This year marks the 35th Anniversary of the NCSL. At this milestone in the distinguished history of our organization it is time to reflect on our achievements and to establish our goals for the future. There has been a steady stream of new products produced over the last few years, and many more are in process. Since our 25th Anniversary we have doubled the number of RPs and published two RISP's. These documents provide invaluable assistance to our membership and are recognized worldwide as one of the finest resources of laboratory practice.

At last year's Annual Conference, the top issue of the Vision 2000 Project, as voted by the attendees, was the development and publication of recommended practices and calibration procedures. In 1994, we published jointly with ANSI the standard ANSI/NCSLZ540-1, which perhaps is our most significant achievement so far. This single document has in its short life become the most accepted standard in industry and government throughout North America, and is quickly gaining recognition internationally.

At the October board meeting in Milwaukee, the 1996-2000 Long Range Plan (LRP), which addresses plans to take us into the next millennium, was approved along with a balanced budget. The theme chosen for 1996 and this year's Annual NCSL Workshop and Symposium is, "Preparing Metrology for the Next Millennium." The conference, to be held in Monterey, California in August, will provide the forum for sharing ideas about dealing with the future and will focus our direction as we approach the next century. The LRP includes the actions required to undertake the top issues from the Vision 2000 Project. Initiatives for 1996 included in the plan are:

- Continue to emphasize the importance of metrology and the basic measurement processes on global trade and the financial impact on business.
- Publish the revision of RP-1, Establishment and Adjustment of Calibration Intervals.
- Revision of RP-7, Laboratory Design and RISP-2, Triple Point of Water.
- Establish a "World Wide Web" home page for NCSL.

In the international arena, NCSL will continue to take a leadership role. Our international membership continues to grow at a very sustained pace (10% in 1995). At a time when global understanding and awareness of the requirement for better standards and measurement processes has never been higher, a new barrier to world trade has appeared. Restrictive technical trade regulations are on the rise. These regulations, while initiated by well-meaning legislators to restrict products of dubious manufacture and poor quality, from sale in their markets, do nothing for established, accepted products of very high standard, except to add to their cost of production.

The requirement to test established products to meet some of these new regulations may force some manufacturers to withdraw products from these restrictive markets. Besides the economic impact of such decisions, the freedom of choice for the customer, and the ability to obtain unique products are compromised by such legislation. NCSL, through education and direction, will continue to work to overcome such trade barriers through its liaison with many international organizations and its strong ties to National Laboratories.

It is vital that the role of NIST in the US, regardless of any impending reorganizational legislation (HR 1756's proposed elimination of the Dept. of Commerce and the impact (continued on page 8)
NCSL ITEMS FOR SALE

In response to popular demand, the following items are available from the NCSL Business Office, postpaid, at the prices indicated. Please include payment with order.

<table>
<thead>
<tr>
<th>Item</th>
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<tr>
<td>* Training &amp; Information Directory (annual) (1995)</td>
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<tr>
<td>* NCSL Directory of Standards Labs (biennial) (1995-96)</td>
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<td>Members</td>
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<td>Non-members</td>
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<td>* NCSL Newsletter (single copy)</td>
<td>$25.00</td>
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<td>* One-year Newsletter Subscription</td>
<td>$15.00</td>
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<td>* Duplicate of Replacement Plaques</td>
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<td>* NCSL 3-ring Binders and Tabbed Index Dividers for Information Manual</td>
<td>$50.00</td>
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<td>* Information Manual Fillers (without Recommended Practices)</td>
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<td>* NCSL Video (What is NCSL?) Members</td>
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<td>* Acronym List (1995)</td>
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<td>* NCSL Glossary of Metrology-Related Terms (9/94)</td>
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<tr>
<td>* ANSI/NCSL Z540-1-1994</td>
<td>$8.00</td>
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<tr>
<td>* Calibration Lab Manager’s Guidebook (11/9/90)</td>
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<td>* NCSL Recommended Practices:</td>
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<td>RP-1 “Establishment and Adjustment of Calibration Intervals” (11/15/90)</td>
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<td>RP-6 “Medical Products and Pharmaceutical Industry Calibration Control System Guide” (7/10/86)</td>
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<td>RP-8 “An Individual Equipment Evaluation Guide” (10/24/88)</td>
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<td>RP-9 “Calibration Laboratory Capabilities Documentation Guidelines” (7/19/86)</td>
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<td>RP-10 “Establishment and Operation of an Electrical Utility Metrology Laboratory” (8/23/91)</td>
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<td>RP-11 “Reports and Certificates of Calibration” (10/23/91)</td>
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<tr>
<td>RP-12 “Determining and Reporting Measurement Uncertainties” (4/95)</td>
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<td>All RP’s 1-12 inclusive</td>
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<td>RISP-1 “Josephson Voltage Standard” (5/95)</td>
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<td>RISP-2 “Triple Point of Water Cell” (5/95)</td>
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EDITOR’S NOTE
This schedule is for guidance for anyone who needs to submit material for publication in the Newsletter.

BOARD OF DIRECTORS’ MEETING DATES

- January 29-31, 1996
- Erawan Garden Hotel
- Indian Wells, CA

- May 6-8, 1996
- Marriott Hotel
- Colorado Springs, CO

- August 23-25, 1996
- Marriott Hotel
- Monterey, CA

- (in conjunction with 1996 NCSL Conference)

- November 4-6, 1996
- TIT Sheraton Charleston
- Charleston, SC

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9601
HIGHLIGHTS OF THE BOARD MEETING

Hyatt Regency Hotel
Milwaukee, WI
Oct 16-18, 1995

The fourth quarter meeting of the National Conference of Standards Laboratory was held October 16-18, 1995 at the Hyatt Regency Hotel, Milwaukee, WI.

Bill Doyle opened the meeting and presented the agenda.

Wilbur Anson, NCSL Business Manager, asked for e-mail addresses where available.

Bill Doyle presented his President’s report. He had extremely heavy activity during the quarter dealing with the Chrysler Bill, H.R. 1576, the restructuring of the Department of Commerce. He mailed 1,111 letters to U.S. Member Delegates, requesting them to make their feelings known to their Congressional Representatives.

He responded to a request from the Honorable George E. Brown, Ranking Minority Member of the U.S. House of Representatives, Committee on Science, to provide a written response to the H.R. 1576.

Bill notified the Board that Dr. Roy VanKoughnett had submitted a letter stating that he could not continue to act as the INMS Representative because of a reorganization and massive workload. He has asked Gary Hyser of NRCC to replace him.

Bill Simmons presented a plaque from NCSL to ISA, on the occasion of their 50th Anniversary, at their annual conference in New Orleans.

Tony Anderson presented the Executive Vice President’s report. He prepared the draft of the 1996 Long Range Plan, which is the key Exec VP task.

Section 7, Organizational Goals and Objectives of the NCSL Long Range Plan, 1996 - 2000 was reviewed, Office/Committee by Office/Committee and the required changes/additions were made, especially to reflect that the results of “Vision 2000” project were incorporated into the Long Range Plan.

He provided inputs to the President for NCSL’s response to H.R. 1576, the restructuring of the Department of Commerce, and in particular, the future of NIST.

Tony announced that Carol Singer had agreed to be Publicity Committee Chairman next year.

The Past President’s report was presented by Ralph Bertermann. He completed the NCSL Ballot process for 1996.

1356 Ballots sent out.
409 Ballots returned.
2 Ballots did not concur with the slate of candidates.
1 Ballot rejected (no marking).

He notified Mr. Norm Belecki of NCSL’s intent to participate in the Dr. Joe Simmons Memorial Fund.

He met with the Executive Director of the Institute of Environmental Sciences to discuss their experiences with a paid administrative staff versus a volunteer organization. He also invited her to address the NCSL BOD, but previous commitments precluded her trip to Milwaukee.

Supplied the minutes of the Ad-Hoc Small Business Committee meeting, held as part of the NCSL Conference were supplied to Bill Simmons.

Max Green presented the Secretary’s report. In addition to the normal duties of publishing and distributing preliminary/final minutes and input for the “NCSL Newsletter”, he participated in the drafting of a corporate letter to Congressional members outlining the opposition of dismantling the Department of Commerce and in particular, the commercialization of NIST Standards Laboratories.

The recommendation was made that the Secretary transition from hard copy paper products to the recording and distribution of minutes by electronic and magnetic means. This was made a part of the Long Range Plan for 1996.

The Treasurer’s report, was presented by Kevin Ruhl. Except for Laboratory Resources, which did not have a budget request, all inputs were received and are included in the 1996 budget report. The requested funds are less than the planned income for the year. A motion was made by Kevin Ruhl to move all routine check writing and bookkeeping to the Business Office. The motion was passed unanimously without discussion.

Sharrill Dittmann presented the NIST Representative Report. Highlights of the NIST Report and additional items of discussion were:

RESCISSION REDUCES FY 95 APPROPRIATION:

President Clinton signed Public Law 102-19 which included a rescission of $633 million from Fiscal Year 1995. Congress has taken back a total of $153.3 million from the original FY 1995 appropriation of $853.8 million, an 18 percent reduction, leaving a corrected appropriation of $700.5 million.

FY 1996 NIST BUDGET STATUS REPORT:

The Senate Appropriations Committee recommended a FY 1996 budget for NIST that substantially reduced not only the amount the Executive Branch had requested, but also reduced the amount the House Appropriations Committee recommended. The House Appropriations Committee recommended $335 million for FY 1996, but the Senate Appropriations Committee recommended $232 million. The two committees must now meet in conference, to resolve their differences, before the final budget is sent to President Clinton.

OFFICE OF WEIGHTS AND MEASURES:

A report was presented on the Office of Weights and Measures which handles legal metrology at NIST. They have recently moved
Highlights of the Board Meeting

into a group which handles calibration, reference materials and reference data. A fax on demand service has been instituted to allow users to dial up and get information on reference materials and reference data.

NIST BUDGET UPDATE:

A NIST budget update was provided on the status, authorizations, and appropriations as of October 6, 1995.

Tom Huttemann brought up issues concerning the upcoming ISO Guide 25 that is being reviewed this year. It was felt that NCSL representation is needed on this committee, to ensure that whoever represents the U.S. indeed represents NCSL/Z540. It may be that we need to apply through ANSI since they control U.S. Technical Advisory Groups for Standards.

An Action Item was assigned to Dave Abell to work with Ms. Lynne Neumann and the TQM Committee to explore ways that NCSL can be more formally tied in with the ISO Guide 25 Committee. This information will be passed to Mr. Jack Ferris, Chairman of the Z540 Committee, and will be reported on at the January 1996 Board meeting.

Frank Bandy moved that the Vice President of Laboratory Resources be renamed as Vice President of Publications. It was seconded by Tony Anderson, and after discussion, passed unanimously. The change will be effective January 1, 1996.

John Wehrmeyer made a proposal that NCSL organize a writing group to draft a document indicating NCSL’s view on the purpose and appropriate use of NIST test numbers.

An Action Item was assigned to John Wehrmeyer to write a position paper indicating NCSL’s view on the purpose and appropriate use of NIST test numbers.

Dave Abell brought up for discussion, and possible future NCSL action, a need for a common class procedures for accreditation. With the development of Z540 and the accreditation process, the issue has been, how do we do the physical proficiency testing for complex electronic instruments.

If the industry has a standard procedure that is used for common classes of instruments and that procedure became adopted as the standard methodology in industry, then you could easily accredit a laboratory to do that procedure.

NCSL is in the position to put together a committee that would make proposals of generic classes of Cal-Lite procedures, and get an agreement within NCSL that those are good descriptors. The next step would be to get the accrediting agencies to agree that they are valid procedures to accredit the M&TE to be able to perform calibrations to a NCSL generic class procedure. That way we have calibration commonality, in accreditation, in different laboratories.

Gary Shuler presented his Operations and Marketing Vice President’s Report.

Wilbur Anson presented his report of the NCSL Business Office.

The process has been started to get an NCSL Internet address. The Domain name has been assigned. This route was chosen to preclude the requirements of having to change the address should providers be changed in the future. This should be completed by the January Board meeting.

The Spanish video is on schedule. We expect to have the finished video ready in time for the “Metrology for the America’s” Symposium.

The first invoice for 1996 dues was sent shortly after October 1, 1995. In light of the popularity of payment by credit card at the 1995 Conference, we expect to see an increase in dues paid by credit card.

The Immediate Past President, Ralph Bertermann, expressed his thanks and appreciation to Wilbur Anson for the outstanding support that he received on the election and balloting process. There were problems at the last minute on filling some of the vacancies and in a short period of time, he turned it around and got the ballots out with a minimum of delay.

Administrative Guidelines and By-Laws: A report was presented for Bill Simmons.

Bob Mielke presented an Institute of Environmental Sciences Liaison Report. An explanation of the organization, goals, paid staff, and support activities was presented. He recommended that in order to communicate NCSL Board activities to the Liaison organization newsletter/calendalr of events, some type of short news release be provided. The “NCSL Newsletter” is too voluminous to try to pick out highlights in liaison newsletter.

Bill Doyle presented the Government Affairs Committee Report for Mike Suraci. A concentrated effort was expended in drafting, editing, and coordinating the review of several letters to Congress regarding the Chrysler Bill, H.R. 1756.

Bill Doyle presented a Laboratory Systems Management Vice President’s Report for Brian Fitzpatrick.

Bill Quigley presented an Industrial Programs Vice President’s Report. He communicated NCSL concerns of H.R. 1756 to the company Vice President of Government Affairs.

He identified a World Wide Web Page that announces conferences (no cost). This information will be passed to the VP Conference Management.

John Ragsdale presented the Utilities Committee Report. Highlights include:

The final draft of the NCSL Recommended Practice on Computer Systems in Metrology was presented to the Board of Directors for review.

A Utilities Salary and Calibration Outsourcing Survey is being discussed for next year.

Nine (9) technical papers have been submitted for the Power Utilities Session at the “Metrology for the America’s” Symposium.

Ben Jack is developing plans to energize the Petroleum Industry Metrology Committee.

The Health Care Metrology Committee’s report was presented by Bill Quigley. Committee activities will probably be expanded to
add subcommittee chairs to cover the wide range of activities that is planned.

The Small Business Forum report was presented by Bill Quigley for Bill Simmons.

Don Dalton presented an Education and Training Vice President’s Report. The following are activities during the third quarter.

Leroy Britain has been appointed as Chairman of the Personnel Training Requirements Committee following the resignation of Joe Ridlen.

Tom Kimbrell has started the process of inviting schools to apply for the NCSL Education Grants for 1996.

The criteria and material to develop the Education Award Policy guideline has been forwarded to Bill Simmons.

Six video tapes have been removed from the NCSL Video Library due to inactivity. They will be archived for future use should anyone ever need them.

The 1996 edition of the Training Information Directory is being compiled. It should be ready for the printer in mid October with a commitment for mailing by the end of October.

An Action Item was assigned to all members of the Board of Director’s to review the draft RP on Computer Systems in Metrology, and get the input to John Ragsdale so that it may be voted on at the January 1996 Board meeting.

John Wehrmeyer presented a Laboratory Evaluation Committee Report. One hundred and fifteen copies of the final draft of the Handbook for the Interpretation and Application of ANSI/NCSL Z540-1-1994 were sent to members of the NCSL Board of Directors, members of the TQM Committee, and the Laboratory Evaluation Committee for comments. The results of the printing, binding, and format opinion poll was discussed.

A motion was made by Dave Abell and seconded by Frank Bandy to publish the Handbook for the Interpretation and Application of ANSI/NCSL Z540-1-1994 by the end of the year. There being no discussion, the motion passed unanimously.

There was no Calibration Systems Committee report, but Wade Keith has been asked to look into using the Scantron method for the benchmark survey instead of computer disc.

A Calibration Intervals Committee Report was presented on the Revised RP-1. The technical review distribution was made to select individuals, but the full distribution for the Board of Directors review was not accomplished. It will be distributed and a fax paper review will be completed by December 15, 1995 in order to present the proposal to publish at the January 1996 Board of Directors meeting.

Jack Ferris presented his TQM Committee Report. Committee activity has centered around providing the written response to ANSI on the FINAL appeal of the ANSI/NCSL Z540-1-1994 Standard. The preparation for the verbal presentation to the ANSI Board of Standards Review, scheduled for December 7, 1995 in New York City is ongoing. Appreciation was expressed to Wilbur Anson and his staff, Bill Doyle, Tom Huttemann, Ralph Johnson, and Gary Davidson for their work and council on this very important project.

About 5,000 copies of the ANSI/NCSL Z540-1-1994 Standard have been sold since its final approval on July 27, 1994. This is in addition to the 1500 copies that have been distributed to NCSL member organizations, and the 200 copies that were initially sent to ANSI. This compares with the approximate 300 copies of the M1 document that have been sold since 1987.

Jack participated in the World Standards Day in Washington. He met with DOD officials and the Deputy Secretary of Defense. The discussion dealt with the DOD initiatives of moving from MIL Standards to Consensus Standards. They were emphatic about how these standards would serve the military.

He participated in a Laboratory Accreditation Working Group Meeting that was organized by a cooperative effort of NIST, ANSI, and ACIL. A letter was presented from Vice President Gore about the importance of Laboratory Accreditation. An ACIL position paper was presented on what they feel are the essential characteristics of a U.S. Laboratory Accreditation System. The characteristics defined were:

- Reciprocity and common standards
- Shared governance
- Principally private sector
- Government oversight
- Adequate funding

It was recommended that NCSL take this under advisement and put out something similar. There were several presentations made on proposed methods of setting up the laboratory accreditation system in the U.S. Those covered were:

Belinda Collins at NIST presented "A System for Laboratory Accreditation in the U.S." whose goal is to "minimize redundant accreditation's and provide a system to ensure the quality of laboratory data". The coordinating entities would be made up of the regulations and conferences that have membership that are concerned with accreditation. The key is common procedures, rather than the way it is done now.

John Locke presented a paper on U.S. Laboratory Accreditation Cooperation (USLAC) "A Concept for Establishing Mutual Recognition of Competent Laboratories in the United States". USLAC is based on an International Model, ILAC. It involves a Memorandum of Understanding (MOU) between the accreditation bodies. All accreditation bodies use ISO Guide 25.

The current steering group is NIST, ANSI, and ACIL. NCSL participation would be welcomed as a member of the steering group and the time is right for NCSL to be proactive or be left out of the loop. Ralph Johnson of the TQM Committee has volunteered to represent NCSL and since he has been participating, it was recommended that he be assigned to the steering committee and that it come under the TQM Committee. The Board of Directors concurred with this recommendation.

A motion was made by Tom Huttemann and seconded by Kevin Ruhl to change the name of the TQM Committee to the ANSI/ NCSL Writing Committee. The motion was approved unanimously without debate.
Highlights of the Board Meeting

Dave Abell presented a report for the International Measurement Coordination Committee. The main activity in this area was the completion of a survey by Graham Cameron on behalf of NCSL for the International Laboratory Accreditation Cooperation (ILAC) Group.

