone no. is (650) 694-2296, FAX (650) 694-2669 and e-mail <brian-ys.lee@hp.com>. The two 2.4 mm kits are coordinated by Ken Wong, Hewlett Packard. Ken’s phone no. is (707) 577-2616, FAX (707) 577-5484 and e-mail <ken_wong@hp-sonoma-om2.cml.hp.com>. The 3.5 mm kit coordinator is Phil Yates, JPL. Phil can be contacted by phone at (818) 393-3705 and e-mail <pyates@jpl.nasa.gov>.

Brian Conroy, Litton Guidance and Control, is interested in starting a round robin in Vibration. Brian’s e-mail address is <conroyb@litongcs.com>. His phone number is 818-886-6872. The Recommended Practice for Conducting Interlaboratory Comparisons has been published. It is RP-15.

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

For more information about the committee contact me at (619) 545-9705, FAX (619) 545-9861 or <wheelerjc@navair.navy.mil>. You may also use <jimw@ieee.org>.

**INTRINSIC AND DERIVED STANDARDS**

**John Ball**

The committee has two Working Groups (WG) developing RISP’s titled “Argon Triple-Point Cell” and “Two-Pressure Two-Temperature Humidity.” In addition, the Deadweight Pressure Working Group is considering the development of spread sheets that calculate uncertainties for pressure calibrations.

Twenty-four people attended the IDS Committee meeting during the NCSC Symposium in Charlotte, NC, 12 July 1999. Among the subjects discussed was the draft of an unpublished paper by A. J. Wallard and T. J. Quinn. Several members had reviewed the draft, which dealt with the subject of intrinsic standards from the CIPM (Comite International des Poids et Mesures) viewpoint.

Discussion of the paper, its implications, and possible IDS Committee response had been planned for this session, but the paper was temporarily withdrawn for revision prior to the IDS Committee meeting. For this reason, the draft was neither distributed nor discussed at length.

However, since this paper was on our minds, it was briefly addressed.

Dr. Charles Ehrlich (who deserves recognition and thanks for his extraordinary efforts) gave a summary of events leading up to the decision by the authors (A. J. Wallard and T. J. Quinn) to withdraw the subject paper for revision.

The CIPM continues to have serious concerns regarding the marketing and application of so-called “intrinsic standards.” Since they had inadvertently used an obsolete definition within the paper, the authors plan to make a revision and circulate the draft through the IDS chairman for comments. The draft will be further distributed within the IDS Committee and working groups for comments. It is expected that a coordinated response will be written for the committee, which Dr. Wallard will review and comment upon prior to publication. Both articles are currently planned for Cal Lab magazine.

It should be noted that CIPM does not take issue with our IDS Committee definition. These two articles, therefore, are not expected to take the form of polemics. Still, CIPM does have serious concerns and a particular point of view that their article will express. The NCSC IDS Committee perspective remains slightly different, and we think, more pragmatic.

Publication of both articles will be a public service by Cal Lab and will hopefully stimulate valuable discussions within the community, highlight areas of agreement, identify problems, and publicize the highly practical nature of this committee’s work.
Working Group Reports

Triple Point of Argon WG reported stagnation.

Two-Temperature Two-Pressure Humidity WG made no report. However, the draft RISP seems essentially complete.

Deadweight Pressure WG reported that it would meet Wednesday to discuss a new uncertainty spreadsheet and other matters.

New WGs

The chairman proposed the creation of a new working group on Gold-Platinum thermocouples. There was no dissent. Hopefully, that WG will be in operation before our next meeting.

Discussion

It was noted from the floor that the EIP company (producer of the phase locking counter used in most JJA systems) has gone out of business, and that FREMA of Germany is getting into the phase locking counter business. Information was also provided that Phase Matrix will continue to produce the EIP product line, including the counter.

Larry Tarr commented on the “counterless” JJA system produced by NIST, referencing an IEEE article for those interested. The Army Primary Standards Laboratory is having such a system built.

CONSENSUS STANDARDS

Open

The chairmanship of this committee remains open. Any possible points of contact would be appreciated. I am still interested in soliciting interest for someone in the semiconductor industry in taking over this committee.

U.S. MEASUREMENT REQUIREMENTS

Jeff Walden

The US Measurement Requirements Committee (USMRC) meeting was held on July 15 at the NCSL Workshop and Symposium in Charlotte, NC. There were sixteen attendees including committee members.

The committee held a panel discussion during the technical sessions to answer questions concerning the purpose of the survey and promoted the survey at the NIST and Navy booths during the conference. A raffle was held for respondents who completed the survey during the conference to promote responses. Paul A. Dilsner won the drawing for a portable Walkman CD player.

The USMRC survey is now available in several formats. An Internet site has been established for members and customers to complete the survey through a WEB page. The survey web page url is <https://wolf.corona.navy.mil/USMRSurvey>. This web page is password protected. NCSL members and their customers are to use <ncsl> (lower case) as their User name and Password. Electronic and hard copy versions of the survey are available in both Word and Power Point. For any questions concerning the the operation of the web page or to acquire a Power Point or Word version of the questionnaire, please contact Jeff Walden at (909) 273-4481 or <walden.jeff@corona.navy.mil>. You may submit your hard copy responses of the survey by faxing it to Jeff Walden at (909) 273-5446 or by mailing it to NWAS, MS31, attention Jeff Walden, 5th Street Corner, CA 91718-5000.

Respondents who complete the survey before Dec. 31, 1999 will be eligible for a second drawing for a portable Walkman cassette player.

CANADIAN MEASUREMENT REQUIREMENTS

Les Peer and Lorraine Yeomans

The purpose of this committee is to determine both our member’s current and future needs for measurement services from the Institute for National Measurement Standards (INMS) at the Canadian National Research Council. A more detailed survey, incorporating suggestions from the community, is being developed.

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INDUSTRIAL PROGRAMS

Gary M. Shuler, V.P.

The UTILITIES COMMITTEE held their meeting during the Conference in Charlotte.

HEALTHCARE COMMITTEE is looking for a new co chair. Tom Couch has agreed to remain as a co chair but would like some help. There was a meeting at the Charlotte Conference. We thank Charles Lord of Galaxo for sitting in for Tom at this meeting.

The EMF COMMITTEE had nothing to report this quarter.

BENCHMARKING COMMITTEE reported on the recent survey at the Conference.

AERIAL METROLOGY planned on another set of meetings during the conference to continue work on drafting an RP for their industry. Personnel changes have occurred in this committee. Francis Horton of US Airways has retired and Sonny Karpalina has taken his position. Carl Closmore of Northwest has elected to step down as chair and Ray Lewis of Delta has been selected by the committee to fill the chair position. Our thanks to all of these folks for their good service and continued support.

The AUTOMOTIVE interest group held a committee-forming meeting during the conference. Plans have been put in place and we have a draft Guideline and Long Range Plan already in place to discuss at the meeting. Contact myself or Steve Stahley at Cummins Engine.

In reality, all of the committees would welcome additional involvement. If you would like to participate please contact the Committee Chairs listed or myself. I might add that the Utilities Committee was established for, and has been mostly Nuclear Power Industry Laboratories, but we would welcome membership from other utilities. If there was enough interest we could establish other committees in these areas. Let’s hear your interests; the NCSL is your organization and we want to provide what you and your Company need.
Committee Reports:

UTILITIES COMMITTEE
Ken Ralston

The Utilities Committee meeting was held on July 12 and 13, 1999 at the Convention Center in Charlotte, NC. There were twenty-nine attendees representing twenty-one member utilities, manufacturers, and NIST.

Greg Secord of DH Instruments gave a presentation on a laminar flow element system used for the calibration of leak-rate monitors. Greg described basic flow-measurement techniques and the evolution of how his company chose and developed the use of laminar-flow elements to accurately measure gas flows up to 50 LPM in a field-transportable standard.

Discussion was continued from the last meeting regarding a Utilities Measurement Assurance Program. There is still a concern of some members as to the cost benefit of such a program; however, several members have expressed an interest in participating. As of this time, we have not been inundated with volunteers to be the pivot lab.

A suggestion was made by Ernest Garner of NIST that we contact a representative of the National Association for Proficiency Testing (NAPT) and request a presentation at our meeting describing their program. Unfortunately they were unable to accommodate us at such short notice. However, I have since spoken with a representative of NAPT and will post the results of that discussion on our Web page.

One question raised was whether or not using NAPT for a MAP would satisfy that element of an accreditation audit. A2LA does accept the NAPT program for proficiency testing. Since NAVLAP has their own proficiency-testing program, they will accept NAPT results only for artifacts not in the NAVLAP program.

And then there was the issue of Guardbanding. After a long and lively debate, four amigos—Kent Crow, Dennis Dubro, Bill Hinton and Larry Nielsen—volunteered to attend the Metrology Practices Committee meeting the following evening to ascertain the committee’s stand on the guardbanding RP and to offer input based on our committee’s discussion.

Since the conference and meetings, I’ve become aware that the only committee authorized to work on an RP for guardbanding is Laboratory Evaluation Resources, chaired by Leroy Britain. I will contact Mr. Britain concerning our interest in the RP and forward information to the committee.

Kent Crow will explore the possibility of automatic e-mail which would notify members whenever a new thread is posted to our Web page.

There were many other productive round table discussions on various lab operating and calibration issues.

The next Utilities Committee meeting will be held on Jan 18, 2000, in conjunction with the Measurement Science Conference Symposium and Workshop in Anaheim, CA. A separate meeting notice will be distributed.

ATTENDEES:

Watson Gabriel  Duke Engineering & Services
Dennis Dubro  Pacific Gas & Electric
Kent Crow  Pacific Gas & Electric
Larry E. Nielsen  Southern California Edison
Kenneth C. Ralston  PG&E Energy Company
Tom Price  PSCO Energy Company
J. D. Kerzwick  Public Service Electric & Gas
Jim Huechter  Public Service Electric & Gas
Doug Henry  Arizona Public Service—Palo Verde
Robert Kemerich  Arizona Public Service—Palo Verde
Joseph Niederbach  Idaho Power Co.
C. (Ray) Nevels  Tennessee Valley Authority
John Ragusa  TU Electric
Roger Adams  American Electric Power
Ed Galbreth  Baltimore Gas & Electric
Tracy Harper  South Texas Project
Keith Sengstara  Consumers Energy
Robert Sawyer  NRECA - Seahawks Station
William Hinton  Energy Operations—Waterford 3
Chris Glick  NIST
George Mattingly  NIST
Ernest Garner  NIST
Sharmil Dirmann  NIST
Michael Lasseter  Georgia Power
Roger Dykstra  Alliant Energy
Tracy Stone  Georgia Power & Light
David Deaver  Fluor Corp.
Wesley Tong  Fluor Corp.
Robert Thompson  First Energy

HEALTHCARE METROLOGY COMMITTEE
Charles J. Lord

The Healthcare Metrology Committee is alive and well, although we have had a turbulent year. We lost two chairs; Mitch Johnson due to employment changes, then Tom Couch due to personal conflicts. VP of Industrial Programs Gary Shuler has asked me to step into this position, which I have accepted. The committee has a shining accomplishment this year, however, with the publishing in May 1999 of the re-write of RP-6.

The committee had a very fruitful meeting at the NCSL Conference, with 43 attending in a room designed for 20 people. The primary concerns of those attending were:

• Communications between members regarding ongoing healthcare metrology issues
• Support for chemical and analytical instrument metrology
• More sessions at NCSL Conference (only one this year)
• Standardized procedures for PDA-regulated calibrations

To answer these concerns, we have set the following goals:

• Set up electronic communications for the committee and all interested parties. This is to start off with an expanded Healthcare Metrology committee web page with information on current topics of concern and links to other sources of information. We are also going to investigate the establishment of a “private” internet newsgroup to allow the discussion of issues year-round.
• We intend to work with Klaus and Ernest on the formation of chemical/analytical practices. We are also pursuing relationships with other groups such as AAMI and PDA.
• We are already organizing sessions for the 2000 conference. We plan to fill 3-4 sessions.
• In the coming months, we intend to form new subcommittees as issues are better identified.

We look forward to an energetic and productive year.
AUTOMOTIVE COMMITTEE
Steve Stahley

There was an NCSL Automotive Committee meeting July 12th, 4:30 to 6:00 pm. in conjunction with the 1999 NCLS National Conference in Charlotte NC. There were 28 in attendance with participants from two of the big three, 1st tier suppliers, calibration service suppliers, QS-9000 registrars and laboratory accreditors, NIST, and one university.

Steven Stahley opened the meeting with general introductions and a discussion as to their interest in participating in the committee’s activities. Steve then provided a general discussion as to how NCSL committees are structured and the activities they generally participate in, using the Utilities and Airline committees as examples. Some potential activities of this committee could include discussion of metrology needs in the industry, products (RP's), networking, “who to call,” share problems/solutions etc.

The group then was provided a copy of the NCSL administrative Guidelines and Long Range Plan generated by Lori Jester prior to the meeting. All recipients are encouraged to feedback comments to Lori or Steve.

The group then discussed future meeting locations and formats. It was agreed that the committee would meet face-to-face twice a year; once in conjunction with the NCSL conference, and once at the SAE conference generally held in February in Chicago. The group also would like to utilize internet and multimedia for committee activities, in between and in conjunction with, face to face meetings.

The group then discussed key subjects for future work:

- QS-9000 interpretations of requirements in several areas:
- There is a great deal of confusion by QS-9000 registered companies, commercial/independent labs and the registrars/accreditors around requirements and timing.
- Contract review and understanding the customer’s needs between commercial/independent calibration laboratories and their customers.
- Where to get Sanctioned Interpretations of the standards requirements.
- There were some concerns raised with AIAG response to questions concerning standards interpretations.
- The group would like to see a discussion thread developed where we can begin to share issues/discuss issues. Steve Stahley took the action item to work with the NCSL Business Office to explore possibilities to support discussion threads and Web based meetings.
- International trade issues between buyers/sellers; are there any automotive industry issues that can be tied to laboratory accreditation or product conformity?
- Should the committee address testing laboratories needs?
- Many of the automotive companies are internally structured where a single organization manages both calibration and testing labs, where both must meet similar QS-9000 requirements.
- Offer AIAG the NCSL committee as a resource concerning metrology related issues.
- Should the committee offer future input to the AIAG Measurement Systems Analysis (MSA) handbook input?
- NIST representatives expressed a keen interest in how they could better service the automotive industry. Particular mention was made of the NIST exhaust simulation facility that has been developed, at the request of the automotive industry, to provide traceability and measurement techniques to meet the new EPA ultra-low exhaust regulations.

Steven Stahley requested that the group provide him any additional names of people that would like to get future information on committee activity.

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EDUCATION AND TRAINING
Michael Suraci, V.P.

This quarter has been one of locating Committee Chairs. Training Resources has a new Chair: Lyle Bagley. Training Information Directory is chaired by Dave Lorenzen for one more year, as he has agreed to assist in converting the Directory to an electronic version. Personnel Training Requirements continues to be chaired by Hong Rosson in an outstanding fashion. Education System Liaison has a new chair—Jim DeSanto of the Community College of Aurora.

Considerable effort was expended in preparing for the presentation of the 1st Joc Simmons Award by NCSL at this Conference. My hat is off to Norm Belecki for his outstanding coordination effort.

Bill Sorrells continued his efforts in chairing The Panel Session 2D: “NCSL EDUCATION AND TRAINING (WHO WE ARE, WHAT WE DO, HOW CAN WE BETTER SERVE YOU?).” My thanks to Bill for doing double duty at such a busy time.

Efforts were expended to update the Committee summaries on the NCSL Web Page. JoAnn Knowles provided very capable assistance to me during this process.

Committee Activities:

TRAINING RESOURCES—has a new Committee Chairman: Lyle Bagley.

TRAINING INFORMATION DIRECTORY—Dave Lorenzen has worked with Craig Gulka in converting the directory to an electronic version.

PERSONNEL TRAINING REQUIREMENTS
Hong Rosson

At the July 13, 1999 NCSL Conference in Charlotte; we held the second meeting of the Personal Training Requirements Committee. The purpose of this meeting was to evaluate the first draft of the new RP. I received the inputs and modifications from Gloria Neely and Gregory Cenker. I will continue to collect the inputs and modifications for this RP until October 1, 1999.