The NCSL President, Bill Doyle, established an Ad-Hoc Consensus Standard Committee and appointed Dean Yarolimek as the chairman of the committee.

A motion was made by Tony Anderson and seconded by Tom Huttemann, to convert the Ad-Hoc Consensus Standards Committee to a Standing Committee on Consensus Standards under the Vice President of Measurement Science and Technology. The motion was passed without discussion. The committee was assigned number 146.

Bill Doyle presented the Vice President Measurement Science and Technology Report for Georgia Harris. She requested that the Board of Directors establish a Consensus Standard Committee.

She presented material on Interlaboratory Comparisons as part of the Measurement Assurance Workshop at the combined Region 3/4 meeting in Asheville, NC.

She is working with Committee Chairs, Vice Presidents, and other interested parties, regarding setting up a meeting at MSC to prepare a set of recommendations to resolve varying interpretations and to define: “traceability; intrinsic and derived standards; and consensus standards”.

The U.S. Measurements Requirements, Intrinsic and Derived Standards, and Measurement Comparison Program Committees, and the RP Subcommittee, will meet at MSC in January, 1996. Brian Conroy will also be conducting a workshop on round robins and Young plot analyses.

Charles Motzko presented his Equipment Management Forum Committee Report.

Bill Upholt has agreed to serve as Conference and Speakers Chairman. He has a good start for the EMF track in Monterey, 1996. John Marsdya and Dennis Ackerman have agreed to serve as Publication and Recommended Practices Co-Chairs.

He is continuing to finalize the speakers and workshops for the Equipment Management Forum track for the 1996 Monterey Conference. Expect closure on or before November, 1995.

Bill Quigley raised the issue for discussion on metrification and in particular “what does the United States intend to do”. The thinking now is that the U.S. government will use its buying leverage to push metrification, by having specifications and purchases in metric. Each NIST division has developed its own metric plan. The change to metrification will be market driven, not mandated by Congress.

The 1996 Budget changes were reviewed and changes were made to balance the budget. Kevin Ruhl made the motion to approve the budget as amended. It was seconded by Tony Anderson. The motion was passed unanimously without further discussion. It was noted that this was the first time in the history of the organization that we will enter the year with a balanced budget.

Tom Huttemann presented the Vice President Conference Management Report.

Annual Conference Site Selection: For 1999 Charlotte, NC and Nashville, TN are still being considered. Toronto, Canada is the strong contender for the year 2000.

1995 Conference Coordination: There were 1,077 persons on the registration list, with 105 non-USA residents and a few from Texas. All conference billings have been reconciled. A special thanks to Chet Crane for stepping in at the last minute and providing outstanding support.

Exhibits Chairman: Dean Brungart presented the Exhibits Report. There has been a 10 percent increase every year since 1987. The 1995 Exhibit receipts were $143,250 and expenses totaled $14,911.70. This left a surplus of $128,338 to apply to the overall conference expenses. Brian Conroy performed admirably as the Exhibits Chairman’s substitute.

The quality of liaison tables was discussed. It was decided to restrict the liaison tables and if the liaison organization wanted to bring a booth, then they would be handled on an individual basis.

Frank Bandy presented his Vice President’s Eastern Division Report. Region activities were reviewed. He believes we need to pay more attention to region activities across all three divisions. Emphasis in the past has been on publications and conferences.

John Wehrmeyer presented his Region 2 Coordinators Report. The Eastern Sectional attendance decline is a cause for concern. The reasons for the decline were discussed and explored as to whether this is localized or across the board. It may be a one time decline, so it will need to be monitored to see if a trend develops.

Dave Nebel presented a Region 5 Report. Chris Guy has changed jobs and is unable to continue as the Central Indiana Section Coordinator and we are looking for a replacement. Jerry Drake, the Northern Indiana Section is unable to continue, but Dave has found a replacement who is willing to step in.

Woody Tramel presented his Central Division Vice President’s Report. Gary Burnett is now the Boulder/Denver Section Coordinator.

Bill Doyle presented the written Western Division Vice President’s Report for Mike Suraci. The greatest emphasis during the quarter was the updating of the Long Range Plan. Regional activities are healthy and as reflected in the input to the Long Range Plan. Emphasis to streamline the payment of dues should be an area for improvement.

Jeff Taylor presented his International Division Vice President’s Report.

He appointed Dr. T.M. Plantenga, Director of Nederland Meetinstituut in the Netherlands to become an Area Coordinator.

Discussed the future direction of the Board on accepting, as NCSL members, from former designated country lists. It was recommended that Sherrill Dittmann check with the International Relations Office for direction.
Tony Anderson presented the Liaison Delegates Reports from Delegates that had submitted reports.

MSC: Everything is going well for the MSC Conference, 25-26 January, 1996 in Anaheim, CA, with the theme being, “Twenty-Five Years of Education in Measurement Science”. It was recommended that a plaque be presented from NCSL to MSC congratulating them on 25 years of service.

ASTM: The ASTM Directors have officially approved the expanded scope and revised title of E-36 to cover all areas of conformity assessment accreditation including quality system registration, product certification, and personnel certification.

ISA: Mike Suraci’s report was presented. The highlight of activity was the presentation of an NCSL plaque to the ISA, on their 50th anniversary, at their annual conference in New Orleans on October 2, 1995.

IEEE I&M: Received the IEEE I&M Liaison Delegates Report from Dave Braudaway. He participated in the I&M ADCOM meeting in Atlanta, GA in August. It was timed to coincide with AUTOTESTCON which is heavily attended by the military, but shows limited interest in Metrology.

A2LA: Pete Unger reported that John Locke will be attending the meeting of ISO Guide 25 Revision Working Group and should have a report to be included with the A2LA Liaison report later this month.

CORM: Tom Huttemann presented the CORM Liaison Report.

The American Vacuum Society (917), Parental Drug Association (918), and the Association for Advancement of Medical Instrumentation (924) should be dropped from the “NCSL Newsletter”.

NCWM: The oral and written NCWM Liaison Report was presented for Georgia Harris. A copy of the “W&M Today” newsletter was attached. It is a quarterly publication of the National Conference in Weights and Measures (NCWM). It contained highlights of some of the interests of the weights and measures community from the NCSL Conference in Dallas. It also described the new NCWM fax-on-demand service.

NACC: Sharrill Dittmann presented the North American Calibration Cooperation (NACC) Liaison Report. NACC held a meeting at the NCSL Conference in Dallas and the next one will be held during MSC in January. They have their committees set and are beginning to work on documentation.

Gary Shuler made a request that the following be discussed at this BOD meeting. Would it be possible to set a section aside in the “NCSL Newsletter” asking for help on calibration and repair issues? For example, outsourcing calibrations for non-critical items. In most cases, these are non-routine items and most common calibration labs cannot do them, yet there must be similar problems somewhere else in the country and perhaps someone has found an answer. (See page 18, Ed.)

There is also an issue for calibrations for items that can be done by a vendor, but who may not be qualified or too expensive. The Board of Directors felt that the “NCSL Newsletter” could contain some type of “Inquiry Corner” where the questions or request for information could be asked, but that the “NCSL Newsletter” not

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**Attendees**

Dave Abell  
Tony Anderson  
Wilbur Anson  
Frank Bandy  
Ralph Bertermann  
Dean Brungart  
Don Dalton  
Sharrill Dittmann  
William F. Doyle  
Jack Ferris  
Max Green  
Tom Huttemann  
James Ingram  
Robert Mielke  
Charlie Motzko  
Dave Nebel  
Bill Quigley  
John Ragsdale  
Kevin Ruhl  
Gary Shuler  
Jeff Taylor  
Woody Tramel  
John A. Wehrmeyer  

Hewlett Packard  
Guildline Instruments  
NCSL Business Manager  
Unified Industries, Inc.  
Abbott Laboratories  
Brungart Mgmt. Services  
Fluke Corp  
NIST  
AT&T Capital Corporation  
Consumers Power  
DynCorp/TAI  
Eastman Kodak  
Guildline Instruments, Inc.  
Abbott Laboratories  
Equipment Mgmt. Technology  
Tektronix  
Hughes Missile Systems  
Tennessee Valley Authority  
TRW Space & Electronics Gp.  
Duke Power Company  
Lockheed Martin Aeronautical Sys  
Precision Enterprises  
Eastman Kodak
President's Message
(continued from page 1)

on the future of NIST is still a real threat), continues to include
responsibility to represent US commerce in the elimination of un-
necessary technical trade barriers. I would urge our US Member
Delegates to continue to let your feelings be known to Congress
on the future of NIST and its role internationally.

Our thanks go to Bill Doyle for his efforts as President last year,
and in particular his encouraging the NCSL Member Delegates to
offer their input to Congress regarding HR 1756. Thanks are also
due to Past President Ralph Bertermann for his many years of
dedicated service to NCSL. It is hoped that Ralph will be able to
stay active in some new role in the organization. Sadly, Mike
Suraci has left the Board as Vice President Western Region. We
will all miss his lively contributions to our Board meetings. As a
Past President (1975), and with three decades of service to NCSL,
Mike has been an inspiration to many of us over the years. Mike
has agreed to continue as Chairman of the Government Affairs
Committee.

Welcome to our new Board members, Leon Barnes and Charlie
Motzko. The new Board assignments have Leon assuming re-
 sponsibilities as Vice President Central Division, and Charlie be-
ing appointed Vice President Western Division. Woody Tramel
assumes the position of Vice President Eastern Division. Gary
Shuler moves over to Vice President of Industrial Programs, and
Bill Quigley becomes Vice President of Operations and Market-
ing.

Kevin Ruhl was elected Executive Vice President and Jeff Taylor
is appointed as Treasurer. Frank Bandy becomes the first Vice
President of Publications. This new position replaces the Labora-
tory Resources Vice Presidency. A new committee, Publications
Oversight, is being formed to provide financial and technical man-
agement of all NCSL publications. The Publications Oversight
Committee will be joined by the Glossary, Compendium and
Equipment Documentation Committees under the Vice President
of Publications.

This newsletter issue contains a newsletter survey questionnaire
for all Member Delegates. Readers often tell us how much they
regard the newsletter as one of our best products. Editor John
Minck's questionnaire asks you how we can improve this valu-
able document. Please take time to respond. Remember it is your
newsletter. (See page 14)

After 35 years of service to the measurement world, we continue
to search for ways to improve our organization. There is still much
to be done.

Anthony Anderson,
NCSL President
CALL FOR PAPERS
1996 NCSL WORKSHOP AND SYMPOSIUM

Conference Theme
Preparing Metrology for the Next Millennium

Suggested Topics for Papers, Panels and Workshops

Theoretical
• New Standards
• Improved Standards
• Intrinsic and Derived Standards
• Advantage in Measurement Disciplines
• Standards & Calibrations At National Laboratories

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

Management/Quality
• ISO 9000
• ISO Guide 25
• ANSI/NCSL Standard Z540-1 & Handbook
• Metrology Management Information Systems
• Strategic Planning
• Equipment Management
• Quality Standards
• Laboratory Accreditation
• Metrology Education and Training
• Self-Managed Workforce
• National Measurement Systems Around the World

Due Dates
Abstract: January 5, 1996
Paper: May 31, 1996
Abstracts of 150 words or less and camera-ready manuscripts should be sent to:

Dave Nebel
Tektronix, Inc.
1370 Black Oak Dr.
Centerville, OH 45459-5411

Office Phone: (513) 438-1090
FAX: (513) 438-1106
e-mail: david.e.nebel@tek.com
Home Phone: (513) 435-5231

Editors Note: This notice will be slightly late due to newsletter publication date, but interested paper presenters should call Dave Nebel to check for openings.
Coffee break finds new Regional VP Woody Tramel in the foreground, and incoming NCSL President Tony Anderson discussing finances with Kevin Ruhl.

All meetings are alike, but here, the attention span has yet to be invaded.

Dean Brungart presents some exhibit strategy, and looks none the worse for his recent medical episode.

Secretary Max Green has all his electronic paraphernalia wired up for recording the details of these gripping sessions. Oh, sure!

All the Milwaukee travellers gather for the "Attendee" photo.

At the end of a long meeting day, spouses join the NCSL volunteers for a reception gathering before heading for the Board dinner.
Outgoing President Bill Doyle and Frank Bandy do a mall tour and engage a local advertising figure for some directions.

I wish Frank Bandy would write some captions for these interesting photos he sends me from the meetings he attends.

Incoming NCSL President Tony Anderson and his wife Pauline enjoy a quiet moment at the dinner. Tony and Pauline have a busy year ahead.

We didn't get the name of the restaurant, but the artifacts on the wall look pretty imposing and museum-like. But I doubt this crowd would attend museums.

We don't know what Jim Ingram is toasting, but no one else is joining him. The vote looks like 12 to 1 against.

Jack Ferris is a relative newcomer to the NCSL Board, and his wife Marcie came along on this trip to Milwaukee.
1996 CPEM
CONFERENCE ON PRECISION ELECTROMAGNETIC MEASUREMENTS
BRAUNSCHWEIG, GERMANY
JUNE 17-20, 1996

The 1996 CPEM 96 will be held in Braunschweig, Germany, Monday-Thursday, 17-20 June 1996, with laboratory visits to the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig and Berlin scheduled for Friday, 21 June 1996. (CPEM 96 is being organized by the PTB, the National Metrology Institute of Germany and the sister institution of the National Institute of Standards and Technology here in the United States.) This series of biennial conferences has earned an outstanding reputation over more than 3 decades as an international forum for precision electromagnetic measurement.

The following topics have been selected for CPEM 96:

- Units and fundamental constants
- Quantum metrology
- Cryoelectronics
- Direct current and low frequency
- New sensors
- Automated systems, software algorithms and validation
- RF, microwave, and millimeter waves
- Antennas, fields, and EMC
- Time scales and frequency standards
- Lasers and optoelectronics

For further information please contact the conference secretary of CPEM 96:

Sabine Rost, Conference Secretary
Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Telephone: +49 531 592 2129
Telefax: +49 531 592 2105
Email: erich.braun@ptb.de

EXHIBITOR COMPANIES INVITED

NCSL MEMBER COMPANIES ARE INVITED TO
EXHIBIT THEIR PRODUCTS & SERVICES AT THE
CONFERENCE.

MEASUREMENT SCIENCE CONFERENCE
Anaheim Marriott
Anaheim, CA
January 25-26, 1996

Theme: “Twenty Five Years of Education in Measurement Science”

January 25 and 26 the Measurement Science Conference will present the twenty fifth annual Symposium and Workshop in conjunction with nine tutorial workshops to be presented on January 24.

There will be two days of training seminars presented by NIST staff on January 22 & 23:

- NIST Dimensional Metrology Training Seminar
- The Time and Frequency Seminar on Properties of Oscillator Signals and Measurement Methods
- Electromagnetic Interference Metrology Short Course

For registration information and materials please call or fax. Credit cards are accepted for payment.

Steve Phleger TRW
Tel (310) 812-4667
fax (310) 814-8797

Internet Home Page
http://www.trw.com/msc/home.html
METROLOGY CALENDAR

NCSL MEETINGS

January 23, 1996
NCSL Utilities Meeting
Southern California Edison, Westminster, CA
CONTACT: John Ragsdale, (423) 697-4273

January 25-26, 1996
Measurement Science Conference
Anaheim Marriott Hotel, Anaheim, CA
CONTACT: Steve Phleger, (310) 812-4667

August 25-29, 1996
NCSL Workshop & Symposium
Monterey Convention Center, Monterey, CA
CONTACT: NCSL Business Office, (303) 440-3339

July 27-31, 1997
NCSL Workshop & Symposium
Hyatt Regency Hotel, Atlanta, GA
CONTACT: NCSL Business Office, (303) 440-3339

INDUSTRY/GOVERNMENT MEETINGS

January 22-25, 1996
Institute of Environmental Sciences
Reliability & Maintainability Symposium
Sahara Hotel, Las Vegas, NV
CONTACT: Inst. of Environ. Sciences, (708) 255-1561

March 12-14, 1996
Institute of Environmental Sciences
16th Aerospace Testing Seminar
Radisson Hotel, Manhattan Beach, CA
CONTACT: Inst. of Environ. Sciences, (708) 255-1561

May 12-17, 1996
Institute of Environmental Sciences
42nd Annual Technical Meeting & Exposition
Radisson Twin Towers Hotel, Orlando, FL
CONTACT: Inst. of Environ. Sciences, (708) 255-1561

October 28-31, 1996
Institute of Environmental Sciences
19th Space Simulation Conference
Radisson Plaza Lord Baltimore Hotel, Baltimore, MD
CONTACT: Inst. of Environ. Sciences, (708) 255-1561

May 4-9, 1997
Institute of Environmental Sciences
43rd Annual Technical Meeting & Exposition
Los Angeles Airport Hilton & Towers, Los Angeles, CA
CONTACT: Inst. of Environ. Sciences, (708) 255-1561

REGIONAL MEETINGS

REGION 3

March 7, 1996
NIST, Gaithersburg, MD
CONTACT: Marlin Johnson, (301) 953-6671

REGION 8

LA/Orange County Section, April 18, 1996
CONTACT: Mike Magin, (714) 895-0151

Phoenix/Tucson Section, May 16, 1996
CONTACT: Wayne Benda, (520) 794-4483

LA/Valley Section, June 5, 1996
CONTACT: Brian Conroy, (818) 886-2211 x2523

LA/Orange County Section, October 24, 1996
CONTACT: Mike Magin, (714) 895-0151

LA/Valley Section, November 6, 1996
CONTACT: Brian Conroy, (818) 886-2211 x2523

Phoenix/Tucson Section, November 14, 1996
CONTACT: Wayne Benda, (520) 794-4483

REGION 12

Canadian Region, May 16, 1996
National Research Council, Ottawa, ON
CONTACT: Dave Morgan, (613) 952-3528

Western Canada Area, Spring, 1996
Vancouver, BC
CONTACT: Satoshi Nishie, (604) 431-8882

Canadian Region, November, 1996
Toronto, ON
CONTACT: Dave Morgan, (613) 952-3528

REGION AND SECTION COORDINATORS

Please fax your Region and Section meeting announcements to Wilbur Anson at the NCSL Business Office, (303) 440-3384, by February 27, 1996, to have them included in the April issue of the Newsletter.
NEWSLETTER PREFERENCE SURVEY

Please reproduce this page, and mail or FAX it to me. Editor

Are you the NCSL Member Delegate
yes ( ) no ( )

Or do you read a pass-along copy
yes ( ) no ( )

What is your principal function?
- Metrology lab manager ( )
- Metrology Engineer ( )
- Quality organization ( )
- Metrology vendor/sales ( )
- Government/academia ( )
- Metrology Technician ( )
- Other ( )

How many issues do you receive per year?
1 ( ) 2 ( ) 3 ( ) 4 ( )

Please estimate how much of an average issue you read?
- You won’t hurt my feelings. 10% ( ) 25% ( ) 50% ( ) 75% ( ) 100% ( )

Do you archive past copies of the newsletter?
yes ( ) no ( )

Please rank these regular newsletter sections with this code:
1. Vital, keep
2. Important, keep
3. Useful, but a don’t-care for me
4. Not useful for me, you could drop this section

Rank These Sections
- Highlights of the Board Meeting ( )
- Training Information ( )
- Metrology Calendar ( )
- Committee News ( )
- NCSL Newsnotes ( )
- NIST News ( )
- Liaison News ( )
- Reports from the Regions ( )
- Welcome to New Members ( )
- Internet Page ( )
- Touring our Member Labs ( )
- Member Company Profiles ( )
- Someone You Should Know (bios) ( )
- Page-length show/conference announcements ( )
- Roster of Board, Committee, Region ( )
- Region Maps ( )
- Board E-mail address listings ( )

Other typical candidates for space
- Annual Conference picture report ( )
- NIST Historical Series ( )
- ISO and Z540 News ( )
- Surveys and reports of interest ( )
- Appropriate magazine reprints ( )

Please list other subjects you would like covered regularly.