I will try to finalize this RP and send the new copy to the committee before the next BOD meeting. I will present to the BOD the final RP at the January meeting. If any managers, engineers or technicians want to send me your inputs, this is a right time for you to do it. I will not be able to accept any input after October 1 of this year. I will try not to delay public release of this RP any longer.
The below-listed members attended and expressed their interest in volunteering to help this committee.

**ATTENDEES:**
- Hong Rockwell-Collins
- Vicky VanWetter
- Christopher Bari
- Michael Cappell
- Gloria Nesty
- J. Lyle Bagley
- Dan Walsh
- Roger Adams
- Greg Cezner
- Keith Funke
- Mike Creech
- Mike Forrest
- Millie Habbard
- John Smith
- Mark Langeron
- Larry A. Pauwels
- Louise Shellen
- Robert Williams

**EDUCATION SYSTEM LIASON**

Jim DeSanto accepted his appointment as Committee Chair. Jim provided very vital Metrology curricula to Ed Nemeroff for use internationally.

**Report:**

The NCSL Education System Liaison Committee held a meeting at the NCSL Conference July 14, 1999.

The committee discussed the membership issue; as can be seen from the attendees list, we had a great turnout. Jim DeSanto had the action item to follow up with NCSL on getting out the scholarship letters for the 1999-2000 year. Herb O'Neal then led the group through a brainstorm session on “What hinders our success?” There was consensus around the room that all the schools were experiencing low enrollments in their Metrology Programs. Some of the ideas that came from the sessions are:

- No awareness of the relationship of Metrology to the Quality of Life.
- No SIC Code for Metrology or DOC Code
- Minimal Marketing - lack of resources
- Lack of space - facilities
- Mismatch of the Metrology career field
- Aura of Professionalism
- Lack of understanding by the general public
- Perception of Community Colleges—trade vs. education

The committee then did a fishbone diagram on these items. This is as far as the committee worked through the agenda. We plan to have a teleconference before year’s end to further discuss these issues.

**ATTENDEES:**
- Jim DeSanto
- Gordon Stamm
- Barbara Anstead
- Paul Dibner
- Lytle Bagley
- Herb O'Neal
- Graham Cannon
- George Parker
- Livia Musteh

**DOCUMENTARY STANDARDS**

*William B. Sorrells, V.P.*

**Activities:**

I will retire from Hewlett-Packard (Agilent Technologies) on September 1. The Hewlett-Packard Instrument Support Solutions Division general manager, Mr. Reed Hillard, has generously agreed to fund travel for my continued participation on the NCSL board. I will continue to serve on the board to the end of my term.

I reported information concerning the status of ISO 17025. I received information from ANSI/ICAC in a message from the CASCO Chair, John Donaldson. ISO 17025 was to be submitted to the notified bodies at the end of July, 1999 for final approval. A sixty (60) day period is allowed for ANSI to obtain public response and then deliver the consensus vote to CASCO.


New Business: John Wehrmeyer and I have been asked to look into the proposed ANSI “New Work Item” and prepare a response from the NCSL board. The thrust of this guideline is that as new standards are being prepared in the Technical Committees of ISO, close coordination should be maintained between that committee and requirements for conformity assessment developed and published by CASCO. Changes will be necessary for the ISO Directives to ensure that the provisions in Guide 7 will be utilized.

I would recommend that NCSL not become deeply involved with this particular guideline as it may take volunteer resources that we cannot afford to divert from our metrology work.

*Editor's Note: Contact Bill for a copy of the "New Work Item."*

**Committee Activities:**

**Laboratory Evaluation Resources**

*Leroy Britian*

No report.

**LABORATORY FACILITIES**

*Dawid Broudy and Doug Cooper*

The recent accomplishments of the Laboratory Facilities Committee were:

Publication of NCSL RP-14, "Guide to Selecting Standards-Laboratory Environments."

The change of ISA RP52.1-1975, “Recommended Environments for Standards Laboratories” to a Technical Report has not yet been completed. A copy of NCSL RP-14 has been forwarded to ISA to aid the discussion of the future of RP52.1. Because of the press of other work, the conversion of RP52.1 to electronic form experienced a delay. At the present time, the committee necessary to consider the proposal is being formed.
I had recommended that, instead of completely removing the document, it be retained in the form of an ISA Technical Report, which will permit copies to be available if needed. The reason for this recommendation is the number of documents that refer to parts of RP52.1. After the change, it is expected that requests for ISARP52.1 will be answered with a reference to NCSL RP-14; already ISA is forwarding questions and inquiries to NCSL (principally David Braudaway) for resolution. Because of the delay, the change in RP52.1 is now estimated for fall of 1999.

Possible changes to the proposed one-page Modification to RP-7 will be discussed. This approach covers the problem with the many references of RP-7 which are most difficult to accommodate for nations outside the USA and the developments with NCSL RP-14 and ISA RP52.1.

**METROLOGY PRACTICES**

*Dr. Howard Castrup*

The committee met in conjunction with the NCSL Workshop and Symposium in Charlotte, NC.

**Calibration Intervals**

A recent "enforcement," during laboratory accreditation, of the belief that the interval for an item of equipment can be determined only by the equipment user has been noted. The enforcement of this unsubstantiated surmise has rekindled our efforts to develop valid administrative guidelines for interval analysis. In addition, the Subcommittee is continuing to develop methods for setting parameter calibration intervals. The subcommittee chair, Don Wyatt of Diversified Data Systems is working on data management models that will optimize such analyses.

**Measurement Decision Risk Analysis**

The subcommittee chair, Chris Grachanen of Compaq Computer Corporation, has developed a preliminary outline for a decision risk analysis RP. The need for an RP in this area was underscored by a recent collaboration with Larry Nielsen, acting on behalf of the Utilities Committee. The collaboration attempted to develop a simple algorithm for estimating test guardbands. Not surprisingly, our attempt failed—as have all previous known attempts by other investigators. The reasons for this are somewhat involved; hence the need for an RP. As I mentioned in my previous report, the RP topics will include risk analysis methods, calibration feedback analysis, risk-based SPC control limits, calibration interval reliability targets, test guardband computation, and reporting guardband computation.

**SPC Methods**

Ricardo Nicholas of Boeing Defense and Space Group has been appointed to chair this subcommittee. The subcommittee has recently been engaged in defining control limits for measurement process SPC and on expanding the scope of measurement process SPC to include SPC for standards. Integration of SPC with parameter interval analysis has also been under development. An outline for a Metrology SPC RP was presented at the January meeting. Suggested topics included adapting traditional SPC methods to metrology, applying new Bayesian methods, establishing risk-based SPC control limits, and setting parameter calibration intervals based on SPC control-chart analysis.

**Decision Support**

The subcommittee chair, Derek Porter of Boeing Commercial Airplane Group, has been engaged in identifying decision support guidance in existing NCSL RPs. References to this guidance will be included in a draft RP for Metrology Decision Support. Topics that have been discussed for this RP include cost modeling, setting reliability targets, identifying and managing significant out-of-tolerances, establishing cost-based risk criticality categories, optimizing calibration and servicing policies, and managing interval extensions.

**ANSI/NCSL WRITING COMMITTEE**

*John Wehrmyer*

There were no committee meetings held since January of 1999. The next committee meeting was held on Monday, July 12, 1999, during the NCSL National Conference in Charlotte, North Carolina.

The main issue before the 174 committee is the ISO Final Draft International Standard, ISO FDIS 17025 and its impact on the ANSI/NCSL Z540-1-1994, Calibration Laboratories and Measurement and Test Equipment—General Requirements. It is anticipated that the ISO 17025 Standard will be issued in the near future. Since the Z540 Standard is now 5 years old, it is time for its review. Due to the convergence of both of these events, the 174 Committee has been considering the course of action to take to produce the next version of the Z540 Standard. One of three actions needs to be taken:

1. The Standard could be reaffirmed as written,
2. The Standard could be revised, or
3. The Standard could be withdrawn.

During the last six months the Committee Chair has been conducting an informal survey to gauge the opinion on what to do with the Z540 Standard. To reduce the number of standards dealing with calibration laboratory requirements in the international arena, there appears to be a general consensus that it should be withdrawn in favor of the ISO 17025 Standard. On the other hand, a significant minority have reported a concern that withdrawal would create a vacuum which might be replaced with less ideal standards, not to mention certain contractual concerns. At any rate, this was a major topic for discussion in July.

Thanks to the efforts of Craig Gulka and JoAnn Knowles of the NCSL Office Staff, and Janis Purcell of Sandia, the 174 Committee Webmaster, our committee website is developing into a viable medium for information exchange. We would like to see even more usage of the open discussion forum, so we encourage your participation. We feel that the website could become a great benefit to our NCSL members if we all get into the habit of using it.
ACCREDITATION RESOURCES

Larry E. Nielsen

At the last meeting of the Accreditation Resources Committee on January 28, discussion was held on proposed committee products or projects with potential for serving the NCSTL member organizations in their quest for formal calibration laboratory accreditation. Consensus was reached on the need to find out what the general membership would consider as the most needed information, and the form in which they would most like to see it presented.

During February, a survey-questionnaire was developed via an e-mail discussion group for mailing to NCSTL member organizations. With the help of committee volunteers, 1564 survey forms were mailed on or about April 5. By May 14, 249 responses were received, representing a 15.9 percent rate of return. The completed forms were received from the business office and tabulated the week of May 24. Results were posted on the NCSTL server, 175 committee home page, and an article was prepared and submitted to the editor for publication in the July newsletter.

The most recent meeting of the Accreditation Resources Committee was held on Tuesday July 13, at the Charlotte Convention Center as part of the 1999 NCSTL Workshop and Symposium. There were 16 in attendance, 5 being first-time attendees. Thank you all for your interest, comments and support. We missed a few of our regular members who could not attend the national conference this year but we look forward to their continued participation in committee activities.

We discussed the outcome of the survey conducted last April on the needs of member organizations with respect to the practical aspects of laboratory accreditation. Both tabulated results and a synopsis of the individual comments received from respondents have been posted on the NCSTL server, 175 committee page.

It was agreed that committee projects or products would be prioritized according to the general guidance offered by the survey. That is, by developing a practical guidebook on achieving laboratory accreditation, by developing an on-line database of accreditation information, and by facilitating workshops or seminars on laboratory accreditation.

The guidebook could answer the questions proposed by the survey, include a chapter on common deficiencies and pitfalls, and provide a bibliography of related papers. The on-line resource could include a list of frequently-asked questions, links to accreditation information, or provide related forms or materials to download. Conducting workshops or seminars could be supported by making presentation materials available to local coordinators or other qualified individuals, perhaps via the proposed on-line resource.

It was agreed that we should not waste time or resources duplicating information readily available elsewhere or the work in-progress by other committees. For example, some practical guidelines on measurement uncertainty are currently being developed by the 171 committee; an active on-line Guide 25 discussion forum is already exists outside the NCSTL.

Ken Parson agreed to begin work on a draft of the guidebook based on presentation materials he has developed on accreditation for national and international audiences. Jim Allred agreed to work with Craig Guika to determine how much, if any, accreditation-related material we may be able to place on the NCSTL server. Larry Nielsen, chairman will seek approvals from the 170 Vice President and the Board of Directors as needed to develop and publish the proposed guidebook in the form of a Recommended Practice. A special thanks to Steve Doty for his contribution in recording the minutes of the meeting.

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PUBLICATIONS

John B. Ragdale, V.P.

Committee Activities:

OVERSIGHT

Dr. Stuart Kaplan and Steve Stalkey

The Glossary and Acronym List are being formatted and edited and should be published in the very near future.

RP-6 “Calibration Control System for the Biomedical and Pharmaceutical Industry” was printed and distributed to the NCSTL membership. The Committee held a meeting during the NCSTL Conference in Charlotte, NC.

GLOSSARY

Jesse Berlanga

The Committee held a meeting scheduled during the NCSTL Conference in Charlotte, NC in July. Topics of discussion at the meeting were future revisions of the Glossary and Acronym List, publication of multi-lingual editions, and web site access.

ARCHIVAL

Lewis Fong

The Committee received very little response to the article in the April Newsletter soliciting interested parties to become Committee members. However, the Committee is moving forward in creating a NCSTL Digital Library for the website. An Excel file has been created that will serve as one of the initial archival sources of information and is the process of being populated with pertinent information. Electronic access by the NCSTL membership is scheduled for the third quarter of 1999.

CALIBRATION/CERTIFICATION PROCEDURES

Harry Moody

The Committee has prepared a PowerPoint slide presentation to be used to educate NCSTL members about the Calibration/ Certification Procedures Committee and the calibration procedures database. This presentation was sent to all Regional Vice Presidents for distribution to their respective Region/Section Coordinators. Progress continues in obtaining procedures for the database and Committee members are filing requests for procedures not yet in the database on a case-by-case basis. The Committee met at the NCSTL Conference in July and discussed the revision of RP-3 and refinements for the calibration procedure database.
ACRYONYM LIST

Third Edition
July 1999

CALIBRATION CONTROL SYSTEM FOR BIOMEDICAL AND PHARMACEUTICAL INDUSTRY

Calibration Control Systems for the Biomedical and Pharmaceutical Industry

Recommended Practice
RP-6
May 1999

If you did not get your copy of RP-6, contact the Business Office.
A MESSAGE FROM THE NIST REPRESENTATIVE

NIST is committed to delivering quality measurement services to its customers! Several steps have been taken recently to improve our services, including new management attention on decreasing the turnaround time of our calibration services and providing customer access to real-time information on the status of their calibration. New web sites have been developed to better explain and list our calibrations, standard reference materials, and standard reference data services. New, innovative Internet-assisted calibration procedures are being tested to improve the quality of calibrations and reduce the cost. These efforts are critical so that NIST and its customers can meet tomorrow’s advanced measurement needs. Contact Dr. Richard Jackson, (301) 975-3400.

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NATIONAL VOLUNTARY LABORATORY ACCREDITATION UPDATE

NVLAP has made tremendous strides in achieving its goal to be recognized nationally and internationally as a “world-class” laboratory accreditation organization. After in-depth evaluations conducted of the NVLAP operations by representatives of the Asia Pacific Laboratory Accreditation Cooperation (APLAC), NVLAP signed the APLAC Mutual Recognition Agreement (MRA) in Tokyo in November 1997. Other signatories to the MRA included accrediting bodies from Australia (NATA), New Zealand (IANZ), Hong Kong (HOKLAS), Singapore (SAC-SINGLAS), and Taiwan (CNLA). Since that time, NVLAP personnel have participated as members of multinational teams that have evaluated the accrediting bodies in Japan (JAB, JNLA), and Korea (KOLAS), and those bodies have since been added to the MRA.

In March, the NVLAP Chief, Mr. James Cigler, served on a joint APLAC-EA evaluation team that performed a reevaluation of the accreditation programs in Australia (NATA) and New Zealand (IANZ). NVLAP is due for a reevaluation by APLAC this year. All of these activities have implications for reducing technical barriers to trade among the MRA partners since the signatories recognize the test reports and calibration certificates issued by each other’s accredited laboratories as being technically equivalent.

NVLAP received an assessment from the European Cooperation for Accreditation (EA) in September 1998. As there was not enough time to see a large number of laboratories during the visit, a return visit of a small team to look at two additional laboratories is being planned for September 1999. NVLAP is expecting a favorable decision as to the admission of NVLAP to the EA recognition agreement at the next scheduled meeting of the Multilateral Recognition Agreement Committee in October of this year. Like the APLAC MRA, the EA agreement will open up trade avenues and reduce technical barriers to trade by promoting the recognition and acceptance of accredited laboratories’ certificates and reports.

NVLAP continues to work within the umbrella of the North American Free Trade Agreement (NAFTA) with Canada and Mexico to achieve mutual recognition between the calibration laboratory accreditation bodies in each country. This is being done under a Memorandum of Understanding between the national measurement laboratories and their closely affiliated calibration laboratory accreditation bodies, which established the North American Calibration Cooperation (NACC).