Other matters:
I like the attendee lists printed for regional meetings
yes ( ) no ( )

The Newsletter type size and font (Schoolbook) is:
- about right ( ) too small ( ) too large ( )

I would like a directory of member e-mail addresses.
yes ( ) no ( )

Any other comments?

Please return by mail or FAX by Jan 31
John Minck, Editor
NCSL Newsletter
642 Towle Place
Palo Alto, CA 94306
FAX/Phone 415 493 3955
NEW 1996 TRAINING INFORMATION DIRECTORY

Copies of the 1996 NCSL Training Information Directory have been mailed to all NCSL Member Delegates. If you have not received your copy or need more, contact the Business Office.

Dave Lorenzen

NEW POLICY FOR TRAINING INFORMATION IN THE NEWSLETTER

The NCSL Training Information Directory is now available as you can see from the article above. It is a very powerful resource for your training needs, and we feel it should be used as your primary reference of available courses.

We are working to develop a method where near-term changes and schedules can be summarized in the Newsletter for all the training information in the Directory. We want to provide the current training information you need while yet maintaining the NCSL policy of not putting commercial ads in the Newsletter.

Don Dalton, VP, Education and Training

QUALITY SYSTEM UNCERTAINTY COURSE SCHEDULE

Please refer to Training Information Directory for basic course information.

Jan 29 - Feb 2, 1996, Anaheim CA

Aug 19-23, 1996, Monterey, CA

Contact: Coast Quality Metrology Systems, Inc.
35 Vista del Ponto
San Clemente, CA 92672-3122
PH/FAX 714 492 6321

TRAINING COURSE SCHEDULES ANNOUNCED FOR INDIA

Training calendar of CETE (January - June 1996)

Calibration Techniques for Electrical Parameters
Jan 08-19
Rework/Repair of Printed Boards and Assemblies
Jan 15-19

Programmable Controllers
Installation & Programming
Jan 29 to Feb 10, Apr 08-20
Industrial Sensors & Instrumentation
Feb 12-23
Advanced Digital Troubleshooting Techniques
Feb 14-24
Micro-controllers (8 & 16 bit)
Feb 27 to Mar 09
Repair & Maintenance of Test & Measuring Instruments
Mar 07-20
Linear & Digital Circuits
Mar 11-23
Electronics Measurements
Mar 18-29
Calibration System Management & ISO 9000
Apr 08-11
Repair & Maintenance of Process Controllers
Apr 15-27
Computer Aided Testing
May 06-15
Repair & Maintenance of Power Electronic Equipment
May 06-18
Programmable Controllers (Advanced)
May 20-31
Quality Assurance of Electronic Interconnections
May 27-31
Repair & Maintenance of PC Hardware
Jun 03-15
Zero Defect Soldering
Jun 10-15
Microprocessor (Basics)
Jun 17-29
Preventive Maintenance by Condition Monitoring
Jun 21-22 (Workshop)

Contact: Director, CETE
Tel: +91 33 321 - 4045; Fax: +91 33 37 - 8498

Training Calendar of STQC-Philips EMT Institute (January - June 1996)

SMT for Production Engineers
January
February
March
April
May
June
Editor's Message  
(continued from page 2)

Thanks Frank Jones

And speaking of Frank Jones, there's a name missing from the masthead to the left on this page. Frank Jones, who has been an associate editor for our newsletter since October of 1988, has just moved out of the Washington area, and will no longer be able to help us keep up with NIST matters.

Frank spent his career with NIST, and, during his retirement, was able to walk the halls of the Bureau to keep us informed about technical and other news, and always gave us additional personnel perspectives in the NIST News section. Frank always met his deadlines and was a person I could count on without fail.

Frank is moving south, to South Carolina, for the next phase of his retirement, and we wish him all the best. He says that he will stay active with projects in training and conferences, as he has been doing in the past. Thank you again, Frank, for exemplary volunteerism.

Regional Meeting Invitations

I recently attended a Region 7 meeting here in the Bay Area. I was reminded that when you member delegates attend your region meetings you should plan on bringing along other people from your organization. Even though your company is the member of NCSL and you are the delegate, NCSL depends on the participation of all your engineers, expert technicians and administrators, and they are all welcome to come to the regional meetings.

Perhaps even more important, we'd like to get many of them with interest in industrial volunteerism, to start working on NCSL committees and other team activities of NCSL. It is a wonderful place to build a network of outside peers, and usually leads to higher levels of professionalism.

So, for your next regional meeting, plan on bringing along several others from your group. Help them move into activities which expand their careers.

Another similar step is to be sure that this NCSL Newsletter is routed throughout your department, so all can be aware of the industry trends and events.

PLEASE fill out the newsletter and e-mail surveys

It's been almost 5 years since I took a survey of reader interest in this newsletter, and with the tremendous change of membership over that period, it is far past time to find out how well we are filling the needs of our membership in communications.

Please copy page 14, fill it in and mail or FAX it to me. I will summarize the results and report to the board, as well as print the summary in the April issue. It's not a long survey, so please give me your input. If you pass the newsletter along to other associates, please give them a copy to fill out for their own answer to the survey. And the E-mail Survey on page 17, I'm asking EVERY Member who is on E-mail, to send me an E-mail message with your E-mail address.

John Minck,  
Editor
MEMBERSHIP E-MAIL SURVEY

ATTENTION—ALL MEMBERS WHO ARE ON THE INTERNET

I have been finding increasing use of the power of e-mail on the Internet. From anecdotal observation of people who have asked for shows of hands at NCeS meetings, I get the impression that only 10 or 20% of our members are communicating with e-mail. My personal feeling is that it is much higher.

So, I am asking that every member who has Internet connection, either at their work or at their home, tell me by sending a message to my Internet address:

76251.2776@compuserve.com

If, as I expect, we have upwards of 50% of our members on the Internet, then I will push hard for including those addresses in the Member Directory, just like the phones and FAX numbers. Dave Lorenzen of McDonnell Douglas points out that about 80% of the Measurement Science Conference has e-mail, which is impressive. It certainly makes organizing easier, when one can just pull up a mailing list of 20 people and just type it once. Powerful.

If you have a computer at home and a phone line, the cost for a service like Compuserve or AOL is about $9.00 per month, and in my case, the access phone number is a local call with no charge. You do, of course, have to buy a modem, but they are less than $100 now. Good ones.

In your message, please spell out your own address. I don’t need those Board member addresses which are already enumerated in each issue of the newsletter.

FEEDBACK

I received quite a few comments from other e-mail users. John Kramer is a member of Section 0900 ASQC in Cincinnati. He reports that they are interested in the on-coming NCeS Metrology Forum, if there is one. John’s e-mail is: RemarkJW@aol.com

Pete Mauro of GEC Marconi Systems, writes to say he is attempting to form a Metrology discussion group. He, too, would welcome a complete listing of all NCeS member e-mail addresses. Pete’s address is: mauro@pcmail03.systems.gec.com

MORE INTERNET HOME PAGES

Thanks to those readers who took the time to feed back some of your preferences and comments to my first INTERNET PAGE in the October issue. Here are a few more suggested home pages.

* Measurement Science Home Page

http://www.trw.com/msc/home.html

Conference content and registration information for the annual MSC in January of each year. This material looks like it is located at the TRW site. I have tried it with my Compuserve browser and I found that it was necessary to go first to the TRW Home Page, and then reference MSC. It’s a useful page for those planning to attend MSC.

* Isothermal Home Page

http://www.demon.co.uk/isotech/

Suggested by Dave Southworth. This site contains information and articles relating to temperature metrology either written or edited by Henry Sostman. Dave is the page maintainer.

* HP Metrology Forum


Dave Southworth says this HP forum is his personal favourite. (How would I guess that he is in the UK?) I dial in to it occasionally to find what is new.

* A2LA Organization Home Page

http://users.aol.com/a2la/a2la.htm

On this Web Site, you will be able to: 1) View lists of accredited labs, 2) Download application packages, selection lists, 3) Download text of past newsletters, and 4) View the schedule of their training program.

LET’S KEEP NEW REFERENCES COMING IN. COMMENTS WELCOME.

* * * * *

‘MAIL LIST’ NOW ONLINE FOR MICROWAVE METROLOGY

If you’re hooked up to the Internet and have questions regarding the measurement of microwave quantities, then NIST wants to hear from you. NIST’s Electromagnetic Fields Division in Boulder, Colo., has set up an electronic mailing list as an open forum for discussion on technical issues and problems regarding microwave metrology. NIST hopes the link will serve industry as a useful source of contacts and information, giving benchtop technicians and engineers a place to ask questions and share their expertise. To subscribe to the service, simply send e-mail to: majordomo@central.bldrdoc.gov. The body of the message should read: subscribe mwave-meas (your e-mail address). To cancel the service, substitute the command “unsubscribe” in place of subscribe. There is no cost for subscribing. To get help or find out more about the list server, send e-mail to majordomo@central.bldrdoc.gov with the word “help” in the body of the message. Once subscribed, one simply sends mail to mwave-meas@central.bldrdoc.gov to post a message to all of the members on the list. If you prefer to talk by voice to someone about this, call J. Wayde Allen at (303) 497-5871.
LOOKING FOR SOLUTIONS

From the Editor. There was discussion at the last Board meeting about adding a new section to the newsletter which would offer a forum for seeking help from the experts, the readers. While I have always used the NCSL NewsNotes section for news and random potpourri, this new section will be a forum for technical and business assistance. Let's see how it works.

Rules will be simple. There may be certain sensitivities to technical requests, so the editor and review panel will be final judges of content. Please keep the problem statement to less than one column.

HELP! HELP! HELP! HELP! HELP! HELP!

CALIBRATION/REPAIR SUPPORT REQUIRED

Looking for capability to calibrate and repair the following instruments:

• Tektronix 7612D digitizers

• Biomation 8100 analyzers

• Autek Analyzers (various models)

The potential service organization has to provide compliance to MIL-STD-45662A or ANSI/NCSL Z540-1.

For further questions, please contact:

Guy Fleming
Lockheed Martin Missiles and Space
Sunnyvale, CA
PH 408-742-7857
FAX 408 742 4435
e-mail fleming@lmse.lockheed.com
QUALITY PROGRAMS
Dave Abell, VP

Activity:

Attended an NCSL meeting at the Chun Shan Institute of Science & Technology (CSIST) in Taiwan hosted by area coordinator, Nigal Jou. Approximately 15 attended, mostly from CSIST. My presentation on Z-540 drew considerable interest.

Attended an NCSL meeting held at the Japan Electric Meters Inspection Corporation (JEMIC) in Tokyo hosted by Mr. Hisao Hashimoto. Area Coordinator Katsumi Yokoi of HP with the assistance of Mitsuo Ishii of Met/Cal Co. organized a lively, well attended (72) meeting with several presentations, including my own on NCSL Board Activities.

My recent travels for HP took me to Taiwan, Japan and Singapore. In all three countries I met with officials of the Standards Laboratories and Accreditation Agencies. In each case, I discussed ANSI/NCSL Z-540 and met favorable feedback that it is based on ISO Guide 25. I also discussed the feasibility of using generic procedures for classes of instruments to deal with the complexity of uncertainty budgets with M&TE. The concept was favorably received which leads me to believe the BOD should initiate an effort towards industry agreement on “cal life” or “generic class procedures.”

Committee Activities:

LAB EVALUATION
Leroy Britain and John Wehrmeyer

Report:

The seventh and final draft of the Z540 Handbook has been completed and the NCSL Board of Directors has approved its publication. It is planned to begin printing the Handbook in December 1995 so that it will be available for distribution early in 1996.

115 copies of the Final Draft were sent to members of the NCSL Board of Directors, the Members of the TQM Committee, and the Laboratory Evaluation Committee for comment. No more writing committee meetings or workshops are planned or considered necessary. It is expected the remainder of the activities will be accomplished by the co-editors and the NCSL Secretariat.

In order to provide “Voice of the Customer” input on the printing format, an opinion poll was circulated to the same 115 individuals mentioned above. 50 responses to the poll were received. Based upon these responses, it has been decided to offer the Handbook in three different formats. 1) Bound and three-hole punched, 2) Loose-leaf and three-hole punched, and 3) on an electronic medium.

It is hoped that the three different formats will meet the needs of almost all customers. The bound version should prove useful for library copies and for those who feel that it is important to have the entire document in a form which is not easily altered. The loose-leaf form should prove convenient for updating or making copies of the Sample Checklist which is included in the Handbook. The computer disk should appeal to those who prefer working in an electronic media.

John and Leroy with Wilbur Anson’s help have investigated pricing and quantities assuming the Board votes to publish the Handbook on Z-540.

The NCSL has never offered a document on computer disk before, as far as this author is aware, so some details of how to accomplish this will have to be worked out. Therefore, the paper versions of the Handbook will be made available first, and the electronic version offered if budget permits and if road blocks are overcome.

The handbook will be distributed routinely to all member delegates of record as soon as it is printed. If you are not a member delegate, please contact the NCSL Business Office after January 1996 for assistance in ordering the Handbook, in whatever formats are available.

CAL SYSTEMS
J. Wade Keith

No report. I’ve asked Wade to look into using the scantron method for the benchmark survey instead of computer disc.

CAL INTERVALS:
Dr. Howard Castrup

Howard has completed RP-1 and we hope to vote on publishing it at the October Board meeting.

TQM COMMITTEE
Jack Ferris

Committee activity this quarter has centered around providing the written response to ANSI on the latest appeal of the ANSI/NCSL Z540-1-1994 standard. This effort has consumed a great many man-hours of effort both by myself and Wilbur Anson and the NCSL headquarters staff. The preparation for the verbal presentation to the ANSI Board of Standards Review, scheduled for December 7, 1995 in New York City, is ongoing. I would like to express my appreciation to Wilbur and staff, Bill Doyle, Tom Hutteman, Ralph Johnson, and Gary Davidson for their council on this very important project.

In addition, I have answered numerous questions about the Z540-1 standard from users, primarily contractors to DoD.

INTERNATIONAL MEAS. COORD:
Graham Cameron

Graham completed a survey on behalf of NCSL for the international Laboratory Accreditation group ILAC.
**INDUSTRIAL PROGRAMS**
William Quigley, VP

**Committee Activity**

**UTILITIES COMMITTEE**
John Ragsdale’s October report was in the Oct Newsletter.

**HEALTHCARE METROLOGY COMMITTEE:**
George Emerson and John Miche

The NCSL Healthcare Metrology Committee met during the 1995 NCSL Conference in Dallas, Texas. The meeting was attended by 32 committee members representing 25 companies.

William Quigley introduced George Emerson (Genentech, Inc.). George was recently appointed as co-chair of the committee following the resignation of Russ Roberson (Baxter Healthcare). Over the past few years Russ was instrumental in the growth of the committee, the organization of conference activities, and wrote many papers related to healthcare metrology. The committee thanks Russ for his many efforts and wishes him well in future endeavors. John Miche (Marine Instruments) will continue to co-chair the committee.

The meeting agenda and discussions focused on committee long range plans and included the following:

1. Expand committee membership and awareness of committee by promoting increased networking between committee members and nonmembers as well as increased interaction with other professional societies related to healthcare metrology. Such societies include the International Society for Pharmaceutical Engineering, the International Society for Measurement and Control (ISA), the Precision Measurements Association, the American Society for Quality Control, the Parenteral Drug Association, the Association for the Advancement of Medical Instrumentations, the Society of Biomedical Equipment Technicians, and the San Diego Bio-Metrology Society.

2. Promote regional meetings of the committee modeled after meetings held in the San Francisco Bay Area.

3. Organize panel sessions and workshops related to healthcare metrology at future annual NCSL conferences.

4. Implement electronic mailing list to promote communication among committee members and healthcare metrology professionals.

There are many opportunities to become involved in committee activities. The committee is seeking volunteers to act as liaisons to other professional societies, organize regional meetings, write papers, and develop workshops. If you have interest in volunteering in any capacity, please contact George Emerson by phone (415) 225-6789 or by e-mail (emerson.george@gen.com).

**PETROLEUM INDUSTRY METROLOGY COMMITTEE**
Ben Jack

Ben Jack is developing plans to energize this committee. Ben now has an e-mail address: Revjack@msn.com. Please volunteer.

**EQUIPMENT MANAGEMENT FORUM**
Charles A. Motzko

**Activities**

- Bill Uphoff of TRW has agreed to serve as 1996 Annual Conference and Speakers Chairman. He has a good start for the EMF track in Monterey ’96.

- John Marsdgn & Dennis Ackerman with the 3M company have agreed to serve as Publication & Recommended Practices Co-chairs.

**Action Items**

- Continuation to finalize the speakers and workshops for the Equipment Management Forum track for the Monterey ’96 Conference.

- The primary open action item is to report out the projected timelines of PUBLICATIONS & RECOMMENDED PRACTICES Committee and schedule for an RPs dealing with the shipping & transportation of GPTE and Standards.

- Continue to search for volunteers, that have their full company support, for EMF Membership & Communication and the Directory & Survey chairs.

**MEASUREMENT SCIENCE & TECHNOLOGY**
Georgia Harris, VP

**Activities:**

NCSL should consider adding a Consensus Standards Committee (146) at the October Board meeting. Dean Yarolimek has been very active in putting together material for this proposed committee and it looks like there will be enough interest. I sent Dean OIML standards for hardness testing/testers (one of the examples presented in Dallas.)

I have been talking with some key committee chairs, VP’s and a few others regarding setting up a special meeting at MSC to prepare a set of recommendations to resolve varying interpretations and to define: “traceability, intrinsic and derived standards, and consensus standards”. One tentative suggestion has been to present the recommendations in the NCSL Newsletter (and other fora) for comment, and once resolved, published in the NCSL Glossary and/or Z540-1 Handbook. I have made arrangements with Chet Crane for a meeting room on Wednesday 24.