NACC meets regularly to discuss recognition issues, to share quality documentation, and to plan cross-border interlaboratory comparisons (ILCs) involving samplings of calibration laboratories in each country. The first ILC in resistance measurement has been completed with more planned this year in mass, length, temperature, and electrical measurements. In May of this year, NACC representatives from the United States and Mexico visited the Canadian accreditation body (SCC/NRC) and participated in a joint NACC-APLAC evaluation of that program. Plans call for a similar visit to NVLAP this year.

CONTACT: Mr. James Cigler, (301) 975-4171.

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AMENDMENTS FOCUS FAQA, LESSEN BURDEN AND LEAD TO ENACTMENT

On June 8, 1999, President Clinton signed into law a series of amendments to the Fastener Quality Act of 1990 that make the legislation more focused and less burdensome. With these amendments, the law clearly establishes protections against the sale of mislabeled, misrepresented and counterfeit fasteners while eliminating unnecessary requirements. Fasteners include screws, nuts, bolts and other devices used in critical products and systems such as automobiles, aircraft and tanks.

A five-month Commerce Department study requested by Congress was completed in February 1999. The study's results led the department to conclude that the number and magnitude of problems with fasteners are a fraction of what they were when the law was passed. Among the reasons identified for this quality improvement were advances in fastener manufacturing technology and better procedures for military and civilian federal procurement of fasteners.

The new law as amended reflects many of the recommendations made in the February report. These include: limiting coverage to only high-strength fasteners, encouraging the use of recognized industry quality assurance systems, and streamlining paperwork reporting by allowing companies to transmit and store reports electronically.

NIST will continue to operate a voluntary program to accredit fastener testing laboratories. Additionally, accreditation organizations may submit their own registration and accreditation guidelines to the NIST Director if they choose not to follow International Organization for Standardization (ISO) guidelines. CONTACT: Michael E. Newman, (301) 975-3025.

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INTERNATIONAL COMPARISON OF CHARPY PROGRAMS SHOWS GOOD AGREEMENT

Charpy impact testing is often specified as an acceptance test for structural materials, and companies performing these tests are required to verify the performance of their machines using certified specimens. In the first ever group comparison, the Charpy impact verification programs offered by the United States, Japan, France and the European Commission showed good agreement.

Certified specimens for Charpy testing are obtainable only from the Institute for Reference Materials and Measurements (Belgium), Laboratoire national D’Essais (France), the National Research Laboratory of Metrology (Japan) and NIST (United States). About 1,800 impact machines are verified annually from these specimens. The comparison showed the certified energies of the specimens typically agreed within 1 percent of the average values determined in the study. The variation in energy for the specimens was low, and the energies measured for the tests using the 2- and 8-millimeter strikers on specimens of 4340 steel were nearly equivalent. However, a trend of slightly higher energy for the 2-millimeter striker was indicated.

“The good agreement shown by the comparison implies that industries verifying the performance of Charpy impact machines to the requirements of [international standard] ISO 148-2 can be assessed in a fair and meaningful manner,” the NIST report states. CONTACT: Fred McGehan, (303) 497-3246.

**FIRST ATP STATUS REPORT RELEASED**

The expected economic benefits from the Advanced Technology Program far outweigh program costs, according to a report issued March 29, 1999. The report, Advanced Technology Program Performance of Completed Projects, Status Report Number 1, by economist William F. Long of Business Performance Research Associates Inc., provides the most detailed examination to date of the outcomes of the earliest ATP projects. The study covers all 38 ATP projects completed by the end of March 1997, documenting research accomplishments, subsequent work by the companies to commercialize the results, and near-term outlooks for the technologies. It also lists the reasons for failure of 12 other terminated projects that had been selected between ATP’s inception and March 1997.

The 38 projects surveyed in Long’s report cover a broad range of ATP investments. Most (34) were single-company projects, though many involved subcontractors. Of these, almost all were projects by small companies (28). The technologies were distributed over seven broad areas - chemicals and chemical processing; materials; discrete manufacturing; energy and environment; biotechnology; information, computers, and communication; and electronics - with the majority in electronics.

Technical success has not always led to commercial success, according to Long. However, according to Long, who cites previous economic studies, the potential benefits forecasted for just three of the projects in the study for which detailed economic analyses have been done far exceed the total ATP expenditures for all 50 projects in the report and, in fact, likely will exceed the total costs of the program to date. Other results noted in the study include: technology acceleration, gains in technical knowledge as measured by technical acceleration, gains in technical knowledge as measured by technical achievement awards, commercialization of new technology, and company growth.

Copies of the Advanced Technology Program Performance of Completed Projects, Status Report Number 1 (NIST SP 950-1) may be obtained from the ATP Economic Assessment Office, (301) 975-2064, or e-mail to <atp@nist.gov>. The report is available on the web at <www.atp.nist.gov/atp/pubs.htm>.

**TECHNOLOGY TRENDS SHAPE U.S. ECONOMIC FUTURE**

Narrower research horizons, shorter product cycles, and stiffer global competition are among key science and technology trends that will determine whether the United States can continue its success in sowing the seeds of innovation and in harvesting the resulting economic benefits, concludes a new report from NIST.

“The dominance of the United States as a source of technology for other economies is declining, with reduced shares in practically every foreign market,” writes NIST economist Gregory Tassser. In his review of studies and economic data, Tassser highlights trends and global developments that are changing the nature of innovation and underlying research and development activities.

For example, technology is increasingly “science-based,” major advances typically require contributions from a variety of fields, and high value-added products are growing in complexity. The report notes that technological progress is recognized almost universally as the major driver of long-term productivity growth. And among economists and business researchers, it adds, there is strong consensus that a base of R&D is necessary not only to foster innovation and to gain “first-mover” advantages in the market, but also to “efficiently assimilate technology from external sources.”


**NEW PROCEDURE SOLVES LONG-STANDING PROBLEMS ASSOCIATED WITH MAKING MULTIPORT ON-WAFER SCATTERING PARAMETER MEASUREMENTS**

Microwave measurements previously made in coaxial or other waveguides are now made directly on-wafer whenever possible. However, the implementation of some of the more complex multiport measurements required to characterize complex electrical packages, multiconductor transmission lines, and multifunction circuits in the on-wafer environment has been hampered by the limitations of available probing systems, which do not allow direct connections between orthogonal probes during the calibration step.
In response to these difficulties, Dylan Williams and Dave Walker of the Radio-Frequency Technology Division have developed a four-port test set and software for measuring fully corrected four-port on-wafer scattering and impedance parameters. The software is unique as it only requires two in-line calibrations, resolving an important difficulty with existing four-port calibration schemes. The additional hardware required to implement this method is inexpensive and easy to construct.

This new procedure allows calibrations for multiport measurements to be performed using well-understood conventional in-line calibrations and provides the first solution to this long-standing problem. Not only is the method well suited to industrial environments, it also can be used to evaluate ad hoc methods commonly used in the industry to address this problem. The electronics packaging industry, which must often characterize multiport circuits, will probably benefit most from this software. In addition, the method probably will be applied to the characterization of multiport wireless circuits and digital transistors. CONTACT: Robert Judish, (303) 497-3380.

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OPTICAL TECHNOLOGY DIVISION TO HOST THE INTERNATIONAL INTERCOMPARISON OF NIR SPECTRAL RESPONSIVITY

The Optical Technology Division has agreed to serve as the host laboratory for the Consultative Committee on Photometry and Radiometry (CCPR) international intercomparison of spectral responsivity scales in the near infrared (NIR), which is one of the CCPR's key comparisons. For this intercomparison, a number of indium gallium arsenide (InGaAs) photodiodes were purchased and their spectral responsivity measured in the Spectral Comparator Facility (SCF) over the wavelength range from 900 nm to 1600 nm. They have been measured twice, separated in time by approximately 6 months, to ensure their temporal stability.

A total of 16 laboratories are included in the intercomparison. A total of three rounds are planned, with one-third of the laboratories participating in each round. In January, the first set of InGaAs photodiodes was sent out to the first group of participating laboratories. They were due to be returned to NIST near the end of April.

In preparation for the NIR Intercomparison of Spectral Responsivity, a new spectral responsivity scale was derived at the SCF, based on a lamp-monochromator system coupled to a cryogenic radiometer. The NIST researchers have reduced the uncertainties in the NIR spectral responsivity scale by approximately a factor of two over the wavelength range from 950 nm to 1600 nm. NIR spectral responsivity measurements delivered through our calibration services have increased accuracy as a result of the new scale. In addition, InGaAs photodetectors were purchased to be used as new working standards at the SCF. These photodiodes were characterized extensively, and their spectral responsivity measured. They currently are being used as the working standards for the CCPR NIR intercomparison and for the calibration workload in the NIR region. CONTACT: Steve Brown, (301) 975-5167.

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NOISE-TEMPERATURE MEASUREMENT SERVICE FOR SOURCES WITH 2.4 MM COAXIAL CONNECTORS

Staff of EEEL's Radio-Frequency Electronics Division have developed a new measurement service for the noise temperature of sources with 2.4 mm coaxial connectors. This type of connector and transmission line is used for applications as high as 50 GHz and is the most common coaxial size for the 26.5 GHz to 50 GHz frequency range. The connector geometry also is used extensively in measurement and test equipment, and high-speed digital logic, as well as for discrete components, such as switches, amplifiers, and mixers. The new measurement service essentially offers continuous frequency coverage from 8 GHz to 40 GHz and is capable of measuring sources with noise temperatures ranging from 50 K to 15,000 K.

Typical expanded uncertainties (k=2) are expected to be between 1 percent and 1.4 percent for frequencies as high as 26 GHz and between 1.5 percent and 1.7 percent for frequencies ranging from 26.5 GHz to 40 GHz. Noise temperatures for these sources would be approximately 5,000 K to 10,000 K with a reflection coefficient of less than approximately 0.1. CONTACT: Robert Judish, (303) 497-3380.

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ABSOLUTE MAGNETOMETER FOR CALIBRATION OF MAGNETIC MATERIAL STANDARDS

A new absolute magnetometer provides for measurement of magnetic moments traceable to fundamental standards. A Faraday method has been developed and placed in operation at NIST. This magnetometer is used, with the field gradient calibrated using three independent techniques: direct measurement with a Tesla meter, force measurement with a paramagnetic sample whose susceptibility has been determined absolutely using the Thorpe-Sentelle method; and a force measurement on a high permeability sample with known geometry (and hence known demagnetizing factor).

The absolute magnetometer will be used to certify Standard Reference Materials (SRMs) for use in the calibration of magnetometers. These SRMs are needed to calibrate commercial magnetometers used to measure the magnetic properties of magnetic recording materials, permanent magnets, magnetic shielding materials, etc. The increased interlaboratory accuracy that can be obtained using magnetic SRMs is becoming a critical factor as the uses of magnetic materials are expanding in many industries.

The first standard to be issued will be a Ni sphere, similar to SRM 772, which has been unavailable for many years. This is a perfect sphere fabricated from high-purity nickel and has a saturation moment of about 3.5 mA m\(^2\) (3.5 emu) in a field of 0.5 T. Other materials to be issued will include a nickel disk and a very small YIG sphere (approximately 0.6 mm diameter with a saturation moment of 25 uA m\(^2\)). The latter standard will be useful for calibration of high-sensitivity instruments such as SQUIDS and alternating-gradient magnetometers. The nickel disks represent a geometry favored by the magnetic recording industry. CONTACT: Robert D. Shull, (301) 975-6035.

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VACUUM-GAP CAPACITOR MAY RESULT IN NEW PROTOTYPE STANDARD CAPACITANCE

In a collaborative effort between staff from the Electricity Division and the Electromagnetic Technology Division, researchers have developed a prototype for a capacitance standard based on counting electrons, which has been pushed to an uncertainty of about 1 part per million (ppm).

The prototype standard combines two best-in-the-world technologies developed at NIST; an electron pump developed by Mark Keller and a vacuum-gap capacitor developed by Neil Zimmerman. The electron pump, a microcircuit that operates at temperatures below 0.1 K, passes and counts individual electrons with an uncertainty of 0.01 ppm. The vacuum-gap capacitor, which is still in development, already meets several important criteria, including no measurable time dependence (drift) or frequency dependence of the capacitance value.

Most important of its electrical characteristics is that it has extremely high electrical resistance; a lower bound for the resistance has been measured at $10^{19}$ ohms (a world record). The capacitor is constructed of a special grade of copper, suitable for extremely low temperatures, along with sapphire standoff balls, which have excellent thermal conductivity at low temperatures.

In operation, electrons flow onto the vacuum-gap capacitor, which is maintained at 0.1 K. After placing about 100 million electrons onto the capacitor, the researchers measured the resulting voltage across the capacitor, that is, the ratio of the pumped charge to the measured voltage, $C = Q/V$. At present, the imprecision or lack of repeatability of the measurement of $C$ is less than 1 ppm. With improvements to room-temperature electronics, an imprecision of 0.1 ppm is expected. A comparison of the prototype standard with the best commercial capacitance meter shows agreement well within the 2 ppm calibration uncertainty of the commercial instrument.

This standard is part of the evolution away from artifact standards and toward reproducible, easily-transportable standards based on quantized properties of nature. In this case, the quantum property is the electron charge. Since the value of the vacuum-gap capacitor can be determined in-situ using the electron pump, no artifacts are needed to realize the measurement. When perfected, the prototype standard could function as a primary standard for some laboratories. CONTACT: Neil Zimmerman, (301) 975-5887.

MEL AND CATERPILLAR DEVELOP LASER-BASED STEP GAUGE

MEL’s Precision Engineering Division, in cooperation with Caterpillar Corp., is developing a laser-based step gauge capable of measuring distance up to 5 meters. This development will assist U.S. manufacturers in evaluating very large coordinate measuring machines. A prototype of this system underwent preliminary testing by staff members Bruce Borchardt and Dan Sawyer at Caterpillar’s Technology Center in Peoria, Illinois, February 22-26, 1999. Initial test results indicate that one-part-per-million or better accuracy should be achievable with the system. CONTACT: Steven Phillips, (301) 975-3565.

ACOUSTIC RESONATOR FOR MEASURING FORCE

Ward Johnson and George Aker of the Materials Reliability Division and Bert Auld of Stanford University have been issued a U.S. patent for an ultrasonic device that measures force. The device uses non-contacting electromagnetic-acoustic transduction to excite resonant modes in a cylindrical load-bearing metal rod and measure the resonant frequency changes induced by applied stress (the acoustoelastic effect).

One advantage of this device over conventional strain-gage load cells is its higher resolution. Also, since the resonant frequencies are properties of the load-bearing element, errors arising from coupling to the transducer and aging of the transducer are not issues, as they are for strain gages. Other advantages include insensitivity to bending moments and durability in harsh environments. The transfer of this technology to industry is being pursued through Resonic Technology (Covina, California). This company is developing simple, economical, and robust electronics for exciting and analyzing the resonant vibrations. CONTACT: Ward Johnson, (303) 497-5805.

SPARK DETECTOR HELPS PREDICT BREAKDOWNS

Scientists at the NIST have developed the first practical system to continuously measure small pulses of electricity that ultimately lead to the failure of expensive high-voltage equipment. The so-called “partial discharge” pulses, which can be likened to extremely weak sparks, appear randomly and are not detected by high-voltage test equipment. They commonly occur at points where insulation is at its weakest, gradually damaging the insulation until it fails.

The lightweight, portable NIST system uses specialized software to continuously record and analyze pulses in power generation, transmission and other high voltage equipment. Utility companies can use this information to monitor equipment and get repairs made before failures occur. The system detects pulses up to 100,000 times weaker than the typical “static electricity” spark caused by touching metal in dry conditions.

The U.S. Air Force provided partial support for the NIST research. Military and other aircraft currently rely extensively on heavy hydraulic controls to operate wing flaps, rudders, landing gear and other systems. Lighter-weight electric motors would help improve fuel efficiency but are less reliable. Accurate monitoring with the NIST discharge detector could allow manufacturers to replace hydraulic controls with electrical systems, while ensuring aircraft safety. CONTACT: Michael E. Newman, (301) 975-3025.

TESTING LAB EXPERT NAMED NAUCAL ADMINISTRATOR

Joseph F. O’Neill has been appointed chief administrator of the National Cooperation for Laboratory Accreditation, a year-old industry-government partnership devoted to streamlining the now complex U.S. system for assuring the competence of testing laboratories. Also executive director of ACIL (formerly the
American Council of Independent Laboratories), O’Neil was selected by the NACLA Board of Directors to guide the non-profit organization as it builds membership and prepares to implement a formal peer-review system for assessing the competence of laboratory accredited and for achieving international acceptance of test results.

Currently more than 150 accreditation bodies operate in the United States. They provide independent assurance that laboratories are qualified to produce reliable test results in their area of specialization, such as dimensional measurements or energy efficiency. Testing laboratories have complained, however, that they often must undergo several accreditations to prove compliance with duplicative requirements—an unnecessary cost for them and, ultimately, their customers.

“NACLA has the potential to significantly improve the U.S. laboratory accreditation situation,” says O’Neil. “It can create a level playing field for qualified accreditors, greatly reduce the amount of unnecessary duplication, and serve as the nation’s single point of contact for international accreditation interests and activities.”

The NACLA secretariat is housed at NIST in Gaithersburg, Maryland, which also provides financial support. CONTACT: Mark Bello, (301) 975-3776.

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NEW NVLAP DIRECTORY LISTS ACCREDITED LABS

More than 700 testing and calibration laboratories accredited by the NIST National Voluntary Laboratory Accreditation Program are listed in the just-issued NVLAP 1999 Directory. Operating in 47 states, Puerto Rico and eight foreign countries, the listed laboratories together offer 850 services that were judged by NVLAP to satisfy internationally accepted competency requirements.

At the request of industrial and government organizations, NVLAP has set up accreditation programs in 18 major fields. Also available on NVLAP’s World Wide Web site <http://www.is.nist.gov/nvlap>, the new directory indexes laboratories by accreditation field, name, location and NVLAP identifier code. Entries list street and website addresses, contacts, field and scope of accreditation, and other information. With nearly 400 accredited laboratories, asbestos fiber analysis accounts for the largest group of NVLAP-accredited services, followed by computer and electronics testing.

Thanks to NVLAP, the test results from many of the labs listed in the new directory will have international impact. New trade agreements between the U.S. government and the European Union and several Asia-Pacific nations rely on mutual recognition of test results. NVLAP has entered into a mutual recognition arrangement with seven other Asia Pacific countries and is working toward similar recognition by European nations that signed another multilateral agreement. Mutual recognition will reduce double testing, which adds to the cost of traded goods. CONTACT: Mark Bello, (301) 975-3776.

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NCWM ANNUAL MEETING TO ADDRESS IMPROVED HANDBOOK 133

Weights and measures experts from government and industry will meet in Burlington, Vermont, July 25-29, 1999, for the 84th annual meeting of the National Conference on Weights and Measures. This year’s theme is “Setting Standards of Excellence in Pursuit of Equity.” Attendees will have the opportunity to discuss a draft of a new, easier-to-use NIST Handbook 133, Checking the Net Contents of Packaged Goods, and other issues related to regulatory weights and measures activities. Participants also will have the opportunity to hear a special presentation on the recent activities of the Asia-Pacific Legal Metrology Forum and attend a series of technical sessions, including one on an undercover investigation of retail motor-fuel dispenser fraud.

Among those encouraged to attend are state weights and measures directors, state and local weights and measures inspectors, industry representatives, federal agency representatives, allied organizations, consumer organizations, retailers, and food processing industry representatives. Those wanting to review the proposed changes to Handbook 133 can see a draft on the World Wide Web at <www.nist.gov/owne>. CONTACT: Linda Joy, (301) 975-4403.

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PORTABLE VOLTAGE STANDARD FEATURED IN AEROSPACE INDUSTRY PUBLICATION

In the April 26, 1999, edition of Aviation Week and Space Technology, researchers Clark Hamilton and Charles Burroughs are recognized for their work on the development of a fully automated portable NIST voltage standard. After citing the system’s uncertainty of better than 0.02 parts per million as being equivalent to that of a full Josephson voltage standard calibration system, the article notes that the portable system can be shipped by overnight courier, and assembled and operated in less than an hour.

The article also states that prior to the development of the portable standard, “research laboratories had to either send their voltage standards to NIST or install their own Josephson voltage standard calibration system—a difficult and time-consuming effort.” The portable system uses a cryoprobe to cool the voltage chip, which has 20,208 superconducting Josephson junctions.

A laptop computer and electronic package control the system. The package, excluding the computer, is only 13 x 48 cm with a total weight of 21 kg. The article estimated that “They should reduce the uncertainty at NASA and Energy Department laboratories by a factor of 10.” This work was done in collaboration with Sandia National Laboratories. CONTACT: Clark Hamilton, (303) 497-3740.

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NIST CONTRIBUTES TO MEASUREMENT HANDBOOK

Staff from four different divisions at NIST have contributed to The Measurement, Instrumentation, and Sensors Handbook published recently by CRC Press and IEEE Press. This massive
tome, covering an extremely broad range of topics, should prove to be useful to technologists in general, but particularly those involved in measurement and calibration.

Mike Lombardi of Time and Frequency Division contributed two sections, one on time measurement and one on frequency measurement. The radioactivity measurement section was contributed by Bert Coursey of the Ionizing Radiation Division. David Hill and Motohisa Kanda of the Radio-Frequency Technology Division prepared a section on electric field strength. Finally, Dennis Swyt of Precision Engineering Division was one of seven people serving on the Advisory Board for the publication, which was edited by John Webster of the University of Wisconsin. CONTACT: Donald B. Sullivan, (303) 497-3772.

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LINEWIDTH MEASUREMENT COMPARISONS MADE

Precision Engineering Division, in collaboration with the IC Technology Group, recently completed the first phase of an intercomparison between the scanning electron microscope (SEM), the calibrated atomic force microscope (C-AFM), and electrical critical dimension (ECD). In this study, a single crystal Si line with vertical sidewalls was used as the test specimen. The latest instrument models to correct all three measurements also were utilized.

In this carefully controlled experiment, all three techniques agreed within the experimental uncertainties. In summary the SEM measured the prescribed line at 447 nm ± 5 nm; the AFM measured the line at 449 nm ± 13 nm and the ECD measured the line to be 438 ± 34 nm. This demonstrates that when properly done the techniques can agree, at least for a good sample. Differences between ECD and SEM or optical linewidths are a widely acknowledged problem among industrial metrologists. For example, differences of 20 nm to 40 nm, for linewidths observed in polysilicon between ECD and other techniques are common.

Published documentation and systematic studies are pretty scarce in this area, but published papers have documented approximately 90 nm differences for chromium lines. This work recently was presented by John Villanubla in the paper "Intercomparison of SEM, AFM, and Electrical Linewidths" at the SPIE microlithography symposium. CONTACT: Michael T. Postek, (301) 975-2299.

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DOES ANYBODY REALLY KNOW WHAT TIME IT IS?

Have you wondered about time? How do scientists determine what time is? These questions and many more are answered in a new edition of a popular book from the National Institute of Standards and Technology, From Sundials to Atomic Clocks: Understanding Time and Frequency. Extensively updated from the first edition published in 1977, From Sundials To Atomic Clocks describes the history of timekeeping from prehistoric times to today, explaining in layman's terms how various kinds of clocks were invented and developed.

It describes how they operate, right up to the most advanced ultraprecise versions based on measuring the properties of atoms trapped in the grip of near-absolute-zero temperatures. Along the way, it explains how the search for better timekeeping, and its mirror-image, frequency control and measurement, has driven and been driven by many branches of science and technology from early astronomy through the age of exploration and navigation to today's telecommunications, navigation and information sciences.


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MAGNETIC RECORDING INDUSTRY TO BENEFIT FROM NEW PARTNERSHIP

NIST is working to provide the magnetic recording industry with much-needed primary magnetic materials standards. Unfortunately, these reference samples are expensive, delicate and generally of fixed geometry. To help the industry out, NIST has signed a cooperative research and development agreement with SHB Instruments Inc., of Northridge, Calif., to develop calibration principles for robust, inexpensive reference samples.

For example, the B-H Looper is the dominant metrology tool used by the disk drive head industry for process and quality control at the wafer level. A prototype for the calibration of B-H loopers will be designed, constructed and tested as a secondary reference sample. This will complement the primary thin film reference sample currently under development at NIST. Measurements on soft magnetic films, as used in heads, sensors and magnetic RAM devices, will be improved with the implementation of these secondary reference samples.

More information on this CRADA may be obtained from David P. Pappas, NIST, Boulder, CO 80303-3337, (303) 497-3374, <david.pappas@nist.gov>; or Barry Megdal, SHB Instruments Inc., 19215 Parthenia St., Suite A, Northridge, CA 91324, (818) 773-2000, <bmegdal@shbinstruments.com>.

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NIST GATHERS VALUABLE GAS DATA FOR CHIP PROCESSING

In the competitive struggle to increase the processing efficiency and the quality of semiconductor wafers, U.S. industry must have reliable data for the properties of numerous gases used in chip processing. That's because mass-flow controllers, which are critical to the processing of semiconductor wafers, must be calibrated differently for each of the more than 50 gases now in use. Complicating matters is the fact that many process gases are extremely dangerous to handle, making it impractical for the manufacturers of mass-flow controllers to directly calibrate each controller for each type of gas.
To get around this problem, industry calibrates mass flow controllers using benign gases, such as nitrogen, and then fine tunes the calibrations with models that are based on approximations of the properties of individual gases. More accurate data about the gases needing calibration would reduce the degree of guesswork needed for these models.

Now, NIST's Chemical Science and Technology Laboratory is developing a comprehensive, reliable database for process gases. Agency researchers are gathering the data by measuring the speed of sound as it travels through gases. The technique yields accurate information about the heat capacity and the equation of state, which is used to determine the density of a gas from measurements of its temperature and pressure. Thermal conductivity, viscosity and diffusion constants are also derived from specialized acoustic measurements.

For technical information, contact John Hurly, NIST, 100 Bureau Dr., Stop 8380, Gaithersburg, MD 20899-8380, (301) 975-2476, <john.hurly@nist.gov>.

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REFERENCE MATERIALS AVAILABLE TO MEASURE FERRITE CONTENT OF WELDS

NIST has completed the certification of two new reference materials (abbreviated RM) for the calibration of instruments used to measure the ferrite content of stainless steel welds. Ferrite is a magnetic component that has an important effect on properties such as the weld toughness and corrosion resistance. The standards were certified in accordance with American National Standards Institute/American Welding Society Standard A4.2 and the International Organization for Standardization Standard 8249.

Secondary Ferrite Standards, RM 8480 and RM 8481, are designed for use in welding construction and repair operations where the ferrite content must be controlled. RM 8480 covers the low range (Ferrite Numbers 0 to 30) and RM 8481 covers the corresponding high range (Ferrite Numbers 30 to 120). The NIST certification program required the development of an advanced calibration procedure and included over 25,000 individual magnetic measurements before the data could be reduced to statistical summaries. The calibration procedure and statistical summaries are included in the reference material certificates.

To order RM 8480 and/or 8481, contact the Standard Reference Materials Program, NIST, 100 Bureau Dr., Stop 2322, Gaithersburg, MD 20899-2322, (301) 975-6776, fax: (301)948-3730, <srminfo@nist.gov>. For technical information, contact Tom Siewert, NIST, MC 853.07, Boulder, CO 80303-3337, (303) 497-3523; <siewert@boulder.nist.gov>.

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INCREASED ACCURACY IS GOAL OF NEW PYROELECTRIC RADIOMETER

Researchers in NIST's Optoelectronics and Optical Technology Divisions have worked together to build and evaluate a practical and convenient pyroelectric radiometer for measuring optical power, radiance and irradiance in the visible, near and mid-infrared wavelength regions. Although the development will not provide a new NIST measurement service, it will help NIST upgrade and increase the accuracy of current services. The unique lithium niobate pyroelectric detector incorporates domain engineering (the engineering of specific crystal properties) to orient the polarization in specific detector regions of the crystal to achieve desired noise reduction. The result is a radiometer with high spatial and spectral response uniformity that will make an excellent transfer standard. The radiometer is capable of routine measurements having uncertainties approaching 0.1 percent.

A paper describing the new detector is available from Sarabeth Harris, MC 104, NIST, Boulder, CO 80303-3337; (303) 497-3237; <sarabeth@boulder.nist.gov>. Ask for paper no. 30-99.

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WANTED: BALDRIGE EXAMINERS FOR 2000

It's a tough, demanding job—without pay. So why is a position on the board of examiners for the Malcolm Baldrige National Quality Award so desirable? Here's what Kathy Yeu, vice president, customer satisfaction, at Charles Schwab & Co. Inc., and a senior examiner for four years, says, "My experience as a Baldrige examiner has been a tremendous asset to my professional development, has exposed me to an infinite and broad set of networking opportunities, and has enabled me to contribute to a program dedicated to improving organizational performance across the country."

NIST is looking for volunteers from a wide variety of business and not-for-profit organizations to serve a one-year term on the board of examiners for the year 2000 Malcolm Baldrige National Quality Award.

Examiners evaluate applications for the award, prepare feedback reports to applicants citing strengths and opportunities for improvement, and recommend award winners to the NIST director. Qualifications include expertise in business, education or health care management processes and results, as well as knowledge of practices and improvement strategies that lead to organizational excellence. The board consists of about 40 members, including nine judges and about 60 senior examiners. Applications for the board will be available in November 1999.

Additional information is available by calling (301) 975-2036 or on the Baldrige award web site at <www.quality.nist.gov/examr2000/page1-top.htm>.

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NEW NIST DATABASE MAKES AIR QUALITY CHECKS A BREEZE

A new database now available from NIST will help measure airborne pollutants from manufacturing plants or other sources with greater accuracy. The new NIST Quantitative Infrared Database has been designed to calibrate and verify measurements made with infrared-based analytical instruments in field monitoring of hazardous air pollutants identified by the U.S. Environmental Protection Agency.

The new database, available on CD-ROM, also is the first issue by NIST that can be used to establish traceability to NIST's primary gas standards. A team of NIST scientists created the database in response to a request from the EPA.

NIST scientists accurately measured and assessed the uncertainty of the infrared spectra for 31 volatile organic compounds identified as high priorities by the EPA. The measurements were
made on primary gas standards prepared and verified at NIST. In the future, researchers will expand and update the database to contain about 100 of the 189 compounds listed in the Clean Air Act amendments.

The database includes programs to allow viewing, printing and verifying the spectra. The database also employs data authentication to assure users that spectral files are unaltered and traceable to NIST.

The Quantitative Infrared Database, NIST Standard Reference Database 79, is available from the NIST Standard Reference Data Program for $240. It runs on a Windows 95, Windows 98 or Windows NT operating system. Updates will be available over the Internet. For more information on the database, go to <www.gases.nist.gov> on the World Wide Web. To order, contact the NIST SRDP, (301) 975 2208; fax: (301) 926-0416; <srdata@nist.gov>.

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NIST X-RAY DETECTOR HEADS FOR COMMERCIALIZATION

NIST has granted co-exclusive licenses to EDAX Inc. of Mahwah, NJ, and NORAN Instruments Inc. of Middleton, Wis., for commercialization of a revolutionary microcalorimeter-based X-ray detector with an energy resolution of two electron volts, some 50 times better than conventional semiconductor-based detectors. The new technology will be used in instruments for the characterization and analysis of materials by X-rays in semiconductor and other materials-intensive industries.

The detector fits easily onto a commercially available scanning electron microscope and conveniently operates even though the sensor is cooled to near absolute zero. The vastly improved detector system will enable chemical analysis of particles that are difficult or impossible to study with current detectors. It permits the chemical analysis of tiny particles that contaminate silicon wafers during semiconductor fabrication. It also has been used to measure the shift in X-ray energy that occurs due to chemical bonding of one atom to another.