Brian Conroy will be conducting a workshop at the MSC on round robins and Youden plot analyses. The US Measurement Requirements, Intrinsic and Derived Standards and Measurement Comparison Program Committees (and RP subcommittee) will all meet at the MSC in January.

**Committee Activity:**

**MEASUREMENT COMPARISON PROGRAMS**
James Wheeler

Brian Conroy (Litton Guidance and Control Systems) will hold a workshop at the Measurement Science Conference in Anaheim.
entitled, "Interlaboratory Performance Evaluation Using the Youden Diagram Method." It is scheduled for Workshop C on Wednesday, January 24, 1996. Call Brian for more information at 818-717-6872.

The cylindrical Ring RR is in progress according to Steve Morse (Superior Gage). Call Steve at 918-456-1554 for more information.

Marc Buttler (MicroMotion) is looking for participants for a flow round robin. It is scheduled to start in March 1996, and finish approximately March 1998. There are international participants. The artifact is a Micromotion Model CMF100 Coriolis Flow Meter. Marc will present results of this effort at a future NCCL meeting. Call Marc for more information at 303-530-8141 or FAX 303-530-8596.

A new mass round robin is starting January 1996 according to Dave Dikken (Minnesota Department of Public Service). There are 10 laboratories interested at this time and the round robin will last approximately one year. Dave invites international primary laboratories to participate in this round robin. The artifacts consist of 2 sets of kits from 1 mgm to 1 KG. The round robin includes density and magnetic permeability measurements. Call Dave to participate or for more information at 612-639-4010.

Les Huntley (Les Huntley, Metrologist, Inc.) reports that the Josephson Junction Array RR is underway and is now at Hewlett-Packard in Loveland, CO. Call Les for more information at 208-746-5443.

Brian Fitzpatrick (Hi-Tech Inc.) is looking for a pivot lab to support a pressure round robin. The artifact is a Parasciente 200 psig Digital Pressure Gage. There are 10 participants interested. NIST is participating. Brian is reporting on this round robin at a Board meeting in Indian Wells, CA in January.

Thomas Larason (NIST) reports that the preliminary results of the UV round robin will be mailed out before Christmas. There were 15 participants using two UV Irradiance probes and meter. He hopes to start a second round. Tom will report on the results at NCCL 1996 in Monterey, CA. Tom can be contacted at 301-975-2334.

Clyde Orrison (Texas Instruments) reports that the RF power RR is now starting in Round 8. The artifact is a Type N Connector Model HP 8478B Thermistor Mount. The 1st lab participating was AEL Industries in Lansdale, PA. The artifact is now at Texas Instruments and it will next go to Bionetics Corp. at the Kennedy Space Center in Florida. Clyde will report on this at the NCCL Region 6 Central Section Meeting in April 1996. Clyde can be reached at 214-995-5032.

ARFTG Verification Kits

The Automatic RF Techniques Group (ARFTG) chairman is Bob Judish (NIST, Boulder). Bob can be reached at 303-497-3380. ARFTG is continuing their round robin efforts with vector automatic network analyzers.

Phil Yates (JPL) is the coordinator for the 3.5mm Verification Kit Round Robin. Phil can be contacted at 813-354-2981.

Connie Ondrejka (NIST, Boulder) is the coordinator for the 7mm Verification Kit Round Robin. Connie can be contacted at 303-497-3524.

Pat Nolan (Lockheed Martin) reports that 28 laboratories have measured the Type-N Verification Kit Round Robin with five labs waiting. He has 36 good data sets. The effort started in June of 1991 and is on-going. The kit consists of a 20 dB Attenuator, a 50 dB Attenuator, a Beatty Standard Airline, a Beadless Airline, and a set of Offset Shorts (M/F). The kit is now at NIST. The kit will next go to the Hong Kong Standards Lab. Other international participants include the Netherlands and Australia. Pat reports that the male offset short pin loosens and the instructions have been modified to correct this problem. Call Pat at 408-756-2144 for more information.

Ed Daws (Wilton) has four participants in a 2.92 mm K-Connector Verification Kit RR. This is also an on-going RR. The kit consists of a 20 dB Attenuator, a 40 dB Attenuator, a Beatty Standard Airline, and a Airline. The kit is now at NIST, Boulder. It will next go to Gore. Ed is looking for more laboratories to participate. He can be reached at 408-778-2000.

For further information on the MCP committee call Jim Wheeler (Navy Primary Standards Laboratory) at 619-545-9698.

EDUCATION & TRAINING

Don Dalton, VP

PERSONNEL TRAINING REQUIREMENTS COMMITTEE

Leroy Britian

Welcome to Leroy Britian as he joins many interested people who are working to develop a recommended practice for developing metrology and calibration personnel qualification requirements.

The charter of the committee is to establish a, "direct connection to the Education System Liaison Committee through the identification and establishment of qualifications, education, knowledge, experience and training requirements of the positions needing the measurement sciences." Leroy will join an already established group of people who are developing a training matrix. These people are:

J. L. Bagley
Gloria Neely
Tom Kimbrell
Don Drum
Don Dalton
Jan Waldus
Herb O'Neil
Jim Cigler
Paul Hanssen

If anyone else is interested in participating in this important committee effort, please contact Leroy.

EDUCATION & TRAINING EDUCATION AWARDS

The NCCL Education and Training's Education Systems Liaison Committee under the leadership of Tom Kimbrell has solicited applications for the 1996 NCCL Education Grants/Awards to post-secondary schools. Several applications have been received and are in the process of being reviewed and prioritized. It is good to
see quality programs in Metrology developing around the USA and indeed the world. We expect to make the awards in February, after the Board of Directors meeting.

**TRAINING INFORMATION DIRECTORY**
Dave Lorenzen

Dave Lorenzen (Training Information Directory) prepared and compiled the 1996 edition of the Training Information Directory. The directory includes some interesting new training programs. The directory has been mailed.

**EDUCATION SYSTEM LIAISON**
Tom Kimbrell

The committee for qualifications is working quickly. Everything else is moving as expected. Listed below are some activities for the quarterly report.

- Coordinated the operation of the education display at Dallas
- Established a subcommittee on qualifications
- Mailed our applications for grants/awards
- Mailed information to Bill Simmons for writing and inclusion in NCSL Information Manual
- Continue to work articulation agreements with the University of Colorado, Denver and local high schools

Tom Kimbrell started the process of inviting schools to apply for the NCSL Education Grants for 1996. Applications were due by 15 Nov 1995. Tom has sent to Bill Simmons the criteria and material for the Education Award policy. The Education Curricula Sub-Committee has been doing some fine work.

**TRAINING RESOURCES COMMITTEE**
Bill Sorrells

The below listed video tapes will be removed from the NCSL Video Library due to lack of use and will no longer be listed in the Training Resources Directory.

148 4014 Display Adjustments,
209-212 Introduction to Microcomputer System lectures 9-12
213-216 Introduction to Microcomputer System lectures 13-16
217-219 Introduction to Microcomputer System lectures 17-19
401 MECCA Introduction
402 Automated Manufacturing Research Facility (NBS)

The tapes will be archived should anyone ever possibly need to use them.

**LABORATORY SYSTEMS**
Brian Fitzpatrick, VP

I was requested to publish an article in the Newsletter with regard to the use and abuse of the term “Certified” in reference to ISO and other registering/accrediting bodies. I spoke with several people at the Region 3 & 4 meeting in order to get some additional opinions on the subject. Everyone agreed that it is a problem that needs to be addressed, and it was recommended to me that ASQC be contacted in this regard.

Since the passing of Joe Simmons, we are without an ASQC Liaison (at present), I took the liberty of contacting the ASQC directly, and wrote a letter on behalf of NCSL.

To:
Helaine Johnson
American Society for Quality Control

Dear Helaine,

I have been tasked by the NCSL Board of Directors to address the issue of Quality Program Registration and Accreditation vs. “Certification” of product.

It has come to our attention that many companies who have been registered to ISO and/or other registering or accrediting bodies have been issuing reports which state that the product and/or calibration report has been “Certified” by said organization. This, of course, is a problem because Quality Program Registration or Accreditation in no way implies that the end product is “Certified” by ISO or any other such body. However, customers are being falsely misled to believe that the product has indeed been certified (implying that an organization such as ISO has extensively tested and evaluated the product and certified that it meets all of its requirements).

In order to address this problem, the NCSL Board of Directors has decided that an article explaining the differences between quality program registration/accreditation and end product certification must be published in the NCSL Newsletter.

Since my company Hi-Tech, Inc. is a sales representative (as well as a calibration laboratory) for at least one manufacturer I cannot write this article myself. In my effort to find an alternate author, I’ve been steered in the direction of the ASQC (by several registering bodies).

My first avenue for such a request would normally have been the late Dr. Simmons, former NCSL delegate to the ASQC. Joe’s recent passing has left a tremendous gap in the calibration community. In fact, I know that Joe would have gladly written the article himself. Since this position has not yet been filled, I am hoping that someone in your organization would be willing to help the NCSL in this regard. Please let me know what you decide. Thank you.

Brian Fitzpatrick

**EQUIPMENT DOCUMENTATION**
Hugh Felger

We are in the process of working on a calibration procedures document to augment the Instruction/maintenance manual document. We hope to complete this in the last quarter of the calendar year.

The demise of the key military standards, 45562 has caused major concerns among the calibration. The implication of ASQC and ISO standards become more important. I believe that NCSL has a
golden opportunity to play a major role in helping to define standard practices.

The amount of time that individuals have available for industrial volunteering in the current economic climate has dropped dramatically. It seems that immediate job requirements have taken more time away from committee activities. We hope that things improve.

CANADIAN NATIONAL MEASUREMENT REQUIREMENTS
Dave Stevens

Following the tradition of a bi-annual satisfaction survey for the NRC, there will be a survey distributed in 1996 to Canadian NCSL members, NRC clients and any other source of users.

The projected timetable is as follows:


Committee members:

Jim Mullens
Pylon Electronics
147 Colonnade Rd.
Nepean, Ontario
K2E 7L
613 226-7920
FAX 204 226-8195

Dave Stevens
Pulse Engineering
300 Keelewat St.
Winnepeg, Manitoba
R3R 2E3
204 644-4321
FAX 204 697-2264

CANADIAN INMS MEETING REPORT
Roy VanKoughnett

The third NCSL-NRC/INMS Managers Meeting was held on October 19 at the NCSL Canadian Region Fall Workshop and Symposium held at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia.

A.R. Robertson welcomed everyone and explained that he would be chairing the meeting for A.L. VanKoughnett who was unable to be present due to a previous commitment.

He then reported on the changes that had taken place at the NRC. He stated that an overall NRC budget reduction of 17% had been announced in June 1995, and in the case of the Institute for National Measurement Standards it must absorb a reduction of 15% over three years. These reductions were made following a process of review and strategic planning for all of NRC. One of the changes resulting from the review is the transfer of the chemical metrology activity, consisting of a Group of 17, from another Institute to INMS.

Other changes included an adjustment in the Group and Section structure of INMS. The Section structure was changed from three to two and some of the Groups were rearranged. The component of the Length Group concerned with stable frequency sources was combined with the Time and Frequency Group to form a new Frequency and Time Group. The Dimensional Metrology component of the Length Group, the Acoustical Standards Group and the Mass Group were combined to form the Mechanical Metrology Group. Most Groups will absorb staff reductions. A. Robertson emphasized that this review will not affect the services the Institute provides to its clients.

Another significant change that emerged from NRC’s review is the concept of technology groups as a means to organize and develop programs of research in technology sectors relevant to industry and Canada’s S&T priorities. Five technology groups were created. A. Robertson pointed out that A.L. VanKoughnett chairs the Infrastructure Technologies group which includes INMS and the Office for Technology Centres along with three other Institutes. P.G. McIntyre has been seconded to the OTC for two years. He explained that the OTC includes a number of technology centres which will take steps to become fully cost-recovered technology centres within five years.

NCSL Measurement Requirements Committee

In summarizing the results of the measurements requirements survey, P. McIntyre indicated that respondents identified services which INMS cannot provide, asked for services that exist but they were unaware of, and identified new services that were needed. He pointed to the report titled NRC’s Response to the NCSL Canadian Metrology Requirements Survey, Final Report (dated July 1994) that was prepared in response to the survey.

The report states that INMS can for the most part meet all of the concerns identified, and in areas that it cannot attempted to point to other organizations that can. In addressing the new services which were identified by the respondents, he mentioned the new dimensional metrology facility and the mass and pressure facility. Reference was also made to the Directory of Services and the Fee Schedule which were recently published to make clients aware of the wide range of services offered by the Institute.

W. Sampson, as Chairman of the Metrology Requirements Committee, reported that a follow-up by telephone to determine why there was such a low response rate to the questionnaire indicated that individuals did not respond because they had put the survey aside or did not use NRC services. The format of the questionnaire was a concern and he stated that this would be reviewed and taken into consideration for the next survey which is to take place in the Spring of 1996. W. Sampson stated that his two-year term as Chairman of the Committee ends on 31 October and that the new chairman will be David Stevens, General Manager, Pulse Engineering.

In general it was felt that this committee served to foster an ongoing relationship between the NCSL and NRC, and was a pipeline to other initiatives by the NRC such as the brochure on Canada’s National Measurement System.

Update on Sir Sandford Fleming activities

P. McIntyre and G. Cameron gave an update on the status of the metrology training program at Sir Sandford Fleming College. Recent efforts to promote the program included attendance at two trade shows at the International Centre in Toronto, and a visit to Trent University to speak to third year physics students about opportunities in metrology. As well a meeting with the Ontario Training and Advisory Board served to make them aware of the pro-
gram. Other suggestions to promote the program included discussions with other community colleges and the private sector.

P. McIntyre and G. Cameron said that they would meet with members of the college to discuss the promotion of the program, and possible cooperation with partners interested in training.

P. McIntyre stated that the need for training is still apparent. Since its inception in 1993, graduates have been successful in finding employment. He also stated that a revised course outline will be published in response to changes in demand for the course and budgetary constraints.

Canada’s National Measurement System

P. McIntyre announced that a four-panel exhibit and brochure on Canada’s National Measurement System would be on display for the registrants of the conference. This exhibit and brochure is a joint venture between INMS, the Department of National Defence, the Standards Council of Canada, and Industry Canada. It was launched in September and depicts the roles of these participants and the related components. It highlights the mechanisms for international cooperation in metrology, provides a glossary and a list of the contacts.

It was mentioned that the exhibit and brochure was shown at the IEEE High Technology and Canadian Manufacturing Week Conference Trade Show in Toronto.

Long Range Plan of the Canadian Region

The Canadian Region goals for 1996 and 1997-2000 were listed as follows:

1996

1. Increase meeting attendance and membership through such actions as using rented membership mailing lists from other supportive societies such as ASQC, IEEE and ISA.
2. Explore the possibilities of holding area spring meetings by encouraging area co-ordinators, manufacturing members and the NRC and SCC to organize presentations at successive meetings across the country.
3. Hold a two-day regional fall symposium with exhibitors.
4. Further develop the Metrology Requirements Committee reporting to the INMS at the NRC with Canada’s needs for measurements and measurement information.
5. Support and promote the Fleming Metrology Training Institute and its students.
6. Encourage a Canadian laboratory to produce an article for the newsletter on Touring our NCSL Member Labs.

1997-2000

1. Continue development and promotion of the training initiative in metrology with Sir Sandford Fleming College, the National Research Council and other member companies.
2. Continue with yearly area meetings and a regional symposium.
3. Expand the Metrology Requirements Committee to encompass all measurement areas.
4. Develop an International Metrology Co-ordination Committee to assist the NRC and industry in collaborating with other national laboratories.
5. Develop closer ties with metrology institutes and industries in Mexico as encouraged in the North American Free Trade Agreement.

As an initial step regarding closer ties with Mexico, P. McIntyre stated that he would provide the NCSL with the names of contacts.

Regarding memberships, it was noted that there are currently 105 Canadian members. Five new members joined this year. The need for mailing lists and ways and means of promoting the NCSL were discussed. In particular, it was suggested that the NCSL brochure be made available at trade shows, large meetings and conferences.

Regarding the list of objectives, A. Robertson stated that where practical NRC would provide support in areas such as mailing and publicity.

Publicizing NCSL in Canada by making better use of NRC/INMS newsletter

Discussion concerning the long range goals of the NCSL included increased participation by members to achieve the desired goals. One of the means to realize this is to publicize the activities of the NCSL in publications such as the NRC/INMS Newsletter. A. Shaw, editor of the INMS Newsletter stated that the next issue of the INMS Standard would be published by the end of November.

L. Peer stated that he would submit an article for that issue.

Joint NRC/NCSL Course

A general discussion concerning the possibility of holding a joint NRC/INMS-NCSL course resulted in the suggestion that the NCSL spring meeting be held at the NRC, in conjunction with an INMS measurement course.

The discussion indicated that there was a requirement in areas such as, mass, dimensional metrology, temperature, pressure, electrical power. As well, it was noted that with the emphasis on quality systems, a course on this topic and how it relates to metrology should also be considered.

It was decided that A. Robertson would contact D. Morgan with a proposed date for the spring meeting. D. Morgan as the Eastern Ontario Area Coordinator would be responsible for organizing the spring meeting.

The next meeting will be held at the NCSL Fall Workshop and Symposium in October 1996 at Ortech in Mississauga.

A. Loucks

(continued on page 40)
ANSI/NCSL Z540-1-1994
The New National Standard for Calibration Laboratories and Equipment
is now available!

A single national standard for calibration laboratories and equipment is becoming a reality. The standard has been published, federal agencies and industry are specifying work based on it, and accreditation is available for calibration laboratories. The new standard is expected to reduce the number of compliance documents, decrease redundant audits, and ensure compliance with international standards.

Titled ANSI/NCSL Z540-1-1994 General Requirements for Calibration Laboratories and Measuring and Test Equipment, it essentially combines MIL-STD-45662A, the consensus national standard for the U.S., and ISO Guide 25, the primary document recognized by the international community to ensure calibration laboratory competence.

The ANSI/NCSL Z540-1-1994 may be purchased from NCSL at $8 per copy.

Need 10 or more copies? Ask about quantity discounts! Phone (303) 440-3339.

--- ORDER FORM ---

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TOURING OUR MEMBER LABS

Hewlett-Packard Co
Santa Rosa Standards Lab
Host: Jean Neering

In any highly-decentralized company like HP, metrology functions are usually divided and assigned to operating units which have those specific calibration requirements. This started happening at HP about 1960, as the main corporate lab in Palo Alto, managed by the legendary Phil Hand, began to transfer portions of its workload to satellite divisions. First to move was the DC and LF standards which moved to Loveland, Colorado to support the production and R&D which moved there.