In the meantime, the NIST research team that developed the technology is exploring other uses for it. One current project is evaluating the microcalorimeter’s role as the detector in a high-resolution mass spectrometer that might help speedup human gene sequencing.

For technical information, contact Richard Harris, MC 814.00, NIST, Boulder, CO 80303-3337, (303) 497-3776; <richard.harris@nist.gov>.

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DOT SAYS SHIPPERS NOT EXEMPT FROM STATE INSPECTIONS OF SCALES

Accurate scales are one of the most basic elements of fair trade. To ensure equity in the marketplace, state weights and measures inspectors check the accuracy of scales used in commercial transactions. An opinion issued June 1, 1999, by the Department of Transportation says that parcel shippers who use scales that are part of a computer-based service system are subject to inspection under state weights and measures regulations. In recent years, some package shipping services have asserted that another law, the Federal Aviation Administration Authorization Act of 1994, prohibits states from inspecting scales that are part of a computer-based service system.

In response to these different interpretations of the regulations, NIST asked the DOT’s legal counsel for an opinion. The recent DOT opinion says the FAA Authorization Act does not preempt state enforcement of uniform national standards of weights and measures. Therefore, parcel shippers’ scales are subject to inspections by state weights and measures inspectors.

The NIST Office of Weights and Measures and the National Conference on Weights and Measures also held a workshop on June 3, 1999, on the inspection of parcel shipping scales. A transcript of the workshop and slides from workshop presentations are available on the World Wide Web at <www.nist.gov/owm>.

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MICROSTRIP TESTING ACCURACY

As transistors get smaller and faster, interconnect performance also must be improved. To meet this challenge, manufacturers are combining low-dielectric constant (known as low-K) thin films with high-conductivity copper interconnects. The speed of light in these low-K thin films approaches what that of a vacuum while the copper significantly reduces loss. Until recently, it has been difficult to accurately characterize the performance of these systems.

A collaborative effort between two NIST groups—the Electromagnetic Properties of Materials Group and the Monolithic Microwave Integrated Circuit Program—and SEMATECH has developed microstrip test structures that thoroughly assess the dielectric properties of candidate low-K thin films and the conductivities of accompanying metals over a range of 50 MHz to 40 GHz. The test structures are small printed interconnects comprised of the thin film and metal combinations to be characterized.

Testing already has been completed on a new low-K dielectric and copper conductor system supplied by SEMATECH. Other systems from companies such as Dow Chemical and Texas Instruments are undergoing performance assessments at NIST’s Boulder, CO laboratories.

For technical information, contact either Dylan Williams (303) 497-3138; <dylan@boulder.nist.gov> or Michael Janezic (303) 497-3656; <Janezic@boulder.nist.gov>.

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NIST CLEAN ROOM TEAM EARN HAMMER AWARD

Ten members of NIST's Janitorial Services Group recently received one of Vice President Al Gore's Hammer Awards for excellence in customer service by government workers. The team was recognized for effecting a major change in how the ultraclean environment rooms in NIST's Measurement and Standards Laboratories are maintained.
The group first learned about the demanding needs of clean room maintenance from the NIST researchers who use the rooms and from clean room equipment vendors. For example, no more than 10 particles of five micrometers (approximately 1/20 the diameter of a human hair) or less in size are allowed per 0.03 cubic meter (one cubic foot) of space. With this knowledge in hand, group members took and completed training and certification courses in clean room management.

To do this, and to obtain the necessary equipment to begin operations, the team realized enough savings in funds and staff-hours from increased efficiencies in other areas. Today, the in-house Clean Room Team handles the upkeep of an ever-growing number of NIST clean rooms. If the work was done by outside contractors, the additional cost to the agency and the government would be over $100,000 annually.

Receiving the Hammer Award are Maria Alvarez, Richard Delisi, Michael George, Tyrone Gibson (Group Leader), Joseph Herron, Josef Kocsis, Marie Liason, Preston Mason, Ernest Matthews and Jerome Orye.

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PAPER DETAILS PROS AND CONS OF ANNEALING OPTICAL FIBERS

NIST has been a pioneer in the development of annealed optical fiber current sensors for use in commercial utility and power monitoring applications. Agency researchers discovered that annealing optical fibers enhances their ability to evaluate the behavior of electrical generators and the power transmission grid.

Annealing a fiber involves raising the glass to a temperature above the strain point for a short time and then cooling it slowly back to room temperature. For instance, a fiber may be heated to a temperature of 850 degrees Celsius (1,562 degrees Fahrenheit) for eight hours.

While this process reduces stress in the glass, it also initiates a number of physical and chemical changes in the glass which need to be understood and monitored. A new paper from the NIST Optoelectronics Division, Boulder CO, discusses these detrimental effects which include increasing the oxygen-hydrogen concentration in the glass and devitrification (the nucleation and growth of crystals) within the glass.

The paper states that to produce an annealed fiber coil for utility company applications, the annealing process must be held within time and temperature bounds or the detrimental effects will degrade coil performance. On the other hand, devitrification may produce useful fiber components for other applications.


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NIST VIDEOS NOW JUST A CLICK AWAY

Over the past several years, NIST has produced a number of videos to better explain its partnerships, projects and programs for U.S. industry, as well as document important events in the agency’s recent history. Now, a showcase for these videos has been set up on the World Wide Web at <www.nist.gov/videos>.

Visitors to the site can sample videos with either a T1 line or 56K modem, so downloading to a hard drive is unnecessary. Anyone without a video player can download one for free from the new NIST website. All programs eventually will be closed-captioned for the hearing impaired. Longer programs (more than 15 minutes run time) are excerpted.

To obtain a VHS copy of any NIST video on the site, contact the Public Inquiries Office at (301) 975-6478; <inquiries@nist.gov>.

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STANDARDS IMPORTANT TO Deregulating INDUSTRY

With restructuring of the electric power industry looming in all 50 states, NIST has initiated efforts to anticipate needs for measurement services and other technical support that may arise as the industry transitions from a system of monolithic utilities to a diverse collection of firms competing to generate, distribute, or meter the power that goes to homes and businesses.

In its role as the nation’s measurement authority, NIST recently commissioned the Research Triangle Institute to study technology trends in the generation, transmission and distribution sectors. RTI also will assess measurement and standards needs identified by power industry experts interviewed during the study. Results will be presented during a NIST-sponsored national conference on “New Challenges for Measurements and Standards in a Deregulated Electric Power Industry,” which will be held on Dec. 6-8, 1999, at the Key Bridge Marriott in Arlington, VA.

"For the first time in anyone’s memory, utility companies will not be controlling vertically-integrated systems stretching all the way from the turbine to the end user’s meter,” explains Robert Hebner, acting director of NIST’s Electronics and Electrical Engineering Laboratory. “Different people will be designing, building and controlling different parts of the system.”

“Restructuring will mean more choices and more competition. Industry-wide adoption of standard measurement methods will help to assure reliable, high-quality service,” Hebner says. Development of these standards, he advises, could be an international matter, involving foreign manufacturers and service providers certain to vie for customers in the large U.S. market.

Topics to be addressed at the December conference include competitive metering, bulk power measurement, power quality, distributed generation, and communication and control technologies.

For more information on the content of conference sessions, contact James Oltzoff, (301) 975-2431, <james.oltzoff@nist.gov>. On-line registration is available.

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COMING SOON TO A COMPUTER NEAR YOU: SMART SPACE TECHNOLOGY

The National Institute of Standards and Technology is launching a pervasive computing initiative to integrate a host of emerging and existing technologies. NIST’s Information Technology Laboratory plans to explore ways to link computers and a variety of sensors. The initiative will involve developing tests and standards that will catalyze advancements in fields ranging from wireless devices to wearable computers.

NIST scientists believe three trends are shaping the future of the information technology industry: the growing number of computers per person in homes and offices, advances in miniaturization technology, and the phenomenal growth of the Internet. The convergence of these trends will result in an era of pervasive computing. Computers, actuators and sensors will be embedded in virtually every device, appliance and piece of equipment, and even in clothing. Many devices will be connected to the Internet.

While many technologies that will contribute to pervasive computing are still new, others are more mature. One field that is ready for advanced research is the development of “smart spaces.” These are work spaces that have many built-in computers, sensors and communications devices, such as voice recognition systems. NIST currently is developing an experimental smart space as a first step in its pervasive computing initiative. Contact: Philip Bulman, (301) 975-5661

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CONTROLLING THE FUTURE OF THE SEMICONDUCTOR INDUSTRY

Money alone can’t buy perfection in a semiconductor factory, but innovative software is helping the industry get a lot closer to it.

The new technology, developed by Advanced Micro Devices (AMD) of Austin, TX, and Honeywell Inc., of Minneapolis, in cooperation with the industry consortium SEMATECH, overcomes a longstanding control problem by detecting and classifying process faults immediately and adapting process “recipes” as necessary from one run to the next. In software lingo, the technology is called an advanced process control (APC) framework, which controls various types of manufacturing execution systems, process control tools, and wafer fabrication equipment.

The benefits include increased process consistency and yield. The joint venture, which was co-funded by the NIST’s Advanced Technology Program, enabled AMD to achieve an 83 percent reduction in photolithography rework and a 48 percent reduction in variability in microprocessor speed, among other advances. The company was able to bring faster microprocessors to market sooner than otherwise would have been possible, substantially increasing revenues.

Since the ATP project ended in mid-1998, the APC technology has been commercialized by ObjectSpace Fab Solutions of Austin, a project subcontractor. The new framework is also in the process of becoming an industry standard. Contact: Michael Baum, (301) 975-2763

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COMPANIES WORK TO ELIMINATE Y2K BUG WITH NIST ASSISTANCE

One percent doesn’t sound like much. But to Michael T. Dunn of Canastota, N.Y.,’s, Thermold Corp., a 1 percent failure of embedded systems could be a problem. Then again, it might not. He’s just not willing to take that chance.

As purchasing and production control manager at the injection molding company, Dunn has taken the additional role of coordinating Thermold’s year 2000 effort. He sought help from the Central New York Technology Development Organization, Inc., in Syracuse, a Manufacturing Extension Partnership affiliate of the NIST. After attending an MEP seminar on Y2K help and using the NIST MEP Y2K Self-Help Tool, Dunn said the center helped his company get a good handle on the Y2K problem.

Thermold Corp.’s Y2K success story is one of more than a dozen included in a newly available NIST fact sheet, MEP Y2K Success Stories can be found online at <www.nist.gov/public_affairs/factsheet/mepy2k.htm>. Copies also are available by faxing a request to NIST Public Affairs, (301) 926-1630.

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LUNAR REFLECTOR STILL ON THE JOB AFTER 30 YEARS

One of the space program’s longest-running and most cost-effective experiments—and one with a connection to the National Institute of Standards and Technology—celebrates its 30th anniversary this month by continuing to return data.

During their pioneering moon landing on July 20, 1969, the Apollo 11 astronauts set up a special device that could reflect a powerful laser pulse aimed at it from telescopes on Earth. By measuring the roundtrip travel time for the pulse (about 2.5 seconds), scientists have defined the Earth-Moon distance to better than 2.5 centimeters (1 inch), which increases each year by about this much due to tidal interactions. The lunar reflector’s initial design was done by James Faller of JILA, a Boulder, CO research institute jointly operated by NIST and the University of Colorado.

The Apollo 11 instrument is a briefcase-sized aluminum panel studded with 100 reflectors, each about 3.8 centimeters (1.5 inches) across. It works just like a giant bicycle reflector, bouncing light back to its source.

The Apollo 14 and 15 missions, in 1971 and 1972 respectively, delivered two more Faller-designed reflector arrays, the latter having 300 reflectors. The trio of reflector stations still provides valuable data about the Earth-Moon system. Contact: Collier Smith, (303) 497-3198.NACLA Update and Membership
LIAISON NEWS

NACLA Update and Membership

WHAT IS NACLA?

The National Cooperation for Laboratory Accreditation (NACLA) is a nonprofit corporation whose mission is to provide coordination, recognition, and worldwide acceptance of competent laboratory accreditation in the United States. In pursuit of its mission, NACLA is supported by a number of private- and public-sector organizations, including the NIST. NIST is the leading federal agency in the area of laboratory accreditation and conformity assessment activities.

The NCSL has been represented on the NACLA Board of Directors by Tony Anderson (Guideline) for the past two years and NCSL has joined NACLA as a member organization. In addition, NCSL made a vital donation to NACLA in 1998 as seed money to help get NACLA started.

THE NACLA VISION

The NACLA vision is: "A test or calibration performed once and accepted worldwide." The NACLA Board believes that pursuit of this vision will benefit all those with a stake in laboratory accreditation. By using one standard to recognize competent accreditation bodies, NACLA hopes to promote mutual recognition within the accreditation community and thereby reduce the redundancy of multiple accreditations of the same laboratory and reduce costs to all parties. NACLA also aims to provide coordination and focus for laboratory accreditation programs in the U.S. and to become the U.S. point of contact for international accreditation efforts. Eventually, NACLA plans to expand to include Canada and Mexico, our trading partners.

MEMBERSHIP IN NACLA

The NACLA Board invites all organizations interested in laboratory accreditation to become members. There are two tiers of membership dues: $200 annually for organizations with gross revenues or budgets of less than $10 million; $1,000 annually for organizations with gross revenues or budgets of $10 million or more. All constituency groups have representation on the NACLA Board of Directors: industry, laboratories, accrediting bodies, regulators and general interest.

An application form for organizations who wish to join NACLA is available below. Additional information can be obtained by contacting Tony Anderson, VP Standards Policy, or from web site <http://ts.nist.gov/ts/htdocs/210/nacla/index.htm>, or by contacting the current NACLA President Fred Grundner, AIHA, Fairfax, VA, (703) 849-8888, <FGRUNDEFR@aiha.org>.

Application Form for NACLA Membership

Name of Organization ________________________________
Name of Member Delegate ________________________________
Title ________________________________
Address ________________________________
Phone ________________________________, Fax ________________________________
E-mail ________________________________

Please Circle Membership Category:
Accreditor Government Laboratory User (of accreditation or lab services)

Annual Dues (invoice available upon request):
$200 for organizations with revenues below $10 million
$1,000 for organizations with revenues of $10 million or more

To assist us in our membership system, please check the appropriate items that best suit your organization’s activities:

( ) Federal Agency ( ) Accreditor of Labs ( ) Specifier of Accreditation
( ) Private Sector Industry ( ) Testing/Calibration Lab. ( ) State or Local Govt.
( ) Other

Please make checks payable to “NACLA” and mail to: NACLA Secretariat, P. O. Box 4045, Gaithersburg, MD 20885-4045.

Phone: (301) 975-6472, Fax: (301) 963-2871; E-mail: <naclasecretariat@nist.gov>
JLC/CCG
John Fishell, Liaison Delegate

Joint Technical Coordinating Group for Calibration and Measurement Technology (JTCG-CMT) Meeting. A JTCG-CMT meeting was held 12-13 May 1999, at the Naval Warfare Assessment Station, Corona, CA.

NASA METCAL Program. Raymond Kotowski (Kennedy Space Center METCAL Program Manager) provided an overview of the NASA METCAL Program. The NASA METCAL Program includes funding/tasking for Metrology Research and Development (R&D). Mr. Kotowski manages the R&D line as team lead of the Metrology and Calibration Technical Working Group and offered to share R&D project requirements/information with the CCG Engineering Working Group in hopes of leveraging off of common requirements. This is especially favorable in light of the declining Metrology R&D budgets.

National Measurement Capability. The status of the JTCG-CMT “Measurement Technology Issues in Future Military Systems” white paper, which has now launched a more shortened commercially applicable white paper entitled “National Measurement Technology Issues in Future Products and Systems Y2K and Beyond,” was discussed. The latter white paper is still in draft form and comments are being solicited from JTCG-CMT representatives. Recently published articles on National Measurement Capability were shared that cite the need for government to invest in metrology R&D since industry has no commercial market incentive to do so for most DoD applications.

GIDEP Overview Brief. Jim Carlton (GIDEP Metrology Data Manager) provided a Government-Industry Data Exchange Program (GIDEP) overview brief, which included a discussion on the reported FY98 metrology data utilization, benefits, and cost avoidance from utilizing calibration procedures. The GIDEP strategic plan initiatives were discussed, which include pursuing international participation in GIDEP and GIDEP wanting to become a metrology data distribution center for all metrology data for government agencies that do not have a centralized METCAL program (FDA, DoT, DoE, etc.).

The JTCG-CMT received clarification from GIDEP on concerns and misconceptions arising out of the April NCSL Newsletter GIDEP Liaison Report. GIDEP is not attempting to become the technical authoritative resource of DoD METCAL information for the Services, as it is not part of the GIDEP mission. Security issues remain a major concern among the Services on DoD information sharing regarding GIDEP’s plan to expand internationally.

NIST Liaison Brief. Dr. Dennis Friday (NIST—Radio Frequency Technology Division Chief) provided an overview of NIST issues that relate to NIST/DoD support, including NIST organizational changes. In regards to the Joint Service CCG funding NIST receives for R&D projects, NIST is concerned with the steady decrease in funding since it is hard to sustain a technical base with an unstable financial base.

The JTCG-CMT relayed the importance of international reciprocity for DoD metrology. The Services are working more and more in cooperation with NATO countries. For example, when weapon system components are manufactured in multiple countries, the uniformity and accuracy of component measurements are critical or the system may not fit together or function properly. Also, Service laboratories overseas are currently sending standard assets back to the United States to maintain traceability to NIST, yet within the overseas local region, accredited laboratories exist within walking distance. The Services are looking to NIST to provide the needed direction.

Program Standards. An overview of the status of DIS-17025 and future ANSI/NCSL Z540-1, 1994 work order were briefed. A particular concern was voiced concerning the possibility of ANSI/NCSL Z540-1 being withdrawn with the intent that the approved version of ISO-17025 will meet the United States requirements contained in ANSI/NCSL Z540-1. The concern is that ISO-17025 only applies to Z540-1 Part 1 (Calibration Laboratory Quality System) and not Part 2 (Suppliers Quality System), which is utilized in many DoD contracts. If Z540-1 is withdrawn, Part 2 users in DoD would be required to utilize (or develop) a new standard. A possible replacement could be ISO-10012-1—Quality Assurance Requirement for Measuring Equipment, but this would require evaluation of its adequacies.

DoD Outsourcing Initiatives. DoD outsourcing initiatives within the Services that have been previously reported are continuing and their progress to date was discussed. Formal announcements published through the Commerce Business Daily contain pertinent point-of-contact information for particular outsourcing initiatives.

Calibration and Measurement Requirements Standard. With Acquisition Reform, MIL-STD-1839 “Standard Practice for Calibration and Measurement Requirements” was cancelled. In the absence of a suitable commercial practice standard, the CCG Calibration Requirements Working Group is developing a strategy for consistently obtaining calibration and requirements technical information within DoD acquisitions to ensure that valid and traceable measurement capability is in place prior to deployment of the weapons system and its associated support equipment.

Measurement Systems Modernization Committee. DoN representative, Mark Kaufman, provided a JTCG-CMT overview brief and participated on panel discussions during the Institute of Electrical and Electronics Engineers (IEEE) Instrumentation and Measurement Society/NIST formed Measurement Systems Modernization (MSM) Committee meeting held in conjunction with the International Test and Measurement Conference ’99 held in Venice, Italy on 24-27 May 1999.

Attendees included representatives from the IEEE, NIST, European Standards activities, and commercial standards manufacturers. During the meeting, other National Measurement Institutes were encouraged to solicit military representation on the MSM Committee. There are three MSM initiatives underway. The first is to develop techniques and technology to allow collaboration and comparison via the Internet. The second initiative is to develop new statistical approaches to laboratory comparisons. The third initiative is to develop larger, more complete and accurate, readily accessible measurement databases structures. The next MSM Committee is being scheduled in the Fall timeframe.

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ILAC
Anthony Anderson, Liaison Delegate

There have been no meetings of the ILAC Laboratory Liaison Committee (LLC) since the last NCSL Board meeting. There was an ILAC Executive meeting on July 8, 1999 in Charlotte, just prior to the conference. As I reported in my last board report, the Accreditation Policy Committee (APC) of ILAC is working on the creation of an ILAC MLA. This work is progressing quite rapidly and more should be known about this at Charlotte.

The next ILAC LLC meeting will be in conjunction with the ILAC General Assembly meeting in Rio de Janeiro in October.

Editor's Note: I thought this ILAC press release was pertinent.

Laboratory Accreditation in the New Millennium
Washington DC—The ILAC 2000 Conference will be held October 29–November 3, 2000 at the Crystal Gateway Marriott Hotel, Arlington Virginia. The International Laboratory Accreditation Cooperation (ILAC) brings together laboratory accreditation organizations operating in all areas of the world to further enhance and facilitate the international acceptance of test data, and to eliminate technical barriers to trade by eliminating the need for multiple testing of products and components.

Founded more than twenty years ago, ILAC was formalized as a cooperation in 1996 when 44 national bodies signed a Memorandum of Understanding (MOU) in Amsterdam. This MOU provides the basis for further development of the Cooperation and the eventual establishment of a Multilateral Recognition Agreement (MLA) among ILAC member bodies.

ILAC's goal is to identify and recognize competent testing organizations and assure users around the world that the test data they receive from these laboratories can be relied upon thus eliminating the need for duplicate testing. "Confidence, efficiency and international acceptance are primary values added by accreditation, particularly in the minds of manufacturers, regulators and others who specify laboratory requirements," said John Locke, Chairman of the ILAC 2000 Planning Committee. "These users want to have confidence that the test data on which their decision are based have been produced by a competent testing agency."

ILAC is creating an evaluation procedure based on an international standard, ISO 17025, "General Requirements for the Competence of Testing and Calibration Laboratories" and ISO Guide 58 "General Requirements for Operations and Recognition of Laboratory Accreditation Systems." "An ILAC evaluation and acceptance into the MLA will likely result in a more thorough and compete evaluation of all areas of laboratory competence than is usually found in user evaluations of laboratories" stated Locke. "Moreover, the cost of the evaluations is normally born by the laboratories themselves rather than the users. We think this is a win-win situation for the users of laboratory test data.

ILAC also publishes technical papers related to all aspects of laboratory competence and accreditation and convenes technical conferences every two years. The next such conference, ILAC 2000, is expected to draw more than 3000 attendees from 50 countries. The format includes educational seminars, interactive forums, networking among members, formal reporting by ILAC committees, and decision-making on fundamental issues relating to mutual acceptance of test data. In addition, the Conference will host a variety of informal events at which the delegates will visit the Kennedy Center, the Torpedo Factory in Old Town Alexandria and a dinner cruise on the Potomac.

To receive more information, visit the Conference web site at <www.ILAC2000.com> or call Robin Gildersleeve at (703) 690-1436 or Lisa Caron at (800) 374-3818.

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ASIA-PACIFIC METROLOGY PROGRAMME (APMP)
Dr. Angela Samuel, Liaison Delegate

The APMP Secretariat will be transferred from the Australian to the Japanese APMP member laboratory in November 1999, with the Chair transferring from Dr. Barry Inglis, Director of the National Measurement Laboratory (NML), CSIRO, Australia, to Dr. Hidetaka Imai, Director General of the National Research Laboratory of Metrology (NRLM), Japan.

The annual meeting of the APMP membership took place at Shah Alam, Malaysia in early September 1999. Several key initiatives were set in place at the 14th General Assembly (GA), of which the most critical to the future functioning of the Programme are the establishment of an APMP Executive Committee to oversee the operation of APMP and APMP Technical Committees to provide a regional interface in the specialist areas covered by the CIPM's Consultative Committees.

The APMP Executive Committee comprises four members, the current Chairman, the Chairman-elect, and two Executive Members elected from the floor of the Assembly. Current members are: Dr Barry Inglis, Chairman (APMP), NML, CSIRO, Australia; Dr. Hidetaka Imai, Chairman-elect, NRLM, Japan; Prof Shi Changyan, NIM, China; and Mr Lam Kong Hong of PSB, Singapore. Primary activities of the Executive are to continuously review the activities of the Programme, develop new initiatives and strategies, and provide an APMP voice at international metrology-related activities.

At the 14th GA, APMP members agreed to the establishment of Technical Committees (TCs). One of their principal tasks is to coordinate regional involvement in the key and supplementary comparison programs which form the technical basis for participation in the global Mutual Recognition Agreement (MRA) in measurement standards being developed by the BIPM. To ensure objective assessment of regional measurement competence compared with international capabilities, APMP members are participating in international measurement comparisons at a number of levels: the BIPM key and supplementary comparisons, RMO key and supplementary comparisons and APMP comparisons. The current APMP comparison programs cover 23 fields, with ten comparisons completed and being prepared for publication, seven in progress and six more in preparation.

Another major policy decision taken by APMP members at the 14th GA was the acceptance of third party accreditation of their calibration services as their preferred means of participating in the second part of the global BIPM MRA.
"mutual recognition of the calibration services of NMIs." It was agreed that this is the best means of achieving objective credibility and international acceptance of the services provided by member laboratories.

The BIPM global MRA in measurement standards is to be finalized by October 1999. The second meeting of the Joint Committee of Regional Bodies (JCRB), including APMP, was held in Paris in February 1999 to re-consider the document. APMP Representatives from nine of the 25 APMP member economies have indicated their intention to sign on to the MRA. It is understood that accommodation is to be made by the CIPM to enable economies that are not Signatories to the Metro Treaty to participate in some way. This will facilitate the possibility of signatory status for many of the remaining 16 APMP member economies.

Through its representation and presentations at a number of international and regional fora during 1998-99, APMP has reinforced its close ties with other infrastructure bodies and helped enhanced awareness of the activities in the region. These fora included meetings of EUROMET, the APEC Subcommittee on Standards and Conformance (SCSC) and PASC and international conferences in Malaysia, the Philippines, Germany, Australia and Japan, at which keynote lectures were presented by the APMP Chairman. Representatives from the BIPM, EUROMET, SIM, APLAC, APLMF, PASC and the APEC SCSC attended the 14th APMP General Assembly.

The APMP and APLAC Secretariats again jointly shared a booth at the 1999 NCSL Conference and Exhibition. The APMP Secretariat has also developed a special session on technical infrastructure development in the Asia-Pacific in which representatives from the APEC SCSC and the five Specialist Regional Bodies participated.

**Glossary**

PASC: Pacific Area Standards Congress.

APLAC: Asia Pacific Laboratory Accreditation Cooperation.

APLMF: Asia-Pacific Legal Metrology Forum.

**NAPT**

Gaylord DeGroot, Liaison Delegate

Since this is my first report as liaison to NCSL, please allow me introduce myself. My name is Gaylord DeGroot, Quality Assurance Manager for MTS Systems Corporation in Minneapolis, Minnesota. I have been involved with NAPT as a participant since its beginning, and more recently as a member of the Board. I have over 30 years experience in calibration which qualifies me for nothing except to sort facts from fiction and continue challenging everything in this fast changing business. My immediate plans in this capacity are to:

- Communicate factual data from NAPT;
- Share with you, the members of NCSL, significant accomplishments from NAPT participants;
- Keep you posted on available testing opportunities with sign up instructions;
- Solicit M&TE manufacturers for additional testing artifacts;
- Assist any laboratory which desires to better understand a measurement process;
- If laboratory accreditation is your end result, help you identify specific tests that will add value in your quest for understanding your process capability.

Presently 60 participants are actively involved with NAPT in proficiency testing. This involves 10 artifacts including: Gage Blocks, Torque Wrench, Digital Multimeter, Load Cell, Thread Plug gage, Resistors, Pressure Transducers, Micrometer, Thermistor, and Glass Thermometer. A Torque Sensor will be added to the available list this month. Sign up instructions are available on our web site: <www.proficiency.org>

Artifacts needed are dimensional instruments such as micrometers, calipers and gage blocks. We are in need of a pivot lab for an inductor proficiency test. If you are a supplier of devices like these or have equipment you would like to donate or borrow, please contact us. The more devices available the more tests can be initiated.

**SIM**

Sharrill Dittmann, Liaison Delegate

The President of the Inter-American Metrology System (SIM), Mauricio Frota, has stepped down following changes in leadership for INMETRO, the national metrology institute of Brazil. The new President has not yet been named. We wish every success to Mr. Frota in his new endeavors.

SIM has requested funding for $490,000 from the Organization of American States for 2000.

**International Metrology Arrangement**

Preliminary agreement was reached among representatives of regional metrology organizations to sign an international metrology arrangement (the CIPM MRA) which will lead to establishment of known relationships between and among national metrology institutes around the world. The document will be presented for signature in October 1999. Implementation of this arrangement will facilitate international trade where issues of trans-national traceability are concerned.

**NORAMET**

Sharrill Dittmann, Liaison Delegate

Delegates to the North American Metrology Cooperation, NORAMET, met in Charlotte in conjunction with the Workshop and Symposium. NORAMET delegates represent CENAM/Mexico, NRC/Canada, and NIST/US. Guests from EUROMET, APMP, SURAMET, and EA also attended. During the meeting, it was agreed that member institutes will sign a Memorandum of Arrangement which closely parallels the international memorandum of arrangement. The first areas to be documented are expected to be mass and length. The goal of both the NORAMET and CIPM arrangements is for all participants to have known offsets and uncertainties with respect to key reference values toward the mutual recognition of calibration certificates.
NACC

*Graham Cameron, Liaison Delegate*

The North American Calibration Cooperation, NACC, also held its meeting in Charlotte. NACC representatives are from NIST and NVLAP (US), NRC and SCC (Canada), and CENAM and EMA (Mexico) and deal with calibration laboratory accreditation issues. Guests from A2LA and EA also attended. Delegates discussed the transition from ISO Guide 25 to ISO 17025 and proficiency testing. It was reported that ILAC, the International Laboratory Accreditation Cooperation, will write a handbook for the interpretation of ISO 17025 which should be ready in early spring, 2000.

**Glossary**

EUROMET: European Metrology Cooperation  
APMP: Asia Pacific Metrology Programme  
SURAMET: Southern South American Metrology Cooperation  
EA: European Cooperation for Accreditation  
CIPM: International Committee on Weights and Measures

CORM

*John Wehrmeyer, Liaison Delegate*

**Announcements**

Call for participation in the Fourth Oxford Conference  
Late June–Early July 2002  
Contact Art Springsteen <art_spring@labsphere.com> or Will Weber <wweber@gretagmacbeth.com>

CORM 2000 Conference

The CORM 2000 conference will be in Rochester, NY from May 8–10, 2000. The theme is "Optical Radiation Accreditation and Standards." Contact the co-chairs Ann Laidlaw (Shelby) at <ann@shelby.com> or Phil Wychorski (Kodak) at <pfw86344@kodak.com> for additional information.

CORM Annual Conference Held

The Council for Optical Radiation Measurements (CORM) held its annual Conference and Business Meeting at the Hilton Hotel in Gaithersburg, Maryland from May 3–6, 1999. CORM 99 featured five technical sessions on "Measurements and Characterization of Signaling and Illumination Devices in Transportation." The titles of the five sessions were:

- Session I — Photometry of Lights and Signals
- Session II — Measurement and Characterization of LED's
- Session III — Retroreflectors and Work Zone Materials
- Session IV — Optical Metrology of Displays
- Session V — Measurement of Special Function Lighting

This year's conference was attended by 103 individuals with a strong presence from the aircraft and transportation industries. NIST was well represented by the Physics and Electronics, and Electrical Engineering Laboratories.

CORM Committee Meetings Convened

On Monday, May 3, 1999 several CORM subcommittees and one CIE committee held meetings at the Hilton Hotel. The committees holding meetings were as follows:

- CORM CR-3 Photometry
- CORM CR-4 Flux Integrating Devices
- CORM CR-5 Flat Panel Displays
- CIE TC 2-45 Measurement of LED's

CORM Committee reports will be issued by each committee chairman and posted on the CORM web site <www.corm.org>. CR-4's report is just now being posted with other reports to follow in the next few weeks.

Highlights from the CORM Annual Business Meeting

At the annual Business Meeting it was announced that David King from Boeing was re-elected a CORM Director. Ellen Carter from Minolta and Kathleen Muray from Inphora were elected new CORM Directors.