At the present, HP calibration standards are managed in a number of sites, Loveland, HP Labs in Palo Alto, Neely Sales in Mountain View, Santa Rosa, and others throughout the world. Today’s tour will focus on the Santa Rosa, California facility, which is resident in the company’s largest Test and Measurement complex. The lab serves three T&M divisions, Microwave Instrument Division, Santa Rosa Systems Division and the Microwave Technology Division.

Several functions of the Santa Rosa site metrology services regrouped a few years back and are now referred to as the Santa Rosa Metrology Services (SRMS). These sections are: the Electrical Standards Lab, the Recertification Lab, and Dimensional Metrology (which includes the Mechanical Standards Lab and other Dimensional Metrology for Santa Rosa). SRMS resides within the Precision Accessories Section of Microwave Test Accessories, and this aligns us with the manufacturing section that produces many of the standards that we calibrate. This alignment has brought us closer to our internal customers, and, in turn, has helped us to better understand our external customer needs and challenges.

As mentioned, SRMS consists of three distinct functions. The Electrical Standards Lab focuses on primary impedance standards to support the R&D and manufacturing of microwave and RF product lines. The Recertification Lab performs recertification and repair of calibration and verification kits, and associated devices (ie: cables, adapters, etc.), which are returned to the factory. Dimensional Metrology focuses on primary standards, machined and assembled part metrology, as well as vendor audit functions.

Although these areas are diverse in technologies, the business priorities are common. Our top priority is to SATISFY OUR CUSTOMERS. Satisfying our customers includes improving productivity, reducing turn-around-times, developing new process capabilities where needed by our customers, developing and communicating a Business Purpose and Objectives, and constantly improving the management of our technical data systems. To maintain a core competency in metrology, we need to stay one step ahead of our customers in technology. We need to be able to give them the tools and technologies that they need to be successful.

During the last several years, we have moved forward in several technologies. We have performed calibrations in 1.85mm, Type F and, most recently, 1.0mm. We have developed and sold 2.4mm LRL calibration kits to external customers. We have developed a pin depth measuring process based on a laser interferometer with sub-micron resolution. Our in-house diamond turning capability has enabled us to create standards with surface finishes and tolerances previously unattainable. We are very excited about these new capabilities, and about the commitment we are making toward maintaining our metrology core competency for the Test and Measurement Organization of HP.

Following are some typical parameters and ranges of the capabilities in the SRMS:

Microwave power: Calibration ranges from 100 kHz to 110 GHz, in Type N, 3.5mm, 2.4mm coax and waveguide as appropriate.

Impedance standards: Calibration services are available for two major types of impedance standards, primary and transfer. Primary standards such as headless air lines, are calibrated using dimensional measurements. Transfer standards such as fixed loads are used as references. Services and products are maintained in 7mm down to 1.85mm coax and from WR90 to WR10 (110 GHz).

S-Parameters:

From four types of coax, starting at 100 KHz, and ranging up to 110 GHz waveguide, the lab provides S-parameter measurement at state-of-the-art uncertainties for S11, S21, S12 and S22.

Dimensional Metrology

Many microwave parameters are traced back to physical dimensions, so most microwave cal labs have dimensional references and dimensional measurement capabilities. SRMS capabilities are summarized in the following table.

- Pin Depth — Zygo New View 100 3D Imaging Surface Structure Analyzer
- Length—Heidenhain length measurement
- Length—Supermike with HP Laser
- CMM—Zeiss Coordinate Measurement Machines
- Internal Diameter Size/Consistency—Automated Air Probe Measurement System
- Outer Diameter Size/Consistency—Automated Lasermike Measurement System
- Surface Texture Analysis—Federal Surfalyzer 5000
- Rank Industries Talysurf 6
- Circular Geometry Analysis—Rank Industries Talyrond 200
The Rank Pneuma Diamond Turning Machine is used in production for a variety of finish machining operations to establish critical length, diameter and surface finish specifications.

This Zygo New View 100 3D Imaging Surface Structure Analyzer is used to measure a variety of mechanical specifications, such as pin depth, with sub-micron resolution.

Primary Impedance Standards such as matched and mismatched Air Lines and precision coaxial Offset Shorts are measured, and uncertainties are computed from these dimensional measurements over the frequency range of the connector.

This Special Option Kit provides the capability to perform an LRL calibration in the 2.4mm interface, with high accuracy and less parts.

S-Parameter measurement are currently available for a variety of waveguide bands and coax connector types using an S310 Network Analyzer.
MEMBER ORGANIZATION PROFILES

STANDARDISATION, TESTING AND QUALITY CERTIFICATION (STQC) DIRECTORATE

Delegate : Joseph Satya Raju
Phone : +91 (11) 436 2831, Fax: +91 (11) 436 3083
E-mail : joe@doe.ernet.in

STQC: Standardisation, Testing and Quality Certification (STQC) Directorate is the major infrastructure provided by Department of Electronics, Govt. of India for Quality improvement of Indian Electronic products. The programme has been in existence since 1977.

Objective: To Improve Quality of Indian Electronic Products to make them globally competitive.

STQC Network: STQC functions through 21 Accredited laboratories viz., ERTLs & ETDCs dotting the entire country as shown in the map.

Services:
• Nation-wide Calibration Service with traceability to National & International Standards including mobile Calibration, Environmental Chamber and Non-Electrical Parameter.
• High Precision Calibration Centre (HPCC) Bangalore.
• Testing of Components, Equipments and Systems including Safety Testing & EMI/EMC Testing as per UL, VDE, IEC, CISPR & FCC Standards.
• Comparative Testing for Consumer Associations/ Organisations.
• Assistance in Product Development.
• Failure Analysis and Reliability Prediction.
• Education, Training & Quality Counselling.
• Certification.

Certification:
• ISO-9000 (SQ scheme).
• Safety Certification to IEC Standards ('S' Mark).

• IECCE - CB Scheme for Safety.
• EMI/EMC Certification (EMC mark).
• IECQ for components.
• Product & Quality System Certification schemes accredited by Dutch Accreditation Council (RvC).

Education, Training & QA Assistance:

Standard & tailor-made curricula on various topics such as :
• Quality and Reliability.
• Metrology & Test Engineering.
• Electronics Interconnection Techniques, SMT, MST, RSP.
• Software Quality Assurance.
• Quality System Implementation.
• Calibration/Testing & many others.

Resources:
• 4 Electronics Regional Test Labs (ERTLs).
• 16 Electronics Test & Development Centres (ETDCs).
• Centre for Reliability (CFR).
• Indian Institute of Quality Management (IIQM).
• National Supervising Inspectorate (NSI) - IECQ.
• Society for Electronics Test Engineering (SETE).
• STQC - Philips EMT Institute.

Manpower:
• 600 well qualified Scientists/Engineers &Technicians.
• 50 Qualified Lead Assessors.
• 8 Certified Quality Analysts.
• 3 Tick-IT Qualified Auditors.
• 5 SEI Assessors.

International Tie up:

STQC has close working relations with following organisations:

BSI, UK
CEPREIL, China
DELTA Electronik Centralean, Denmark
DEMKO, Denmark
GOSTSTANDARD, Russia
HKQAA, Hong Kong
IES, USA
IMQ, Italy
JQA, Japan
KAITECH, Korea
KEMA, Netherlands
NCSL, USA
PHILIPS, Netherlands
QMI, Canada
R&S, Germany
RvC, Netherlands
SISIR, Singapore
TUV-Product Services, Germany
UL, USA
VDE Test Centre, Germany
SIXTY YEARS OF BONDED RESISTANCE STRAIN GAGES FORTY YEARS OF WESTERN REGIONAL STRAIN GAGE COMMITTEE

The 40th Anniversary and 80th meeting of Western Regional Strain Gage Committee (WRSGC) will be celebrated in Scottsdale, Arizona, February 5-6, 1996 at the Ramada Valley Ho Resort.

Whenever you have your mail weighed at a Post Office, buy anything in a supermarket or "Five & Dime" or a candy store; or even order a pizza; whenever trucks on the highway, trains in motion and planes on the runway are weighed, transducers based on bonded resistance strain gages are involved almost all of the time. The pressure transducers which keep our petro-chemical and other industries going are also mostly strain gage based.

The strain gage industry including transducers and their signal conditioning and processing hardware and software are a multi-billion-dollar world-wide industry today. Strain gages helped the Allies win World War II because their commercialization in 1938 permitted engineers for the first time to actually measure stresses and strains on airplanes in flight and the dynamic phenomena on armaments of all kinds. The U.S. was able to design and produce superior air power and armaments with the help of "that little bundle of wire".

HISTORICAL: 60 years since the invention of the bonded resistance strain gage, meet these inventors and pioneers on the program:

Charles M. Kearns, inventor in August 1936 of the bonded carbon strain gage.

Edward E Simmons, inventor in September 1936 of the bonded wire strain gage, at Cal Tech.

Frank H. Hines, co-worker with Prof. Arthur C. Ruge at M.I.T., inventor (now 90) of the commercialized version of the wire strain gage in April 1938.

Peter Scott Jackson, inventor of the bonded foil strain gage in England.

William T. Bean Jr., pioneer in the application of strain gages to prevent and solve failure problems in military and industrial projects.

All the speakers are in their 80's and this is the first time they appear together.

A review of the 40-year history of WRSGC is also included.

For information & reservations, contact:
Peter Stein
1-800-632-7797
FAX 1-800-meas-sys
e-mail meas-sys@primenet.com

STQC QUARTERLY NEWSLETTER HELPS QUALITY AWARENESS IN INDIA

Standardisation, Testing & Quality Certification (STQC) Directorate publishes a quarterly newsletter, which covers Metrology, related news and activities undertaken by various organisations particularly about STQC & its 21 labs. The newsletter covers topics/activities such as new Test & Calibration facilities added, Certification, highlights of labs, Metrology, seminar/workshops organised, Laboratory Accreditation, proposed future training courses, NCSL, IES etc.

Annual subscription is US $10.00 which includes postage charges by Airmail.

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PARTNERS LOOK AT ULTRASOUND USE IN POWER PLANTS

A new collaboration between NIST and the electric Power Research Institute is seeking more accurate measurements of water flow rates in electric power generation plants. Utility companies want improved sensor technologies in order to enhance plant productivity, boost competitiveness and reduce the cost of electricity. One technology that EPRI has identified as needing improvement is flow metering for turbine feedwater. Power plants use internal flow meters whose accuracy is adversely affected by such things as fouling and swirling flows coming from pipe elbows. A promising alternative is ultrasonic flow metering, which places a sound transmitter and receiver at specified points on the outside of a pipe. Flow rate is determined by the time it takes sound to travel between the transmitter and receiver. EPRI and NIST recently signed a new cooperative research and development agreement with a long-range goal to develop standards of practice for installing and using ultrasonic flow meters. NIST is planning to test ultrasonic meters in ideal flows, such as those found in very long straight pipes, and in non-ideal conditions near pipe elbows and reducers.

Contact: Linda Joy, (301) 975-4403

INSTALLATION EFFECTS DOCUMENTED IN NEW REPORT

A recently issued report from NIST’s Flow Meter Installation Effects Consortium, Laser Doppler Velocimetry Studies of the Pipeflow Produced by a Generic Header (NIST Technical Note 1409), describes how a pipe header affects flow meters installed in downstream pipes. Scientists studied the effects of a generic header, which directs a single influent stream into two effluent streams, using laser Doppler velocimetry, a light-based technique that can detect flow velocities without inserting instrumentation into the flow. The improved flow measurements can result in significant enhancements in material accountability for continuous process industries and utilities, and can help assure equity in the exchange of commodity chemicals and fuels. NIST TN 1409 is available for $5 prepaid from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238, fax: (202) 512-2250. Order document number 003-003-03334-1.

Contact: Linda Joy, (301) 975-4403

PAPER EXAMINES MECHANICS OF ELECTRONIC PACKAGING

An interesting aspect of current microelectronics work is the need for increasingly more precise knowledge of the mechanical properties of materials such as thin films. As electronic circuitry gets smaller, denser and faster, semiconductor junctions run hotter. High-performance electronic interconnect structures are made of multilayer “sandwiches” of conductors and dielectrics with different coefficients of thermal expansion. Temperature changes during manufacturing, testing and service produce thermomechanical stresses that can split the interlayers apart, as well as fatiguing and fracturing the metal conductors. To simulate these temperature changes and thermomechanical stresses, manufacturers are creating computerized models of advanced packaging structures. This modeling and simulation effort requires an understanding of material properties and failure modes. NIST’s Materials Reliability Division in Boulder, Colo., is working with industry and academia to help gain this understanding. Researchers David T. Read of NIST and James W. Daily of the University of Maryland, recently used a miniature piezoelectric-activated micromechanical testing device to obtain much needed materials property data. In particular, they studied the mechanical behavior of thin films produced by electron-beam evaporation of aluminum and copper, and deposited on silicon substrates. They found that the mechanical behavior of thin films is influenced by their thickness and grain size. To obtain a copy of their paper, contact Sarabeth Harris, Div. 104, NIST, Boulder, Colo. 80303-3328. (303) 497-3237, e-mail: sarabeth@micf.nist.gov.

FORTY-FOUR AWARDS MADE IN FIVE FOCUSED AREAS

Forty-four industry-sponsored projects in five technology areas—motor vehicle manufacturing technology (15 awards), digital video in information networks (six awards), catalysis and biocatalysis technologies (nine awards), component-based software (seven awards), and manufacturing composite structures (seven awards)—will receive cost-shared funds for research and development under the NIST-managed Advanced Technology Program. The awards in the five competitions (among 11 programs focusing on technology areas deemed by industry as offering the best opportunities for major economic returns) were to 19 joint ventures and 25 single companies, involving a total of 160 organizations as participants. If carried to completion, the projects will cost approximately $192 million in private sector funding plus approximately $188 million in cost-sharing by the ATP. For lists of the selected projects in the five competitions, fax a request to (301) 926-1630. This information also is available electronically on the World Wide Web at http://www.nist.gov/welcome.html or from the NIST Gopher: gopher-server.nist.gov (in both cases, look under “News and Information”). For more information on the ATP, call (800) ATP-FUND (287-3863) or send e-mail to atp@micf.nist.gov (via Internet).

NIST, AUTO MAKERS TEAM UP FOR LOWER EMISSIONS

A new research program at NIST will help U.S. auto manufacturers develop and test low-emission vehicles. The program, done in cooperation with regulatory agencies, also eventually could help emission testers measure a variety of exhaust gases in a few seconds. Auto makers need new measurement technologies and standards in order to design cars and trucks that will meet increasingly stringent federal Clean Air Act requirements and California emission standards. NIST’s Chemical Science and Technology Laboratory is collaborating with the American Industry government Emissions Research organization to meet this need. AIGER is an umbrella group that includes the Environmental Research Consortium (ERC members are Chrysler, Ford, General Motors and Navistar), the California Air Resources Board and the EPA. The
new research effort includes an “electronic nose” (an array of microsensors, detectors and a microprocessor on a credit-card-size device), a new primary flow meter calibration facility at NIST, analyzing automobile exhaust analysis using infrared light and microwaves, and gas cylinder standards.

Contact: Linda Joy, (301) 975-4403

GROUP EXAMINES OPTICAL TAPE DATA STORAGE STANDARDS

Preserving the integrity of electronically stored data becomes increasingly significant as the amount of information processed by computer systems proliferates. Answering industry’s call for data integrity and standards for emerging optical tape media, devices and applications, researchers from NIST’s Computer Systems Laboratory are participating in the Optical Tape Study Group established by the Association for Informational and Image Management International. This is one example of NIST’s collaboration with industry and government organizations in developing measurements, evaluation techniques and standards for long-term computer data storage. The recently established study group explores such issues as the data integrity of optical tapes, metrology concerns, media and drive specifications, and possible future standards. Several key organizations in the data storage industry participate in the study group. For more information about the Optical Tape Study Group, contact its chair, Fernando Podio, by phone at (301) 975-2947 or e-mail: fernando@pegasus.ncsl.nist.gov (via Internet).

ON-LINE VERSION OF SRDP CATALOG AVAILABLE

The new NIST Standard Reference Data Products Catalog is available on-line through the World Wide Web by using a browser such as Mosaic or Netscape. It can be accessed through the NIST home page (http://www.nist.gov) via Measurement Services, or directly at (http://www.srd.nist.gov: 8231/). The on-line resource contains information on all currently available SRD databases. Information is provided on data content, search parameters, display features and system requirements of SRD’s computerized databases. Price and ordering information is included for all products. The on-line catalog will be updated whenever new or revised products are available. For information, call (301) 975-2208 or send an e-mail message to srdp@enh.nist.gov (via Internet)

NEW MICROLITHOGRAPHY METHOD MAY HELP SHRINK CHIPS

A new form of microlithography that uses neutral atoms instead of light to write patterns on silicon has been demonstrated at NIST by scientists from Harvard University and the Commerce Department agency. The new method offers the future promise of manufacturing integrated circuits or other microfabricated objects about 10 times smaller than is currently possible with lightbased lithography methods. The scientists’ results are reported in the Sept. 1 issue of the journal Science. The experiments involved directing a beam of metastable argon atoms through a copper grid or screen with holes about 10 micrometers across. The atoms were used to write patterns on a gold surface covered with a photosensitive layer called a resist. In the new microlithography method, the resist is a self assembled monolayer made of organic molecules known as alkanethiolates. Wherever the metastable atoms hit this experimental resist, they release their energy and break hydrocarbon bonds. Areas of gold underneath weakened and damaged bonds then are washed away with a chemical bath. The result is a grid of gold lines a few micrometers wide, which then can be chemically transferred into the silicon.

Contact: Linda Joy, (301) 975-4403

LASER LENS DRAWS NANODOTS ON SILICON

Physicists at the National Institute of Standards and Technology like to think small. Their newest creation—an array of metallic nanodots—is among the smallest fabricated objects on earth. Each nanodot is about 80 nanometers (80 billionths of a meter) wide. That’s about one one-thousandth of the diameter of a human hair. Scientists say the technology used to make the nanodots could be adapted to draw more complex patterns for integrated circuits on silicon chips. Once developed, such a method might provide a way to pattern circuits with linewidths as much as 10 times thinner than those in current computer chips. To make the chromium nanodots, a group of NIST physicists modified a technique they devised two years ago to draw rows of nanolines on silicon. In that first experiment, they used a laser wave to guide chromium atoms to the surface in rows spaced 213 nanometers apart, exactly half the length of the laser wave. Two perpendicular laser waves focused chromium atoms into evenly spaced dots in the most recent experiments. Since the distance between the dots is determined by the laser wavelength, which is known with very high accuracy, the nanodot arrays also could serve as an atomic ruler for instruments such as atomic-force microscopes. For more information, contact Jabez McClelland, B206 Metrology Bldg., NIST, Gaithersburg, Md. 20899-0001, (301) 975-3721, e-mail: jabez@epg.nist.gov.

U.S., CANADA MUTUALLY RECOGNIZE TESTING LABS

In an effort to improve trade between the world’s two largest trading partners, NIST and the Canadian General Standards Board recently signed an agreement for the mutual recognition of testing laboratories administered by the NIST National Voluntary Laboratory Accreditation Program and the Laboratory Acceptance Program operated by CGSB. The MRA provides for mutual recognition of testing labs located within the territorial United States accredited by NVLAP and for testing labs within Canada that are accredited by CGSB’s Laboratory Acceptance Program. Both programs meet the requirements of international standards for accrediting labs under ISO/IEC Guides 25 and 58. The CGSB program was established in 1979 and is one of six national certification organizations accredited by the Standards Council of Canada. Established in 1976, the NIST NVLAP program currently has more than 850 accredited laboratories. For more information, contact NVLAP, A162 Bldg. 411, NIST, Gaithersburg, Md. 20899-0001, (301) 975-4016, fax: (301) 926-2884
COMPREHENSIVE GUIDE TO T&F DATA ISSUED

A bibliography of NIST publications in the field of time and frequency is now available. It covers the modern era of this technology; that is, papers dating from the introduction of atomic clocks. Every paper published by the Time and Frequency Division staff since 1967 is included, plus selected papers on atomic clocks dating back to the early 1950's. The papers have been grouped into 23 categories, including broadcast services, calibration methods, frequency synthesis, ion storage research, lasers, measurement methods and time scales, to name a few. Also provided is a section listing books, journals, special issues of journals and conference proceedings in this field. More general papers on tutorials and general T&F are found in separate sections. Time and Frequency: Bibliography of NIST Publications (NISTIR 5035) is available for $27 prepaid from the National Technical Information Service, Springfield, Va. 22161, (703) 487-4650. Order by PB 95-220463.

TWENTY-ONE AWARDS MADE IN THREE FOCUSED AREAS

Twenty-one industry-sponsored projects in three technology areas—digital data storage (six awards), techniques for vapor compression refrigeration (seven awards), and new materials and processing technologies for heavy manufacturing (eight awards)—will receive cost-shared funds for research and development under the NIST-managed Advanced Technology Program. The awards in the three competitions (among 11 programs focusing on technology areas deemed by industry as offering the best opportunities for major economic returns) were to nine joint ventures and 12 single companies, involving a total of 51 organizations as participants. If carried to completion, the projects will cost approximately $70.7 million in ATP funding, plus approximately $67.3 million in cost-sharing by private industry. For lists of the selected projects in the three competitions, fax a request to (301) 926-1630. This information also is available electronically on the World Wide Web at http://www.nist.gov/welcome.html or from the NIST Gopher: gopher-server.nist.gov (in both cases, look under “News and Information”). For more information on the ATP, call (800) ATP-FUND (287-3863) or send e-mail to atp@micf.nist.gov.

MEP SERVES UP SUCCESS FOR SMALLER MANUFACTURERS

Studies are showing that manufacturing extension programs, including NIST’s MEP, are making a difference in helping smaller U.S. manufacturers adopt modern technologies. For example, the NIST Connecticut State Technology Extension Program reports that after one full year in operation, field engineers have completed 21 projects. Based on company estimates, the economic impact is expected to be about $2.73 million, a return on investment of 13 to 1. In a second case, Chivas Plastics of Canton, Mich., asked the NIST Michigan Manufacturing Technology Center to do a one-day energy cost-reduction study. Twelve areas were identified for a potential energy cost savings of over $20,000 annually. Yet another satisfied customer is Barron’s NTH Inc., which received help from the NIST Northwest Wisconsin Manufacturing Outreach Center and says, “...we have initiated a complete rearrangement of the shop, are installing a manufacturing control system...that will be able to provide a specialized product in one week instead of four to five. The assistance we got...helps make these results possible.” NIST’s MEP is a nationwide system of services and support for smaller manufacturers giving them access to new technologies, resources and expertise. For information on the MEP, call (301) 975-5020 or send e-mail to mepinfo@micf.nist.gov.

CRADA GOAL: PREDICTING SPACE RADIATION EFFECTS

Among the many variables aerospace engineers must consider when designing spacecraft systems is the effect of ionizing radiation. Devices on communication, scientific and defense satellites can fail if not adequately protected from radiation in the near-Earth environment: protons and electrons in the Van Allen belts, solar protons and cosmic rays. Engineers who design the appropriate shielding and the use of radiation-tolerant electronic devices need reliable tools to predict radiation effects. NIST and Severn Communications Corp. of Millersville, Md., recently signed a cooperative research and development agreement to improve software for modeling space radiation effects. NIST and the company will collaborate on integrating NIST’s SHIELDOSE 2 into the SCC’s Space Radiation for Windows TM software. SHIELDOSE 2 is a computer program for rapidly calculating radiation dose in spacecraft. The company had integrated the original SHIELDOSE code into a userfriendly, comprehensive package for personal computers, which includes modeling of the radiation environment for a generated orbit, radiation penetrating into the spacecraft and dose predictions. SHIELDOSE 2 includes improved algorithms and dose conversion to an expanded list of materials, such as silicon, silicon dioxide and gallium arsenide.

Contact: Linda Joy, (301) 975-4403

NIST DOCUMENTS ITS GATT ACTIVITIES FOR 1994

The annual report, GATT Standards Code Activities of the National Institute of Standards and Technology 1994 (NISTIR 5697), describes the NIST Applications and Assistance Program’s role to
support industry with information on technical regulations and conformity assessment procedures that might affect U.S. trade. AAO is the U.S. inquiry point in support of the General Agreement on Tariffs and Trade (or GATT), now known as the World Trade Organization Agreement on Technical Barriers to Trade (Standards Code). Examples of AAP’s busy 1994 included the processing of 508 notifications of proposed technical regulations, responding to 409 inquiries for GATT notification information, and participating in various bilateral and multilateral standards-related trade discussions. AAP operates a GATT Hotline on proposed foreign regulations at (301) 975-4041 and a European standards at (301) 921-4164. To obtain a copy of NISTIR 5697, send a self-addressed mailing label to AAP, A163 Bldg. 411, NIST, Gaithersburg, Md. 20899-0001. For more information, call (301) 975-4036 or send e-mail to overman@micf.nist.gov.

Hemisphere-Wide Activities

NORAMET has proposed to the members of the Inter-American Metrology System (SIM) that hemisphere-wide intercomparisons be held for mass, electricity, pressure, and temperature. The first of these will be for mass. Mass artifacts will be donated by Rice Lake Weighing Systems, Troemner, Inc. and Denver Instrument Company, and training will be conducted in the protocol and data analysis at NIST. Each of the five regions of SIM will send one or two metrologists to NIST and then conduct the intercomparison in his or her own region. When complete, the intercomparisons will provide information on the equivalence of mass measurements with NIST and begin to quantify the uncertainties achieved for each of the 33 participants in SIM (the United States is the 34th participant).

NVLAP Update

The NVLAP Calibration Laboratories Program has completed on-site assessments of an additional three laboratories and is awaiting the results of proficiency testing in two of those laboratories before convening an accreditation panel to make the final recommendation concerning accreditation. Seven laboratories have already achieved NVLAP accreditation as previously reported, and thirteen more are in various stages of the process. Jim Cigler reported at the Dallas Workshop and Symposium that applications have not been received from many of the laboratories that had indicated that they would apply by this time. It is hoped that they do apply so that the network of accredited laboratories will continue to grow. On the international front, North American Calibration Cooperation (NACC) meetings were held with delegations from Canada, Mexico and the United States in Dallas, Texas after the NCSL Symposium. Great progress is being made in getting to the point of assessing each country’s compliance with ISO Guide 58 and its implementation of ISO Guide 25 in calibration laboratories. In addition to the NACC Documentation Committee which is chaired by Jim Cigler, NACC empowered two additional committees in Dallas. NVLAP’s Jon Crickenberger will serve on the Technical Subcommittee chaired by Ismael Castelazo (CENAM) of Mexico, and Doug Faison will serve on the Agreements Subcommittee chaired by Graham Cameron (SCC) of Canada. Jim Cigler and Jeffrey Horlick are planning to visit Hong Kong (HOKLAS), New Zealand (TELARC) and Australia (NATA) beginning in February 1996 in order to assess their accreditation programs as was done by those same countries at NVLAP in June. The outcome of these on-site visits could be a mutual recognition agreement between NVLAP and those countries which would establish equivalence of the accreditation programs on an international basis. In a related development, NVLAP is awaiting the pre-assessment report from the European Cooperation for the Accreditation of Laboratories (EAL) as a result of its assessment of NVLAP in May.

NIST to Provide Load Cell Testing to OIML R60

The NIST Weights and Measures (W&M) Program is completing plans for a new program that will enable load cell manufacturers to obtain both U.S. and International Organization for Legal Metrology (OIML) certificates of conformity from a single location. The program is expected to result in reduced costs and smaller time delays for manufacturers who previously had to submit devices to laboratories both in the United States and in other nations. The force group of the Manufacturing Engineering Laboratory’s (MEL) Automated Production Technology Division, which recently modified its facilities to be able to test in accordance with OIML Recommendation R60 for load cells, will conduct the tests required under the new program. In preparing to take on this responsibility, the force group conducted intercomparison tests to ensure equivalent results with a highly respected European national laboratory. The National Conference on Weights and Measures National Type Evaluation Program (NTEP), managed by the W&M Program, issues U.S. Certificates of Conformance for load cells and other commercially used weighing and measuring devices. Earlier this year, Sam Chappell, U.S. International Committee of Legal Metrology member, designated NTEP as the U.S. issuing authority for OIML R60 Load Cell Certificates based upon the results of tests conducted by MEL’s force group. NIST staff are now working with industry volunteers to develop procedures to ensure that NTEP satisfies the administrative criteria specified by the OIML Certificate System for Measuring Systems. In anticipation of these procedures being completed within the next several months, the W&M Program is compiling a list of manufacturers who wish to seek an OIML Certificate for R60. Application information will be distributed as soon as the load cell program begins. CONTACT: Tina Butcher, (301) 975-2196.

NIST Helps Define Electrical Measurements Needed for International Trade

At its June meeting at the International Bureau of Weight and Measures in Sevres, France, the Consultative Committee on Electricity adopted a set of international comparisons of electrical measurements that, when completed, could ease impediments to international trade. U.S. interests were represented by staff from NIST. The International Bureau of Weights and Measures is a treaty organization funded by industrialized countries to maintain worldwide uniformity in measurements. The Consultative Committee on Electricity, which helps to set the technical program in the electrical area, is made up of representatives from the national measurement laboratories of the member countries. Regional activities in Europe, North America, and the Asian Pacific region had a significant impact on the committee’s deliberations and conclusions. Quality assurance systems used by manufacturers worldwide require that measurements be consistent with national standards. In the electrical area, advances in fields such as computing and telecommunications are requiring national measurement laboratories to support an ever-widening range of very accurate electrical measurements. The broader need for accuracy is out-stripping the methods currently in place to assure that national mea-
NIST News

Measurement systems in the various countries are consistent. The approach adopted by the committee emphasizes the comparison of selected key measurements beyond the historical focus of international comparisons on basic standards. In the past, determinations of the basic standards could be much more accurate than "practical" measurements. So if a laboratory could maintain a basic standard, it was likely it also could support more practical measurements. Today, however, practical measurements require high accuracy. Thus, in addition to the comparison of basic standards, the committee recommends comparisons: (1) for the electronic instrumentation industry, verification of voltage and impedance scaling from the basic standards; (2) ac-dc difference measurements needed to relate the measurement of time-varying signals to the time-invariant standards; (3) measurement of electric power to support equity in revenue metering; and (4) measurement of microwave power and noise to support advances in wireless and optical telecommunications systems. The NIST delegation consisted of Edwin R. Williams, Robert M. Judish, and Robert E. Hebner of Electronics and Electrical Engineering Laboratory, and Barry N. Taylor of Physics Laboratory.

CONTACT: Robert E. Hebner, (301) 975-2220.

NIST DEVELOPS ACCURATE MMC MEASUREMENT METHOD TO REDUCE AMOUNT OF WAFER "REAL ESTATE" NEEDED

The team of Dylan F. Williams and Roger B. Marks, both of the Electromagnetic Fields Division, has developed a method for calibrating measurements on monolithic microwave integrated circuits (MMICs) that with no significant loss in accuracy greatly reduces the amount of space of the wafer compared to previous high-accuracy methods. MMIC microelectronic chips are becoming increasingly important commercially for such applications as wireless communications and smart transportation systems but pose a challenge in characterizing their microwave performance because of the need to deconvolve the effects of the probes used in the measurements. Prior to the team's work, high accuracy calibrations involved a series of transmission lines of varying length that occupied considerable (and costly) space on a wafer. To circumvent this loss of space for product die, sets of structures were developed by others outside NIST, based on the line-reflect-match (LRM) measurement technique. Known as compact calibration sets, the sets incorporated a short transmission line, a symmetric reflect, and a resistor. Unfortunately, the compact calibration sets did not work well at high frequencies. The method developed by Williams and Marks overcomes the significant loss of measurement accuracy in LRM compact calibration sets introduced primarily by the behavior of the resistor. At high frequencies, the resistor stores energy and this reactance effect interferes with the LRM measurements. The team's solution was to characterize the behavior of the resistor at high frequencies by means of another physically small structure. This thru-reflect-line (TRL) structure, consisting of a short transmission "thru" line and a symmetric reflect, provides accurate results at high frequencies but not at low and hence cannot be used for the entire characterization. The NIST method is applicable to a wide variety of MMICs fabricated with both coplanar waveguide and microstrip transmission lines.

CONTACT: Robert M. Judish (303) 497-3198.

NIST ITS-90 THERMOCOUPLE DATABASE

This database fully reproduces the tables of NIST Monograph 175, "Temperature-Electromotive Force Reference Functions and Tables for the letter-Designated Thermocouple Types Based on the ITS-90," by Burns, Scrogue, Strouse, Croarkin, and Guthrie. These reference functions have been adopted as standards by the American Society for Testing and Materials and the International Electrotechnical Commission. All temperatures in the database are given on the International Temperature Scale of 1990 (ITS-90).

Features of the database include:

- Creation of tables with temperature as a function of voltage or voltage as a function of temperature
- Interactive calculations of temperature and electromotive force data
- Conversion of temperature of electromotive force data from a computer file
- Calculations using customized thermocouple functions supplied by the user
- Flexible units conversion
- Output if reference function coefficients in a choice of units.

Hardware Requirements: PC-DOS 3.0 or later, 386 or higher processor; 500 KB disk space; 512 KB available memory; color monitor recommended.

Price: 215.00. Call for details.

Standard Reference Data Program
National Institute of Standards and Technology
221/A320
Gaithersburg, MD 20899
(301) 975-2208 (VOICE)
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SRDATA@enh.nist.gov (E-MAIL)
HTTP://www.srd.nist.gov:8231

NIST ANNOUNCES 18 NEW REGIONAL AFFILIATES

With the announcement of 18 awards for new manufacturing extension programs, 42 states (including 11 not previously represented) and Puerto Rico now have programs affiliated with NIST's Manufacturing Extension Partnership. States new to the MEP network are Alabama, Arkansas, Florida, Idaho, Mississippi, Montana, New Hampshire, New Jersey, Rhode Island, Utah and Vermont. Six of the 18 awards will provide coverage in new regions of states already affiliated with MEP. NIST received 44 proposals for new or expanded manufacturing extension programs. Funding to support the MEP network is shared by federal, state and local partners. In all cases, federal support is matched by state or local funding, fees for services, and industry contributions. The total amount of federal funds requested to support these 18 MEP-affiliated programs for their first year is $21.2 million (contingent on negotiations of formal agreements between NIST and the proposing organizations). Cost-shared funding by state organizations and others is $23.3 million. Working together, the private sector and government have created MEP to help smaller manufacturers improve their competitiveness through the adoption of modern technologies and business practices.

Contact : Jan Kosko, (301) 975-2767

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ENVIRONMENTAL HELP COMING TO SMALL MANUFACTURERS

NIST has announced 17 projects to receive funding to help the nation's smaller manufacturers reduce or eliminate pollution sources in their operations. Participating organizations — including universities, state agencies and 13 groups affiliated with NIST's Manufacturing Extension Partnership — will share funding. The awards are for projects in three areas. In the first category, for which an existing MEP center is the lead partner, environmentally focused technical assistance, especially pollution prevention, will be integrated into the broader services provided by MEP centers. Secondly, tools or techniques will be developed to aid manufacturing centers in providing environmentally related services to smaller manufacturers. In the third area, a national center is being developed to provide easy electronic access to information, technologies and techniques on pollution prevention and regulatory compliance for the metal finishing industry. Last January, NIST solicited proposals for projects in the three areas and received 42. Federal funding from NIST and the U.S. Environmental Protection Agency for the 17 projects selected totals about $6.1 million. Cost-shared funding totals $3.7 million.

Contact: Jan Kosko, (301) 975-2767

ARMSSTRONG, CORNING DIVISIONS WIN 1995 BALDRIGE AWARD

Armstrong World Industries' Building Products Operation (Lancaster, Pa.) and Corning Telecommunications Products Division (Corning, N.Y.) were selected as winners of the 1995 Malcolm Baldrige National Quality Award in recognition of their business excellence and quality achievement. Both companies were evaluated on their achievements and improvements in seven areas: leadership, information and analysis, strategic planning, human resource development and management, process management, business results, and customer focus and satisfaction. They will present their quality improvement strategies and results at the Quest for Excellence Conference, Feb. 4-7, 1996, at the Washington Hilton & Towers. President Clinton and Secretary of Commerce Brown are expected to present the awards at a ceremony in Washington, D.C., later this year.

Contact: Jan Kosko, (301) 975-2767

ADVANCE MADE IN VOLTAGE STANDARDS

NIST scientists have made advances in low-temperature superconducting electronic technology that may lead to replacement of the direct-current voltage standard with a fast programmable alternating-current voltage standard. Such a standard has application for alternating-current metrology, precision waveform synthesis, and characterization of high-precision digital-to-analog and analog-to-digital converters. The advance is based on the Josephson effect, where an alternating current at a known frequency is applied across a Josephson junction and the current-voltage curve exhibits equally spaced constant voltage steps. Scientists in NIST's Electromagnetic Technology Division in Boulder, Colo., fabricated and tested superconductor-normal-superconductor junctions utilizing niobium-palladium and gold-niobium. These were connected in arrays of 4,096; 2,048; and 1,024 junctions, as well as two arrays of 512 junctions (all on the same chip). The researchers also constructed a microwave circuit that enables uniform microwave power distribution so that each junction has constant voltage steps within the same bias current range. Each array showed constant voltage steps of at least 1 milliamperes with the same applied microwave power. When all five arrays were measured in series, the power distribution was sufficiently uniform to achieve milliamperes-wide steps. With only a fourfold increase in the number of junctions, NIST scientists believe it should be possible to demonstrate a programmable voltage standard with a range of plus-or-minus one volt, 15-bit resolution, and 30-bit accuracy. This then could be used to eventually replace the direct-current voltage standard.