CORM Subcommittee CR-5 on Flat Panel Displays Seeks Members

The newly formed CORM Subcommittee CR-5 on Flat Panel Displays is in need of committed interested parties to address pressing problems in the area of flat panel display optical radiation measurements. Dr. Steven Brown from the Optical Technology Division of NIST has recently assumed the role of Chairman of the CR-5 Subcommittee. If you are interested in participating in this work, please contact Dr. Brown at his following address:

Steven W. Brown  
NIST Optical Technology Division  
Tel: (301) 975-5167  
<awbrown@nist.gov>

**EUROPEAN COOPERATION FOR ACCREDITATION (EA)**

*Graham Cameron, Liaison Delegate*

Dr. Bob Kaars, the EA Liaison Delegate to NC S L, attended the EA and EUROMET booth during NC S L 1999. During the conference, he presented a paper on EA and its role with respect to the European Union.

EA held the third meeting of its General Assembly in Venice, Italy on June 2 and 3, 1999. Jim Cigler of the National Voluntary Laboratory Accreditation Program attended and presented a progress report on behalf of the North American Calibration Cooperation Committee. Peter Unger of the American Association for Laboratory Accreditation (A2LA) also attended. Some 67 persons were present.

During the meeting, EA signed a Memorandum of Understanding with the European Commission, making clear their
cooperation with respect to accreditation criteria in the mandatory area (Notified Bodies), trade agreements and development aid to third countries.

Chair Ettrup informed participants concerning the need to have one designated "member accreditation body" for each country. Most European countries have one such body, however Belgium and Italy have three and Germany has more than 10. The principle to be followed is that influence should be equally shared between the participating countries.

A meeting between the APLAC and the EA MLA committees had resulted in an agreement not to proceed with plans for a bilateral agreement between the two organizations but in stead to go for the ILAC MLA, assuming that this does not create any delay in coming to an agreement by the end of the year.

A working group consisting of EA, APLAC and ILAC representatives has been formed to study the "length and depth" of evaluations with findings to be circulated to EA law assessors for comments. The findings will subsequently be circulated to EA members (and also to IAF and ILAC and other parties concerned) for consideration.

It was noted that in some countries the accreditation of Proficiency Testing (PT) providers has begun. Since there are different opinions as to whether the accreditation of PT providers is the best approach, it was agreed that EA needs to establish a policy on this matter. If EA decides that accreditation is the best solution, it will probably need to extend its MLA to include this activity.

It was proposed that the EA expert group on uncertainty in measurement be disbanded, since its assignment has been finalized. The suggestion was made that a permanent expert group be established to deal with uncertainty in the whole field, both calibration and testing. Consultation with APLAC and ILAC was foreseen.

The Generic Guidelines Committee indicated that it would be active in ILAC concerning the topic Introduction of ISO/IEC 17025. The Generic Guidelines Committee chair encouraged persons with knowledge of this field to contribute to EA Guidance to ISO/IEC 17025.

New membership criteria, which were already agreed upon, were implemented, so that now 5 countries from Central Europe are full members (Latvia, Lithuania, Czech Republic, Slovak Republic and Hungary). More countries may be admitted later this year and thereafter.

Mr. Daniel Pierre of COFRAC, France was elected as EA Chair, effective 2000-01-01.

Future General Assemblies

Athens, Greece: 1999-11-24/25
Paris: in the 2000-06-5/9 time period
Slovenia: during a week in November 2000
Sweden: Spring 2001

MSC
Chet Crane, Liaison Delegate

The 1999 Measurement Science Conference was successfully held at the Disneyland conference center in Anaheim, California this past January. The 2000 MSC will also be held there. The additions and upgrading of the facility will be complete so there will be no confusion finding sessions.

The dates for the next Conference are January 20 and 21 1999, with NIST Seminars and the Tutorials on the three days prior to the Conference.

The Conference Committee Chairpersons are:

Speakers: Nidal Kerliya Teledyne Electronic Technologies
Chairman: Allan Ho Boeing Space Systems
NIST Liaison: Mike Magin Sr. Cal. Edation
Publications: Jeff Smith TRIAD Solutions
Publicity: John Schult Satech Systems Corp.
Registration: John Bowman Pilkko Corporation
Conference Evaluation: Mark Karthe Teledyne Electronic Technologies
Arrangements: Christopher George Consultass Naval Warfare Assessment Station
Programs: Mark Kaulfuss Teledyne Electronic Technologies
Finance: Doug Sugg Naval Warfare Assessment Station
Scholarship and Education: Rick Corette Teledyne Electronic Technologies
Tutorial Workshops: Dave Lorentzen Boeing Space Systems
Registration On-chair: Thomas Neal Test and Measurement Specialties
Awards: Kevin Rudd Boeing Space Systems
Exhibits: Mark Samman (Global Net Solutions
Guest Program: Paulea Thames Consulting
Secretary: Kevin Wilson Boeing Space Systems
Drum Prices: Jim Smith Boeing Space Systems
Exhibits Co-chair: Rob Tuchemiki GIDEF
Sponsor Liaison: Kendra Jackson GIDEF
Logistics: Ray Wade Red, Inc.

On behalf of the Y2K Committee you are invited to attend the Conference and to bring your family for a vacation in warm Southern California and a discounted ticket to Disneyland. For answers to your questions regarding the Conference please contact any of the listed chairpersons. For Committee meeting space at the conference center during the conference week please contact this writer.

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IEEE I & M SOCIETY
David W. Braudaway, Liaison Delegate

The IEEE IMTC Conference was held in Venice, Italy May 24-26 after tutorials on the 23 and workshops held elsewhere the end of the previous week. Attendance for IMTC continues to increase slowly with 380 attending in Venice. Four tracks were presented with additional poster sessions in parallel. Not including the tutorials, the Conference Proceedings are 1937 pages long. This year, the Proceedings were also supplied on CD although several IEEE requirements dictate continued paper publication. Curiously, the University Professors, who make up about 60% of attendees, have strong preference for the paper form of the Proceedings. There is hope this will change in the future.

The Administrative Committee of the IEEE I&M Society met following the conference.

Keynote Speaker for IMTC/99 was Dr. Heber of NIST who is leaving to accept a post in academia. A meeting of the International Measurement Systems Modernization Project was held on the 27th of May and many papers at the conference covered aspects of this effort.
IMTC 2000 will be held in Baltimore, Md, May 1-4. The 2001 conference is scheduled for Budapest, Hungary. In 2002, the scheduled meeting location is Anchorage, Alaska, and the 2003 conference is scheduled for Vail, Colorado.

A reciprocity e-mail “Call for Papers for IMTC” is being furnished to the NCSL Newsletter; while a copy of the NCSL “Call for NCSL 2000” is being sent to the I&M Magazine. In discussion, I have argued that, rather than using a full page, condensing the announcement to a portion of a column is appropriate.

2000 IEEE INSTRUMENTATION AND MEASUREMENT TECHNOLOGY CONFERENCE

Baltimore Hilton and Towers, Baltimore, Maryland, USA
May 1-4, 2000
“Smart Connectivity: Integrating Measurement and Control”

The conference scope will include, but is not limited to, theory, implementation, and application of:
- A/D, D/A, and Data Acquisition
- Analog and Digital Signal Processing
- Automated Test & Measurement
- Distributed Measurement and Control Systems
- Fault Tolerance and Diagnosis
- Emerging Technologies
- Networking Calibration
- Integrated and Intelligent
- Neural and Fuzzy Technologies Systems
- Self Test and Built-in Test
- Sensors and Transducers
- Sensor Interface and Networking
- System Identification and Control
- Virtual Systems
- Waveform Measurement & Analysis
- Wireless Sensors

For further information, contact Robert Myers, the IMTC/2000 Conference Coordinator, or visit the IMTC/2000 web site <http://www.ewh.ieee.org/r2/baltimore/Conferences/IMSociety/IMTC2000.html>

A2LA
Ramona J. Saar, Liaison Delegate

Status of A2LA Programs

As of June 29, 1999, A2LA has accredited 57 calibration laboratories and 1236 testing laboratories. Additionally, 197 testing laboratories and 93 calibration laboratories are currently seeking accreditation.

A2LA Issues Press Release to Automotive Industry

Following is the June 6, 1999 Press Release A2LA has issued to the Automotive Industry. Calibration laboratories seeking to meet Clause 4.11.2.b.1 of QS 9000:1998, Third Edition by seeking accreditation with A2LA should apply by December 31, 1999 to allow sufficient time for the completion of the accreditation process by the QS 9000 deadline of January 1, 2001. Calibration laboratories currently account for one third of all new applicants to A2LA (93 out of 290).

Status of the A2LA-EA MLA Bilateral Agreement

On June 1, 1999, the European Cooperation for Accreditation (EA) General Assembly voted 9 for and 10 against acceptance of a bilateral agreement with A2LA. The only stated objection was the fact that A2LA operates as both a laboratory accreditation body and as an RAB-accredited quality system registrar.

The minutes of the June EA General Assembly in Venice state the following:

Decision on bilateral agreements:

The technical evaluation of A2LA shows that they are technically (sic) competent to carry out accreditation of calibration and testing laboratories. However, the fact that A2LA performs accredited ISO 9000 certification of its accredited laboratories was the basis of a lengthy discussion. The EA policy not to work on two levels has no concrete foundation in the standards/guides.

It was decided to postpone the decision six months and use the time to consider the EA policy and if that policy needs to be changed, or possibly to discuss the issue with A2LA and persuade them to accept the European view and stop the certification activities.

The A2LA Board of Directors must now make a decision as to how to proceed from here. A2LA is committed to achieving the goal of the A2LA-EA MLA bilateral agreement as soon as possible. Once an acceptable plan can be submitted to EA to resolve the concerns, it is hoped the decision to accept A2LA will be voted on again by mail ballot of the members of the General Assembly immediately.

ISA
Michael Suraci, Liaison Delegate

I have maintained contact with ISA over this past period.

I am not aware of any further activity at this time with regards to the upcoming Temperature Symposium. I believe Klaus has talked with Larry Rubin, who is active in the development of the Symposium.

I also have agreed to serve on the ISA RP52-1 committee with David Braudaway. This standard covers environmental requirements of Calibration Laboratories. I believe there is some effort to make it available electronically.

* * * * * * *

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A2LA PRESS RELEASE

Important Notice for Calibration Laboratories Serving the Automotive Industry

Issue Date: 06/08/99

Is your company a commercial or independent calibration facility providing calibration support to the automotive industry? If so, you have most likely heard about the new requirement in Clause 4.11.2.b.1 of QS-9000:1998 Third Edition, that states "Commercial/independent calibration facilities shall be accredited to ISO/IEC Guide 25 or national equivalent or have evidence, e.g. assessment by an OEM customer or an OEM customer-approved second party, that they meet the intent of ISO/IEC Guide 25 or national equivalent."

The International Automotive Sector Group (IASG), included the following related information item on their January 22, 1999 posting at the ASQ web site (www.asq.org/standcert/qc-9000/sancl.html): "Due to a current lack of suppliers of accredited calibration services for calibration laboratories, compliance with QS-9000:1998 Third Edition laboratory requirements, 4.11.2.b.1. may be satisfied if the supplier has a documented plan to assure that, effective January 1, 2001, the supplier is fully in compliance with the QS-9000:1998 Third Edition. in other words, calibration laboratories that intend to meet the clause by seeking accreditation must achieve accreditation by January 1, 2001.

A large number of calibration services are expected to seek compliance with the requirements stated above by applying for laboratory accreditation through A2LA. In anticipation of another spike in calibration applications, A2LA has hired additional staff and is currently training a number of new calibration assessors. It should be noted, however, that the average time for a well-prepared laboratory to achieve accreditation is seven (7) months. Due to the need to develop measurement uncertainty budgets and undergo artifact measurement audits, calibration laboratories can take longer to achieve accreditation. As such, A2LA is making the following announcement:

Calibration laboratories that intend to meet cls. 4.11.2.b.1. by obtaining A2LA accreditation to ISO/IEC Guide 25 by January 1, 2001 must submit a complete application by no later than December 31, 1999.

Incomplete applications or applications received after December 31, 1999 will continue to be processed in order of receipt. However, A2LA cannot ensure that late or incomplete applicants will be able to complete the accreditation process by the January 1, 2001 deadline noted in the IASG interpretations. Regardless of the date of application, any laboratory that is unable to demonstrate full compliance with the A2LA accreditation requirements will not achieve accreditation until all non-conformities are fully corrected.

If you have any questions related to this topic or wish to obtain an application package, please contact: Ramona J. Saar, A2LA, 301 644 3201

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AMMAM

Dr. Salvador Echeverria, Liaison Delegate

As NCST-Mexican Association of Metrology Liaison Delegate, I want to inform the Board that I have been participating in some of the Metrology meetings in Mexico. In all of these meetings I have mentioned the NCST activities last year I sponsored the membership of AMMAC in NCST.

During the beginning of this year the Mexican Metrology Community has been dealing with the changes of the national system of laboratory accreditation. In January, the Emisiad Mexicana de Acreditacion (Mexican Accreditation Entity) began to take the responsibility of the Testing and Metrology Laboratories Accreditation. The last National Calibration System (SNC) is discontinued.

These changes maintain the attention of the laboratories to adapt to the new regulations.

Since 1998 the National Calibration System (SNC) has had approximately 70 accredited laboratories with almost 160 metrological areas (at this time I do not have the exact number).

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GIDEIP METROLOGY

Jim Carlton, Liaison Delegate

Thu Ngo Joins the GIDEIP Operations Center Staff

Thu Ngo recently joined GIDEIP to work in the GIDEIP Metrology Data area. She graduated with a BS degree in EE from Cal State University at Los Angeles, California in June 1988, and began her career working as a metrologist in the Metrology Engineering Center at NWAS in December 1988. She was the project manager for various air weapons and platform systems such as HARM, AMRAAM, B-2C, and Common Support Equipment.

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GIDEIP Database Enhancement for Metrologists

The GIDEIP database now provides you, the metrologist, with the ability to easily find other GIDEIP data of interest to and having impact upon metrology! Following is an example:

Query:
COMPUTER ENTRY DATE = 05/01/1998
AND DOCUMENT DESIGNATOR = TR, SA, PC, PA, FA, DS, AN, AND AL
GIDEP Metrology Meeting at Fluke Corporation Service Center, Fluke Park, Everett, WA

Glenn Moore, Fluke GIDEP Representative, and Dave Haug, Fluke Customer Support Services Marketing Manager, hosted a meeting on July 30, 1999, at Fluke Corporation Service Center, Fluke Park, Everett, WA. This meeting was arranged in conjunction with the GIDEP Management Team meeting the same week at the SEA-TAC DoubleTree Hotel.

Dave Haug welcomed attendees and gave a brief Fluke Corporation overview. David Denver, Fluke Corporate Metrology Manager, presented and discussed Fluke's Accreditation Experiences. Matt Nicholas, Fluke Staff Software Engineer, presented Fluke's new software for automating Measurement Uncertainty Requirements and implementing ISO 17025 Measurement Uncertainty Requirements. Larry Nelson, DYNCORP, GIDEP Support Contractor, and Jim Carlton, GIDEP Metrology Data Manager, presented and discussed the GIDEP Metrology Data CDs.

Windows 98 Compatible GIDEP Metrology Data CD Ready for Release

By the time this NCSL newsletter reaches your desk, the new GIDEP Metrology Data CD will be in distribution. In addition to Windows 98 compatibility, this CD has many new features: documents are in much easier-to-use .pdf files, the search engine includes a link to the GIDEP Internet Database, and a document utilization tracking file is automatically created as documents are selected from the CD.

CANADIAN EDUCATION AND TRAINING
Graham Cameron, Liaison Delegate

NCSL awards were presented on June 17th to three students at Sir Sandford Fleming College, Centre for Applied Computing and Engineering Sciences, Peterborough, Ontario.

Eugene Laskowski and Austin Sherwin completed their Measurement Science course in August of last year and will continue into their third year. Michael Greenough will enter his second year. All three are top performers in the course and are at least above average in the rest of their courses.

Professor Noel Briones made the presentations on behalf of NCSL, since I was away on travel. A copy of the program has been provided to Mike for circulation to other related Education and Training committees, to allow them to be aware of the other organizations that made awards to Fleming students.

A note of thanks was received from the Academic Team Leader, Ron Walker, for NCSL's support to the Measurement Science course.

While at the Mexican National Metrology Institute (CENAM) for North American Calibration (NACC) and North American Metrology Cooperation (NORAMET) meetings in April, we learned of the new MESURA NETWORK. Its general objective is: To offer, by means of an integral metrological service, a solid and effective support for competitiveness of the productive plant of the country and for any entity that requires a reliable base to warrant the validity of measurements.

There are many interesting features to this program, which Fleming College is currently reviewing and discussing. I have additional information from my colleagues at CENAM and was pleased to see so many participants in the course.

Fleming is exploring plans for a new course in the Manufacturing and Mechanical field and was quite impressed with the multi-tier, user-friendly approach to the treatment of measurement uncertainties by MESURA.

As reported previously, education in Ontario is undergoing many changes. There is great interest in partnerships, the establishment of a project to work on real-life industry problems and remote learning delivery.

I hope to find more time to devote to establishing the most effective way NCSL can contribute to this effort.

In light of NCSL's financial situation, I would like to discuss how best to use or return some of the funding allocated to Fleming.

With the donated time and talent of a Standards Council of Canada colleague, we now have a series of digitized pictures of Fleming students engaged in measurement-intensive activities. I can readily share these with others. They can form part of an audio-visual campaign to illustrate metrology to high school students, the place I believe we need to start to mold attitudes toward careers in measurement.
REPORTS FROM THE REGIONS

The next Region 1 meeting is scheduled for Tuesday, October 26th. BASF Biosearch in Worcester, MA will host the meeting. We are planning to have four presentations addressing temperature, temperature stability and accuracy, and the upcoming need for electronic signatures.

I would like to begin e-mailing invitations because using standard mail is a lot of work for me. I would like to ask all Region 1 members to e-mail me your e-mail address. I can be reached at <Steve.Griffin@fluke.com>.

I hope to see all of you on the 26th.

Steve Griffin
Region 1 Coordinator

April 29, 1999
Springfield Hilton
Springfield, VA
Marlin Johnson
Baltimore/Washington
Section Coordinator

The Spring 1999 meeting of Baltimore/Washington Section of Region 3 was held at the Springfield Hilton, Springfield, VA on April 29, 1999. Thanks to Steve Smigay, Unified Industries, Inc., for arranging the meeting accommodations and Unified Industries and Wavetek for providing the refreshments.

The first speaker was Ed Nemeroff, VP—International Division for NCSL. He presented an excellent slide show outlining the history, operation and logistics of NCSL. He discussed the strategic vision, membership, publications, web site, committees and initiatives NCSL has undertaken.

Ed informed us that NCSL has more than 1500 member organizations in 51 countries. He also noted that the USA needs to get its act together in order to avoid trade barriers due to the lack of mutual recognition agreements with other governments and accrediting organizations. Ed also gave a presentation of the Egyptian Cubit.

The second speaker was Randy Fowler, Wavetek Corporation, who gave a presentation, "DC Voltage Maintenance System, A New Approach." Starting from the importance of DC voltage, he proceeded to the history of DC reference standards and to NIST Technical Note 1239 (Solid-State Voltage Standards Performance and Design Guidelines). Randy highlighted several key points of the Tech Note, with emphasis on the need for the use of multiple standards or a standard with multiple references. He discussed a new patented Zener diode conditioning technique that enables Zeners to recover their reference value from unforeseen events. He also described a transfer system for reference intercomparison.

Curt Kiser, Navy Mid-Atlantic Regional Calibration Center, offered a presentation on the "Black Art of DC Voltage Standard Calibration." Curt began with a history of early voltage sources and described some of the recent methods of voltage maintenance. He described the transition from chemical to solid-state references and how the Navy is using the Josephson Junction to maintain the volt. He described some of the problems the Navy has in transferring the volt to its calibration laboratories throughout the world. Curt concluded by describing what he sees for the future in both Zener and Josephson Junction systems.

The last speaker before lunch was Larry Warner, Fluke Corporation, who gave a presentation on "Guardbanding and its Effect on ISO Standard 17025." Larry discussed the methods of guardbanding and their impact on ISO Standard 17025. He also discussed some of the changes between ISO Guide 25 / ANSI/NCSL Z540-1 and the new standard. Ed Nemeroff also filled us in on some very recent changes to the new standard.

After lunch Kevin Abercrombie, Naval Air Warfare Center, Aircraft Division, presented a slide show on "Choosing a Quality System, A Comparison of ISO 9000 and ANSI Z540." Kevin gave an outline of why many people feel that they don't need a quality system and also the reasons for a quality system. He described the benefits of a quality system and the differences between ANSI Z540 and ISO 9000. Some of the differences are: Z540 is specifically written for calibration and testing laboratories, requires proof of proficiency in each measurement discipline and results in certification. ISO 9000 is more general, applies to both manufacturing and service providers, relies on continuous improvement and results in registration. Kevin provided a cost estimate for a small lab which showed that Z540 would cost considerably more over a three year period.

The final speaker of the day was Steve Smigay, Unified Industries, who discussed measurement traceability and how it was accomplished by his company.

After the presentations ended Steve Smigay and Ed Scutt, Unified Industries, led a motorcade to their facility and provided a very interesting tour of their calibration laboratory.

ATTENDEES

Kevin Abercrombie
Cliff Anthowe
Rob Anglin
Chuck Austin
Joseph Bowers, III
Troy Bowling, Jr.
Herman Douthit
James Furman
Deirdre Fisher
Randy Fowler
Tracy Harper
E. Ainslie Hoffman
Larry Hunt
Marlin Johnson
Curtis Kiser
Jim Meek
Gino Mafuta
Roger Malleury
Juan Moore
Charles Moreno
Ed Nemeroff
Charles Robinson

NAWCAP
Doris Instrumentation Mfg. Co.
Eastern Instrumentation
Dept. of Navy
Virginia Power Company
White Oak Semiconductor
Unity
Dept. of Navy
Eastern Instrumentation
Wavetek, Inc.
Baltimore Gas & Electric Co.
Virginia Power Company
NSWC
Johns Hopkins University
Navy MD-Atlantic Regional Cal. Center
Unity
Eastern Instrumentation
Creative Marketing Assoc.
Wavetek, Inc.
C. A. Morek & Associates
Wavetek, Inc.
Naval Weapons Station, Yorktown
The NCSL Region 6 South Section summer meeting was held on August 5, 1999 at the GE Industrial Systems Service Center at the Kelly Air Force Base, San Antonio, Texas. The meeting was hosted by Johnnie Winters, GE Industrial Systems Area Operations Manager, and was conducted by Keith Scoggins, NCSL South Section Coordinator and Metrology Laboratory Supervisor at the South Texas Project Nuclear Operating Company.

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

Jim Patterson, NCSL VP - Western Division and Calibration Laboratory Manager at the Southwest Research Institute, gave a report on the Board of Directors Meeting. Jim also discussed the ongoing progress of laboratory accreditation; a subject that generated numerous comments and questions.

The first presentation of the morning was from Keith McClintock, GE Industrial Systems Quality Manager. Keith provided attendees with an overview of the GE Corporate Quality Program and detailed how the program is implemented at the Kelly Air Force laboratory. According to Keith, their major challenge is operating the laboratory under two quality programs, one for the Air Force and one for commercial customers.

From meetings, attendees have expressed a desire to learn more about laboratory accreditation. The second speaker of the morning was Thom Adams, American Association for Laboratory Accreditation (A2LA) Senior Laboratory Service Officer, Calibration. Thom addressed several laboratory accreditation issues: accreditation vs. certification, the accreditation process, the requirements of accreditation, audits, and on-site assessments.

Lunch was provided by our host: GE Industrial Systems.

The next speaker was Steve Peluffo, from Gas Tech Inc. Steve gave an enlightening presentation on gas detection sensor technology, regulatory requirements for gas detection, and why companies must be concerned with gas detection. Steve acquainted the group with the different types of sensors used in gas detection and the advantages and drawbacks of each.

Keith Scoggins, the south section coordinator, gave a presentation on the United States National Measurement Requirements Committee (US-NMRC). The US-NMRC develops a report every two years to assess US government and industry future national measurement requirements. Attendees were encouraged to complete the survey on the NCSL web page.

The meeting concluded with a general discussion on where laboratories may find metrology technicians in the future. With the closing of the military metrology schools, finding qualified metrology technicians could become a serious problem for laboratory managers.
A tour of the GE Industrial Systems calibration facilities was provided to attendees wishing to see their operation.

ATTENDEES

- Keith Scoggins
- Tim Pangrazio
- Tim Noglen
- Tim McGurr
- J. Porter Winters
- Ken McGinnick
- Thom Adams
- Dave Upson
- Skip King
- Bill Gibbons
- Ron Smith
- Kevin Jackson
- Glen Watson
- Geoff Payne
- Sam Container
- Dave Sanders
- Matthew Walker
- Paul Brown
- John Wulsley
- Tony Dwyer
- Selina Vignella
- Richard Guers
- Darrell McGio
- Mark Wood
- Gary Ferrar
- Mike Rojas
- Bill Kemp
- Steve Peluffo
- Mike Gunvalson
- Richard Sennettman
- L. J. Morgan
- Rob Tintinger
- Bill Schneider
- Ken Johnson
- Robert Felicia
- Jennifer Pain
- STPNOC
- GE Industrial Systems
- GE Industrial Systems
- A2LA
- EMA
- Menlo-Corp.
- Du Pont
- Du Pont
- Du Pont
- Outlinescope Services
- Bureau
- Teltech
- Teltech
- CDR
- Forntics, Plasric
- Forntics, Plasric
- Southwestern Res. Bas,.
- Ferran Group
- DMA
- Gas Tech
- Gas Tech
- N.I.
- Rithcs
- TESCO
- TESCO
- Acsduts
- GE Industrial Systems
- AEDV
- Lockhead Martin
- Sunny

Thom Adams from A2LA describing calibration laboratory accreditation.

* * * * * * * *

May 13, 1999
California Edison
Westminster, CA
Miguel Cerezo
Los Angeles
Section Coordinator

New ISO17025 Metrology Standard.
Will ANSI Z540 be Phased Out?

The Los Angeles Section of NCSL Region 8 met on May 13, 1999 at the Southern California Edison facility in Westminster, California. The day began with a continental breakfast. Dori Abbott, of Amgen, welcomed attendees, Section Coordinator, Miguel Cerezo, then facilitated an introduction review of the topics for the day. Thirty-four individuals representing twenty-four organizations attended.

The opening session was a technical presentation by Bill Spath, Wavetek. Bill covered several topics relating to “A New Method of Maintaining the Unit of DC Voltage.” A lively questions-and-answers session followed his presentation, which resulted in a hot debate related to solid state voltage cells and other topics.

Bill Spath was scheduled to be followed by Chuck Ellis of NAPT. Due to unforeseen circumstances, Chuck was unable to attend the meeting. Perhaps we’ll be able to reschedule Chuck for a later date. At this point, Rob Crowe, of Beamex and former NCSL Region 4 Coordinator, volunteered to make a presentation on the various considerations that should go into selecting a calibration control/recall software package. This informative and very professional presentation was again followed up by a lively Q and A session. Thanks to Rob for stepping up to the plate at the last minute.

Brian Conroy, Litton Guidance and Control, lead a discussion on the upcoming ISO 17025 document and its impact on the metrology community. Brian’s interactive and refreshing style made the session both informative and entertaining.

Attendees enjoyed a wonderful Pagnese Chicken and Pasta buffet style luncheon. After the luncheon, they broke up into two groups and toured the SCE calibration laboratories. Charlie Marona led one group while Jennifer Smith led the other.

Planning for the autumn session was completed following the tours, and the meeting was adjourned.

This meeting had a 100% increase in attendance compared to our last meeting and special thanks should go out to the
Twelve eight people were in attendance at the April 22, 1999, Region 11, Chicago Section Meeting. Siemens Building Technologies provided excellent facilities, refreshments and lunch.

Tom Walrich opened the meeting with introductions and presented the days agenda. Jeff Waters, session host, also welcomed everyone to the meeting at the Siemens Building Technologies facility.

Tom requested that everyone complete and send back the Chicago Section survey. The survey was sent out with the spring Chicago Section meeting announcement. Attendees were also requested to participate in a Chicago Section Steering Committee being formed to enhance section activities.

Our first speaker was Kirk Moschet of Rusk Instruments. Kirk discussed primary pressure standards.

The second speaker was Simon Johnson of Druck. Simon gave a presentation on secondary pressure standards.

The third speaker was Tim Stark of Wavetek. Tim gave a presentation on a new approach to DC voltage maintenance.

The final speaker was Jeff Waters of Siemens Building Technologies. Jeff discussed GMP compliant validation of HVAC systems and the importance of quality calibration in that process.

Door prizes were then raffled off. Thanks go to Base Eight, Wavetek, and Siemens for their generosity in providing the door prizes.

The day ended with a tour of the Siemens Building Technology Calibration facility.

I would like to thank everyone who attended the meeting for their interest and participation. Special thanks to Jeff Waters and Siemens Building Technologies for all the effort and outstanding hospitality.

ATTENDEES

Tim Stark
Greg Norris
Walter Herold Jr.
Kenneth Cox
Dave Walters
Mark Keypun
Michael Thomassen
Ken Kim
Gino Hadlund
Michael Huc
Dennis Kilner
Charlie Hebbek
Dan Higginbotham
Mike Eastall
Tyler Giles
John Cunningham
Walter Koope
Mark Jones
Wayne Jones
Lee Basford
Bob Ziemann
Bob Laytens
Wavetek
USX Gary Works
USX Gary Works
Abbott Labs
Abbott Labs
Abbott Labs
SBC Instruments
Siemens Building Tech
Siemens Building Tech
Siemens Building Tech
Calibration Consultants
Cobe Pump
Cobe Pump
Cobe Pump
Cobe Pump

REPORTS FROM THE REGIONS

INDIA REPORT

Report from Mumbai Area
Dr. (Mrs) P. Bhama Iyer
Mumbai Area Coordinator

IDEMI Organizes Two-day National Seminar

Institute for Design of Electrical Measuring Instrument (IDEMI), Mumbai-22, an NCSL member, in association with Fluid Control Research Institute, Palghat, organized a two-day National Seminar on Flow Metering, Computation and Automation on 3rd and 4th of June 1999, at Multipurpose Hall, Bhabha Atomic Research Centre (BARC), Mumbai.

The Seminar was inaugurated by Dr. D.N. Patkar, Director, Western Regional Instrumentation Center, Mumbai. Dr. K. Ramani, Principal Director of IDEMI, welcomed the Chief Guest and delegates of the Seminar, Mr. M.S. Konur, Director, FCRI, Palghat, in his speech, stressed the importance and scope of the seminar. In his speech, Chief Guest Dr. D.N. Patkar brought out the application of fiber optic technology for flow measurement.

The seminar covered topics such as Differential Pressure Meters and Installation Effects, Primary Standards for Flow Metering, and Quality Accreditation, Mass Flow Meters, Linear Flow Meters and Flow Handling Systems in five different sessions. The seminar was attended by about eighty professionals that included participants from pharmaceutical, petro-chemical, fertilizers and process industries, govt. bodies dealing with flow measurements and utilities, consultants and guest faculties from organizing institutes, industries and educational institutes.

The seminar generated awareness about the latest developments in flow measurement among the participants and various problems faced by them were discussed. The organizing Institutes benefited from these discussions as these institutes can now plan the facilities to be developed at the premises as per the requirements of the industry.

For further information about the seminar proceedings, kindly contact Mr. S.G. Khaladkar, Jr. Director IDEMI, Chnnabhatti, Mumbai 400 022. Fax No. 022 522 9016.

Speakers at the Flow-Measuring Seminar respond to audience questioning at a meeting forum.
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