Contact: Fred McGehee (Boulder), (303) 497-3246

LEARN NEW RULES FOR IMPROVING 'NOISE'

NIST scientists have developed a theoretical framework for describing excess low-frequency phase modulation (known as PM) and amplitude modulation (known as AM) noise generation processes in radio frequency and microwave amplifiers. They produced a set of design rules that work exceptionally well for circuits based on bipolar junction transistors. A key to this advance is the development of the state-of-the-art systems for measuring PM and AM noise close to the carrier. This has allowed complete testing and verification of the concepts. The design rules take into account several different noise sources, including up-conversion of low-frequency base-band noise from bias currents, noise generated within the transistor and power supply noise. Application of these methods can produce substantial improvements in the fidelity of processed and amplified signals, particularly where a strong carrier frequency is involved and for high-spectral-purity oscillators. For example, they have demonstrated high gain amplifiers where the excess phase noise is less than the thermal noise, even within a few Hertz of the carrier. This is an improvement of 10 to 20 decibels over current systems. NIST is prepared to disseminate this new technology through intensive training sessions with limited attendance. The training will include the origin of low frequency PM and AM noise bipolar transistor amplifiers, the design of amplifiers with low excess PM and AM noise, implementing high-resolution PM and AM noise measurements, and bench measurements of PM and AM noise. Persons interested in the training should contact Fred L. Walls, NIST, Boulder, Colo. 80303-3328, (303) 497-3207, e-mail: walls@bldgdoc.gov. Session dates will be arranged to accommodate requirements.
The SRM Quarterly has news about current releases in the SRM program. Technical Barriers to Trade is involved with trade assistance worldwide and might be of interest to companies with overseas ambitions.

DID YOU KNOW ABOUT THESE NIST PUBLICATIONS?

Editor's Note. I receive a number of unexpected publications from NIST, and from other observant readers who think the rest of our membership might like to know about them. Here are three recent arrivals.

SRM Quarterly
TBT News

Frequency and Time Services

This flyer shows all the various frequency and time services of the NIST.
Asia/Pacific Metrology Programme
Tony Rocha, Liaison Delegate

The Asia/Pacific Metrology Programme (APMP) is a collaboration of the primary standards laboratories of countries and territories in the Asia/Pacific region. At present members come from Australia, Bangladesh, China, Fiji, Hong Kong, India, Indonesia, Japan, Kiribati, Republic of Korea, Malaysia, Maldives, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Taiwan, Thailand and Vietnam.

APMP held its 11th Committee Meeting in Tsukuba Science City, Japan, on 16 and 19 October. The National Research Laboratory of Metrology (NRLM) hosted the meeting, which was attended by 34 delegates from APMP member countries and territories, as well as representatives from BIPM, OIML, EUROMET and NORAMET. The meeting which was chaired by Dr. Barry Inglis, Regional Coordinator of APMP, discussed many issues which included:

• Progress of various ongoing regional intercomparison of standards
• New proposed projects
• Reporting of intercomparison results in Metrologia
• Draft Memorandum of Understanding
• Mutual recognition arrangements for measurements standards within APMP, and international recognition
• Cooperation with EUROMET and NORAMET
• Cooperation with Asia Pacific Economic Cooperation (APEC)
• Membership matters
• Country and territory reports
• Regional Coordinator's Report

In connection with the meeting, a seminar on “Dissemination of Standards and Laboratory Accreditation in the Asia/Pacific Region” was held on 17 and 18 October, in Tsukuba and Tokyo, sponsored by the Japan Weights and Measures Association and supported by the Ministry of International Trade and Industry (MITI). The seminar was divided into 5 sessions and covered the following topics:

• Role of national/territorial primary standards laboratories in the laboratory accreditation system
• Needs of developing and newly industrialised countries/territories
• Global perspective
• Regional collaboration
• Needs of industry

It was a truly stimulating event which offered an excellent and rather rare opportunity for metrologists and industrialists to get together and exchange views.

While in Japan the overseas visitors had opportunity to visit NRLM, the Electrotechnical Laboratory (ETL), the National Institute of Materials and Chemical Research (NIMCR), the Japan Electric Meters Inspection Cooperation (JEMIC) and the Japan Quality Assurance Organization (JQA). The APMP meeting and seminar were successfully conducted, and all participants appreciated the professional arrangements made behind the scene by the APMP Secretariat and organizers, and kind hospitality of the Japanese hosts.

INSTITUTE OF ENVIRONMENT SCIENCES
Robert Mielke, Liaison Delegate

The following is my liaison report on activities of the Institute of Environmental Sciences for the third quarter of 1995.

New position of Associate Director of Educational Programs

Corrie Roesslein has joined the Institute of Environmental Sciences filling the new full time position of Associate Director of Educational Programs. This position was created to oversee the Institute’s tutorial program. It is anticipated that the Institute will be expanding their educational program.

Shared organization experiences with NCSL

Ralph Bertramenn, NCSL Past President, met with Jan Ehmann, Institute of Environmental Sciences Executive Director, to discuss the Institute’s experiences using a paid administrative staff versus a volunteer staff. Mr. Bertramann invited Mrs. Ehmann to the October NCSL BOD meeting to discuss the Institute’s experiences. Due to previous commitments, Mrs. Ehmann will not be able to attend.

The organization’s Seminar Calendar for 1996 is presented:

Jan 22-25 Reliability and Maintainability Symposium • Sahara Hotel • Las Vegas, Nevada.

Mar 12-14 16th Aerospace Testing Seminar • Radisson Hotel • Manhattan Beach (Los Angeles), California.

May 12-17 42nd Annual Technical Meeting and Exposition • Radisson Twin Towers Hotel • Orlando, Florida.

Oct 28-31 19th Space Simulation Conference • Radisson Plaza Lord Baltimore Hotel • Baltimore, Maryland.

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES
Georgia Harris, Liaison Delegate

(continued on page 40)
THE DERIVATION OF BASE UNITS

Chart Courtesy of Industrial Technology Research Institute of Taiwan

Dave Abell came upon this chart of base unit derivations on a trip to Taiwan, and I reproduce it with the permission of Kai-Li Ko, Deputy General Director. You can request a copy from:

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The Newsletter contains highlights of the NCWM metrology meetings of the NCWM Annual Conference held in Portland, Maine.

The Newsletter also contains highlights of some of the items of interest to the weights and measures community from the NCSL Annual Workshop and Symposium held in Dallas, Texas.

Please note the new NCWM fax-on-demand system. Call Joan Koenig at 301-975-4007.

If you have business or technical interactions with NCWM, contact editor Ann Turner at 301-975-4012, to become a subscriber.

GIDEP
Jim Carlton, Liaison Delegate

Editor's Note: Stapled to the cover sheet of the GIDEP Newsletter was a packet of 6 pages of tabular listings of Mil specs, with the title:

105 Heartburn—Standards Reform Status

For anyone working with Mil Spec activities, this looks like it might be very valuable, since it refers to specs from MIL-STD-100E all the way to MIL-S-83490+.

I'm assuming that the listed tables would be available from Jim Carlton, but if not, I saved a master copy and could send a copy to whoever requests.

Interested parties for Lab Accreditation should notify the Editor of the A2LA News to get on their mailing list.

Write:
A2LA
656 Quince Orchard Rd.
Suite 620
Gaithersburg, MD 20878-1409

COMMITTEE NEWS
(continued from page 24)

Attendees:

Alan R. Robertson (Chair), NRC/INMS Director, Chemical, Mechanical and Radiation Standards
Graham Cameron, NCSL International Measurements Coordination Committee Chair
Declan McEvoy, National Defence, Section Head, Standards and Tribology, QETE Paul G. McIntyre, NRC/OTC, Operational Coordinator
Adrien Michaud, NCSL Regional Coordinator, Quebec Area
David W. Morgan, NCSL Regional Coordinator, Eastern Ontario Area
J.R. Bryan Murphy, NRC/INMS Manager, Program Office Les R. Peer, NCSL Canada Region Coordinator
Wayne Sampson, NCSL Regional Coordinator, Eastern Canada Area
Alexandra Shaw, NRC/INMS Communications Officer
Antje Loucks (Secretary), NRC/INMS
REPORTS FROM THE REGIONS

Oct. 24, 1995
Carrier Circle Holiday Inn
Syracuse, NY
Joe Maciag
Upper New York Section Coordinator

A meeting of the Region 2, Upper New York State Section was held at the Syracuse Carrier Circle Holiday Inn on Oct 24, 1995.

The meeting was commenced by Joe Maciag. After introductions and review of the day's agenda, tentative meeting dates were set for April 9 and Oct 15, 1996. The April meeting will be in the Rochester area and the October meeting in the Western New York area.

The meeting presentations were as follows:

• Bruce Dupont of the Starrett Company discussed Thread Gaging.

• Steve Griffen of Fluke discussed “Better Ways to Manage Your Metrology Process.”

• Neil Pope of Techne, Inc. discussed Temperature Baths and Calibrators.

• Joe Maciag discussed the NCSL’s Vision 2000 program, its objectives and membership survey results.

Attendees:
Bert Mamula    NMA
Martin Vasick    IBM
Nelson Wilcox    IBM
Mark Stachowski    Carleton Technologies
Thomas Dickinson    IBM
Ken Thrash    IBM
Mark Edlinger    GE
Roland Motroni    Stiefel Corp.
Philip Clark    IST Corp.
Henry Staab    Eastman Kodak
Tom Reid    Calspan
Bill Corcoran    AFTC Controls
Neil Pope    Techne Inc.
Rick Venditti    Moog, Inc.
Larry Durante    Niagara Mohawk
Robert Mavsh    Niagara Mohawk
Dick DuBois    Fluke Corp
Gary Kwiatkowski    Motorola, Inc.
Todd Buttrick    Northern Marketing
Phil Smith    ETL Testing Labs
Gene Bebernes    Bristol-Meyers Squibb
Terry Mills    Caltronix, Inc.
Skip Cochran    Caltronix, Inc.
Ed Bell    Dexter Electronics Materials
Wes Caswell    Dexter Electronic Materials
Mike Ziewers    Transcat
Don Bean    Loral F.S.
Ike Wilson    Loral F.S.
Joe Maciag    Moog, Inc.
Bruce Dupont    Starrett

Sept. 11-12, 1995
Holiday Sunspree
Asheville, NC
Ed Pritchard
Jim Bufano
Co-Coordinators

A multi-section workshop, sponsored by the Atlanta, North Carolina and Tennessee Sections was held in Asheville, NC, on September 11th and 12, 1995. There were 61 attendees from 39 different Companies, Government Agencies and Educational Institutions present.

The meeting had parallel sessions on Monday with speakers presenting subjects of Measurement Assurance and Environmental Controls for Standards Labs at the Monday morning sessions. Following lunch, parallel sessions were held with the speakers covering Dimensional Metrology in the U.S. and Metrologist/Calibration Technician Qualifications.

On Tuesday morning, an information session was led by NCSL Vice-President Frank Bandy who reviewed the minutes of the NCSL Board meeting. Following Frank a general session was held with the topic being Laboratory Accreditation versus Registration. The speakers included Jim Cigler, Peter Unger, Jamie O'Neil and Diane Lee. Following the general session, there was a drawing for door prizes and a warm thank you from the hosts to all attendees.

Although the attendance wasn't quite what was hoped for, everyone in attendance generally felt that it was a successful workshop and were very complimentary of the facilities, speakers and the workshop.

We are looking at holding this multi-section meeting again next year in Chattanooga Tennessee around the first or second week of October. Additional details will be forthcoming.

Attendees:
Ed Pritchard    Lockheed Martin Energy Systems
Pam Hutchinson    Lockheed Martin Energy Systems
Tammy Bell    Lockheed Martin Energy Systems
Jim Adcock    Lockheed Martin Energy Systems
Kathy Allison    Oak Ridge National Lab
Lyle Bagley    Naval Aviation Depot
Frank Bandy    Unified Industries
Ronald Barker    Magnetek
Jim Bufano    Glaxo-Smithkline
Tom Carpenter    USAF-AGMC/MLSP
Jim Cigler    NIST/NVLAP
Kenneth Clarke    Magnetek
T.D. Comer    Lockheed Martin Energy Systems
Jim Cornelson    Eastman Chemical Co.
M.Carroll Croarkin    NIST
Regional Reports

Sonny Crader  Aerojet Ordnance
Butch Denmark  ETA
Sherrill Dittman  NIST
Ted Doiron  NIST
Donald Drum  Butler County Community College
L.F. Eason  North Carolina Standards Lab
Jerry Everhart  JTI Systems
Kelly Fuller  Oak Ridge National Lab
Brian Fitzpatrick  Hi-Tech, Inc.
Alan Fortner  Fleet Technical Support Center Atlantic
P.A. Gebhardt  Raytheon Electronic Systems
Leon Hall  Nordson Corp.
Tracy Harper  Baltimore Gas & Electric
Georgia Harris  NIST/OWM
Wesley Harris  AT&T Network Systems
Harvey Hecker  Pre-Cal Services
Richard Hess  Oak Ridge National Lab
Kenneth Hrossowyc  The Coca-Cola Co.
Ron Ingle  Piedmont Technical College
Joseph Keck  Southern Testing Services
Tom Kimbrell  Lawry Education Center
Mike Kramer  Virginia Weights & Measures Lab
G. Diane Lee  NIST/OWM
Alan Longton  Flanders Filters
Ray Massarotti  Wyle Laboratories
Chuck Maytas  Magnetek
Gary McConville  The Coca-Cola Co.
Mark Miller  Control Solutions
Harry Moody  Lockheed Martin-Idaho
James O'Neil  NQA
James Payne  Oak Ridge National Lab
Don Prater  Oak Ridge National Lab
Camilla Roberts  JMS Southeast
Jack Rogers  Lockheed Martin Utility Services
Karen Sermer  AGMC-Newark AFB
Doug Severence  DS Technical Services
Jack Shuler  Rockwell International
Bill Sorrells  Hewlett Packard
Denis Swyt  NIST
Jeff Taylor  Lockheed Martin Aeronautical Systems
Peter Unger  A2LA
Tony Webb  Aerojet Ordnance
Edward Welsh  Clinton McKinley Measurements
Vicky White  Glaxo-Wellcome
Mike White  Western Environmental
Nick Zurcher  Lockheed Martin Energy Systems

Jim Bufano, Co-Coordinator and Vicky White of GLAXO-Wellcome, helped with organization of this innovative multi-section conference.

Jim Cigler of NIST presents information on NVLAP

Parallel sessions allowed for many topics and speakers.

Registration helpers Pam Hutchinson and Tammy Bell take a break for lunch. It was Pam’s birthday, but I don’t see a cake.
The Pittsburgh Section of the NCSL had a Fall conference on Thursday, October 26, 1995, at Butler County Community College in Cranberry Township, PA. Dr. Donald Drum introduced guests and presented NCSL Scholarships to four students enrolled in the Butler Metrology Program. The NCSL Scholarship recipients were William BcrasL, Brent Orr, Scott Pridemore, and Gregory Toy.

Dennis Antunes was awarded a Muscile Products Corporation Scholarship for the study of tribology in the Metrology program. The criteria for the NCSL Scholarships and the MPC Work Study Scholarship were integrity, academic ability, work ethic, dedication and financial need. In addition, Greydon Kay was awarded a Certificate of Appreciation by the local NCSL section coordinator for his contributions to the section conferences and for the promotion of Metrology education at Butler County Community College.

Frank Bandy, NCSL Eastern Division Vice President, identified the goals of NCSL and discussed present and future activities of NCSL. He also presented information on membership requirements. Guide 25 was discussed as a topic for a Spring 96 meeting.

Steve Griffin, Fluke Corp., presented a paper titled, "Ways to Manage Calibration Processes." The topics included new quality systems, changing UUTs, and levels of accountability. Modern automated instruments include more functions, greater capabilities and improvements in accuracy. A single automated calibration unit can calibrate many different devices. Data base technologies and customized calibration systems will generate reports in a variety of formats. Today, state-of-the-art enterprise-wide metrology is robust, extensible, scaled and integrated.

John Wehrmeyer, Eastman Kodak Company, presented a topic titled, "Measurement Uncertainty." After a brief descriptive statistics introduction, he discussed types of measurement uncertainties and their applications to process measurement. Mr. Wehrmeyer provided measurement uncertainty definitions, developed Ishikawa diagrams and uncertainty budgets, and calculated the expanded standard uncertainty. He presented a procedure to estimate measurement uncertainty and applied the 4:1 TUR Rule. Also, he discussed alternatives to the 4:1 TUR and provided literature references.

In addition, Mr. Wehrmeyer gave a presentation titled, "ANSI/NCSL Z540 Standard." The new national standard for calibration laboratories and equipment is expected to reduce the number of compliance documents, decrease redundant audits, and ensure compliance with international standards. The standard essentially combines MIL STD 45662A and ISO Guide 25. He discussed the general requirements for the competence of cal labs, quality assurance requirements for measuring and test equipment, calibration certificate requirements, and documented procedures on how to handle complaints.

David Schiebel, Metrology and Electronics Instructor at Butler County Community College, discussed, "Education vs Training." Training emphasizes, "What it is, What it does, and How it is used." Education provides training in addition to an understanding on, "What makes it work, How it can be made better, How I can adapt it for other uses, and How it will be accepted."

You train for a job where you do something to earn money and pay bills, whereas a career is something you choose to devote your life to. Therefore, individuals who consider their metrology position as a career are going to be far more productive in the workplace. Educating metrologists for a career is the focus of the program at BCCC.

Jim Clark, RAB Certified Lead Auditor, Armco, discussed "ISO-9000 Experiences." He presented the reasons for pursuing ISO-9000 and a discussion about team-building, SPC, integrated process management, and the Quality Management Process (QMP). QMP is a framework for quality policy and includes the issues of problem-solving models, process standards and procedures, communications and training. QMP emphasizes measurements performed, conformance monitored, corrective actions, variability reduced, continuous improvement achieved, and quality product produced. In addition, Mr. Clark discussed RAB requirements for auditor certification, audit teams, audit processes and the audit performance.

James Federlein, Process Controls and Project Management Consultant, presented a talk about, "Applying Instruments in Today's Industry." Rigorous application of instrumentation requirements is the foundation of quality, safety, automation, and financial decisions. False information from instrumentation leads to wrong decisions. Using a more accurate instrument does not always result in a more accurate measurement in the process control industry. Repeatability and reproducibility of measurements from installed instruments are critical factors in process measurements. Major problems in process control include instrument compatibility and variability, incorrectly sized instruments and equipment, specification bias spiral, and misapplication of instrumentation. The end user must verify data collected by instruments.

The primary knowledge in process control applications requires chemistry, physics, mechanics, electrical principles, and math/computer skills. The process control technician/engineer must stay current with instrumentation changes and be able to apply instrumentation correctly.
Regional Reports

Names were drawn for door prizes provided by NCSL, Fluke Corp, and Butler College.

Attendees:

- Tim Baker: Pre-Cal Services, Inc.
- Frank Bandy: Unified Industries, Inc.
- William Beasley: Mine Safety & Health Adm.
- Jason Grossman: Butler, PA
- Steve Harpster: Murata Electronics
- Andrew Harvilla: Westinghouse Science Ctr.
- Harvey Hecker: Pre-Cal Services, Inc.
- Judy Hodges: ISA
- Harry Johns: Murata Erie
- Rich Keister: Murata Erie
- Bruce Krakauer: Allegheny Ludlum
- Diane Lepovsky: West Penn Power
- Gene McLaughlin: Armco, Inc.
- Don Peiffer: Mine Safety & Health Adm.
- Rich Perhala: WKM Associates
- Rob Perry: Mine Safety & Health Adm.
- William Persuitte: Westinghouse Science Ctr.
- John Pipp: Pre-Cal Services, Inc.
- Ted Tometer: Armco, Inc.
- Joseph Truman: Mine Safety & Health Adm.
- Tim Wetzel: Westinghouse Science Ctr.
- Jim Yex: BCCC
- Dr. Donald Drum: Fluke Corp.
- Steve Griffin: Eastman Kodak Co.
- John Wehrmeyer: BCCC
- David Schiebel: Armco, Inc.
- James Clark: Process Controls
- James Federlein: BCCC
- Greydon Kay: BCCC
- Fred Kinnick: BCCC
- Dr. D. Michaleopoulos: BCCC
- John Sanders: BCCC
- Sami Alfallakawi: BCCC
- Waleed Alghanim: BCCC
- Abdul AlSharifi: BCCC
- Suliman AlShemmari: BCCC
- Dennis Antunes: BCCC
- Len Berasi: BCCC
- Melissa Mrumbaugh: BCCC
- Tom Ciarlariello: BCCC
- Bryan Daily: BCCC
- John Dixon: BCCC
- Janie Gardner: BCCC
- Everett Harringer: BCCC
- Gari Ann Hoffman: BCCC
- Brandon Kamerer: BCCC
- Mari Kraus: BCCC
- Brent Orr: BCCC
- Scott Pridemore: BCCC
- William Schaeffer: BCCC
- William Stehle: BCCC
- David Sutara: BCCC
- Greg Toy: BCCC

Section Coordinator Dr. Don Drum opens the meeting to a good-sized crowd.

NCSL scholarships were presented to Brent Orr, Scott Pridemore, Gregory Toy and William Berasi. Dennis Antunes (center) received a scholarship for tribology studies in the Measurement program.

Greydon Kay of the BCCC staff was honored for his help provided to NCSL for regional meeting services.
The Fall meeting of the Central Texas Section was hosted by Mr. Johnny Winters, Service Manager of the Dallas Fluke Facility.

Following introductions, Sean Thompson of National Instruments presented a brief introduction to VXI instruments, and the current methods used for remote control. Sean shown the MXI interface hardware, and compared it with GPIB and internal computer (Slot 0) methods for controlling these classes of instruments.

Mr. Thompson described the hardware required to establish a calibration lab system to support VXI instruments. A discussion of VXI “Plug and Play” and the capability to perform calibration to published specifications using the front panel display followed. Tektronix and HP Service Center managers commented on the efficacy of calibration performed in this manner.

Tucker Electronics provided a photographic lab tour of their Garland, TX facilities. Craig Leong and Richard Doyle described the recent renovations in the Tucker Calibration lab areas and showed before and after photos to demonstrate the attractiveness and efficiency of the newly re-designed lab areas.

Don Dalton of Fluke Corp, NCSL VP of Training and Education, spoke briefly about the, “Metrology for the America’s” seminar conducted in Miami, FL. He described NCSL, Dept. of Commerce (NIST) and FAA involvement in this international conference on metrology, trade and international commerce issues.

Following Don’s presentation on the Miami seminar, Don presented an analysis of current metrology/calibration laboratory business trends. Changing equipment and changing business emphasis were discussed. Don Discussed the need for newer calibration standards to meet modern multi-function measurement instrument demands, and the growing need for field (in-place) instrumentation calibration.

An excellent lunch was provided for all attendees by our Fluke hosts. Johnny even called us back to finish the excellent peach cobbler desert. It’s amazing how much business can be discussed, and how many new acquaintances are made over a business lunch away from the work place. All of us in this region are grateful for continuing support provided by local hosts.

Syed Haider of Texas Instrument’s Semiconductor Division explained how a new manufacturing facility planned and implemented sound metrology and support services. Mr. Haider illustrated the methodology employed to characterize each process and how standard resource material and consensus standards were employed to insure the fully characterized equipment/processes were to be maintained under statistical control. Syed listed the equipment described as the “backbone” instrumentation for state-of-the-art semiconductor manufacturing process monitoring.

The new ANSI/NCSL Z540-1 and its soon-to-be-released handbook were the topics of an open forum led by Clyde Orrison of Texas Instruments. The use of Z540 as a replacement for MIL-STD-45662A in Quality Systems was openly discussed, and many of the effects of the MIL-STD on other requirements documents were brought out by attendees. Many of the attendees indicated that Z540 was already part of their Quality System. The January 1996 availability of the final version handbook, the cost and method of purchasing the ANSI/NCSL Z540, and the availability of the Draft 6 version of the handbook from NVLAP were covered.

Open discussion followed the Z540 presentation. Questions and requests for information raised from the floor by attendees were addressed, some of which included: Test system calibration philosophy, ISO-10012 requirements issues regarding continuous monitoring of test conditions (environment), and the content of vendor supplied calibration reports/certificates.

At the close of the meeting, door prizes were awarded to those in attendance.

The next meeting of the Central Section of Region 6 will be on Wed, April 3, 1996, tentatively in Dallas at Texas Instruments.

Attendees:

William Beal Loral Vought Systems
Mark Hayes Alcon Labs
Jim Patterson Southwest Research Inst.
Phil Fainconer AcuData
Richard Doyle Tucker Electronics
Robert Ryan Tucker Electronics
Syed Haider Texas Instruments
Sean Thompson National Instruments
Jim Lohman Lockheed-Martin
Jim Dollar Lockheed-Martin
Mark Barneby AcuData
Steve Morse Superior Gage Service.
Tom Kolat Texas Instruments
Cheang Lauv TU Electric
Keith Scroggins Houston Light & Power
Don Dalton Fluke Corp
Craig Leong Tucker Electronics
Luke Smith E-Systems
Dave Upton EMA
Don Crachanen Ruska Instruments
Marty Jost Tektronix

45
Ed Brookes, Region 7 Coordinator, welcomed everyone to the meeting and thanked Philips Semiconductors for hosting the meeting.

Paul Feisthamel, VP Quality and Technical Services at Philips, introduced their company and presented a history of the company and an overview of their products. He mentioned that they were the first semiconductor company to become ISO 9000 registered, December 1991.

Charlie Motzko, C.A. Motzko and Associates, spoke on Disaster Preparedness. He presented information about paying attention to the small details in a disaster plan. Some of the points were: for the ISO 9000 quality manual, have a procedure for handling disasters; keep a manual copy of calibration procedures incase your system is down; keep emergency supplies outside of building incase the building is damaged - this should include a crowbar - so people on the outside can gain access if your building is damaged. Overall your plan should make it possible for you to quickly get back into operation after a disaster.

Ivonne Bachar, Stanford University and a VP for the Property Managers Association, discussed the topic “Successful Presentations”. She discussed the three critical steps to a successful presentation: preparation, execution, impression. Although it is difficult to condense her presentation here, she presented the steps in preparing: plan; analyze your audience; content - narrow to the three things you will present; organize - thing of the outcome desired and prepare to reach that outcome; visual aids - develop after you develop the content; practice - outloud, in front of mirror, family, work group. Time yourself so that you don’t overstay your welcome.

She indicated that the best meeting times are 8 - 11 am on Tuesday through Friday. Worst times are Monday or Friday, after lunch, and just before quitting time. These worst times can be used if it will enhance the reason for the meeting.
Fred Espenshade, Philips Semiconductors, spoke on "Improving Quality of Calibrations." He expressed concern about following the discussion of successful presentations. He discussed Philips closed loop calibration system that has helped them provide quality calibrations. They adjust equipment to optimize their equipment during calibration. Most of their equipment is on a six month cycle.

Carrie Cabak, Underwriters Laboratories, discussed ISO Audits and training. To get started and succeed with ISO registration there must be commitment from all levels of management within a company. After reviewing the requirements you need to do a self-audit of your processes and readiness. You then need to plan, prepare, and practice before your audit. After registration you must follow a continuous improvement process and not let things fall back to the same old way.

Klaus Jaeger, Lockheed Martin, presented the NCSL Vision 2000 that was presented at the July NCSL Conference. Basically he presented what is NSCL and where are we going? He discussed the 10 top issues from the Dallas Conference.

Dave Abell, Hewlett-Packard and NCSL VP Quality Programs, discussed Z540. Z540 encompasses all or part of ISO Guide 25, Mil Std 45662A, ISO 9002, and ISO 10012. The question was asked "When will Z540 become universally adopted?" At this point the answer is that no one knows, but it is rapidly being adopted because ISO Guide 25 is being widely adopted.

Remember you can order a copy of Z540 from NCSL at a minimal cost. There will also be a handbook that should be available sometime early in 1996. The handbook will help explain Z540 and give examples.

Attendees:

Felix Moranion       Edwin Sabathia
Roger Ging           Joe Sacco
Charlie Motzko       Fred Espenshade
Dave Moberg          Bob Bahrs
Bruce Mayfield       Joon Kim
Tom Maoaluno          Phung Tram
Allen Angliny        Chester Lu
John Minck            Fortunato Rodriguez
Dennis Sherring       Christine Gibney
Charles Balken       Debbie Cabosin
Anthony Harris       Glenn Geist
Toni Daniels          Joe Passanisi
Rudy Jnang           Klaus Jaeger
Dave Abell            Jan Smith
Lee Kenna             Andrew Ibach
Ivonne Bachar         Ed Brookes

A good-sized crowd gathers at the entrance of the Phillips Training Facility after a complimentary lunch, for the mandatory attendance picture.

Oct 26, 1995
Sizzler Restaurant
Tucson, AZ
Wayne Benda
Region 8 Coordinator

The twenty fourth semi-annual Phoenix/Tucson Section Seminar and Workshop was held at the Sizzler Restaurant in Tucson, AZ. Wayne Benda welcomed a group of 33 NCSL members and friends.

William Quigley, Hughes Aircraft, gave the Board of Directors report. The much anticipated guide to Z540 should be mailed to members in January.

Miles Smith, Motorola, shared his experience with an ISO 9000 series audit conducted by his customer, the Department of Defense. First off, Miles wanted us to know that the ISO 9000 certificate his company received does not say that they are "certified"; but that they comply. He held up a copy of the certificate. The top line was "Certificate of Qualification."

Motorola saw that most approaches to the reinvented audit process would lead to high cost. Motorola found that the ISO 9000 audit organizations who reviewed their processes had trouble understanding DOD requirements. One audit organization did not understand the Motorola Quality Manual and the concept of mini-factories. Another audit organization could not get past the Motorola training program.

Motorola decided to approach their customer with these problems. Discussions led to the idea of having DCMC audit Motorola for compliance to ISO 9000 series quality requirements. Both Motorola and the DOD felt this was the best way to go. Advantages are:

- The DOD understands its suppliers
- It allows for an orderly transition from MIL-Q-9858A to a commercial process
- It provides consistency
- There is no security problem with DOD auditors
- The DOD is accustomed to operating in an environment with a large design and development content.
Regional Reports

Miles pointed out that this approach to ISO 9000 audits was not exactly free (as had been suggested in our meeting notice agenda). Motorola spent a lot of time preparing for this audit. Also, the calibration department went with Z540 compliance rather than ISO 10012.

Mike Englund, Allied Signal, had prepared a question (complete with overhead viewcharts). He stated that the uncertainty of M&TE to product quality is a new issue. And nobody does it?

Miles responded that Motorola characterizes the measurement process very carefully.

Wayne Benda responded that Hughes performs a product test error analysis that verifies accuracy transfer from calibration to the product.

Maurice Rodriguez of Hughes Aircraft, shared information about the hourly training program developed by Hughes Aircraft. It is known as the Career Enrichment Program (CEP). When CEP was started in 1987, career advancement was nearly non-existent. That labor force typically retired in the job they were hired for. Labor flexibility was low. Hughes would lay off one labor skill and hire another as job requirements changed. There was a need for improved communications.

Hughes knew the key to being competitive was a versatile, stable work force and recognized that training was the way to get a more valuable work force. CEP was created to achieve these goals. The development of CEP was a team effort. Management and bargaining unit employees worked together. CEP is dynamic. The CEP committee’s continue to meet and continuously improve the process.

Training was coordinated with Pima Community College. The college already had a certified system with certified instructors. Once CEP was underway, the college needed more instructors. They were able to tap the resources of Hughes to obtain and certify instructors who were experts in their fields.

The hourly pay scale was tied in with training. When an employee qualified to a new skill level from training, within the same level and family, even though a position in that skill may not be open, that employee is paid a percentage of the new skill level in addition to the pay level of the job they are working. When an opening is available in a higher level or another family, the employee may move to that skill level and receive the pay of that time. If the employee goes back to the old job, he/she will retain the pay level of the highest skill worked.

Hughes now has Employee Growth (career path), a stabilized work force (they no longer lay off one skill while hiring another), and a documented, certified training system. Further, there are people in the community who have taken those college courses, and when Hughes recently needed another 300 employees in 1992, they found them in the community, already trained.

Maurice fielded several questions concerning CEP and the Hughes and Community College cooperation.

Miles Smith shared information of training Motorola recently obtained from Butler Community College in Pennsylvania. The instructors came to Phoenix and taught a 40 hour class on Advanced Metrology Techniques for $432 per student. Many in attendance exclaimed, “Excellent Value!” The reason for this class was that new technicians are not Air Force trained today. They are missing much of the philosophy and advanced technique training. Miles wanted to know if any at this meeting would be interested in NCSL coordinating a training session? There was general interest in this concept.

Wayne Benda gave a summary of the contents of RP-7, “Laboratory Design.” He also discussed the status of the Chrysler Bill in Congress.

The group discussed what quality document their company is using and how audits are going. Chaos is increasing.

Obidal Islam, Allied Signal, asked the group, “How do you get the calibration you need?” Vendors always say, “We can do it!” They can not always live up to their claims. This opened up a diverse discussion. Mike Englund wondered if NCSL could publish Cal Lab Capabilities, so that we might know before we send standards? Some vendors can do it, but not with 4:1 ratios. The group also discussed “How much should we spend to get that accuracy ratio?” Personally visiting the vendor may give some confidence.

Bob Groene asked, “How do you preclude the use of overdue equipment?” The answers ranged from, “I call the person with overdue equipment every day,” to “I turn them over to security.” Security confiscates the equipment. The discussion included concern about cost effectiveness of precluding the use of overdue equipment.

Our next meeting will be in Phoenix on Thursday, May 16, 1996.

Attendees:

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>Dan Gauthier</td>
<td>Allied Signal Aerospace</td>
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<td>Dan Montoya</td>
<td>Allied Signal Aerospace</td>
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<td>Obaidul Islam</td>
<td>Allied Signal Engines</td>
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<td>Israel Zepeda</td>
<td>Burr-Brown</td>
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<td>Lynn Campbell</td>
<td>Edo Western Corp</td>
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<td>Cecil Cole</td>
<td>EG&amp;G Flow Technology</td>
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<td>Patrick LaFave</td>
<td>EG&amp;G Flow Technology</td>
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<td>Raymond Malesic</td>
<td>Evergreen Air Center</td>
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<tr>
<td>Mike Michaels</td>
<td>Evergreen Air Center</td>
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<td>Bob Groene</td>
<td>Honeywell</td>
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<tr>
<td>Steven Wasinger</td>
<td>Honeywell</td>
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<td>Kenneth Nield</td>
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<tr>
<td>Carlos Ortiz</td>
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<tr>
<td>Pat Smith</td>
<td>Honeywell</td>
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<td>Larry Stueber</td>
<td>Honeywell</td>
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<tr>
<td>Isaac Arellano</td>
<td>Hughes Aircraft</td>
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<tr>
<td>Wayne Benda</td>
<td>Hughes Aircraft</td>
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<td>William Quigley</td>
<td>Hughes Aircraft</td>
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<td>Maurice Rodriguez</td>
<td>Hughes Aircraft</td>
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<tr>
<td>Tim Frigon</td>
<td>Litton</td>
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<td>Roger Karner</td>
<td>McDonald Douglas</td>
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<td>Matt Shostek</td>
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<td>Steve Alexander</td>
<td>Metrum</td>
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<td>Jay Curtis</td>
<td>Motorola GSTG</td>
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<td>Miles Smith</td>
<td>Motorola GSTG</td>
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<tr>
<td>Lee Walters</td>
<td>Motorola GSTG</td>
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<tr>
<td>Corlin Crowther</td>
<td>Orbital Sciences Corp</td>
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<td>Greg O’Conner</td>
<td>Osborn Products Inc.</td>
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<td>Charles Daggs</td>
<td>Precision Measurements</td>
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<tr>
<td>Leslie Martichuski</td>
<td>Unisys</td>
</tr>
<tr>
<td>Steve Briggs</td>
<td>Zeus Measurements</td>
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<tr>
<td>Mike Englund</td>
<td>Allied Signal</td>
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The fourth meeting of NCSL Japan area in Region 10 was held at the Japan Electric Meters Inspection (JEMIC) facility in Tokyo on Oct. 3rd 1995, PM 2:00 to PM 5:00.

The meeting was hosted again by Mr. Hisao Hashimoto, Director of Measuring Standards Division in JEMIC. Many thanks to Masahiro Inoue of JEMIC and Mitsuo Ishii of METICAL for the preparation of 4th meeting.

The meeting was opened by Katsumi Yokoi, NCSL Japan Area Coordinator. He welcomed 72 participants for the NCSL Japan 4th meeting, and introduced a brand-new NIST Special Publication 811 1995 Edition using the Checklist for Reviewing Manuscripts. It is entitled the Guide for the Use of the International System of units (SI) by Barry N. Taylor. He introduced Dave Abell/NCSL VP-Quality Program for the guest speaker of honor again.

Program

1st Speaker: Dave Abell, NCSL VP-Quality Programs, Hewlett Packard

Theme: 1st topic: NCSL Vision 2000 and Members prioritized wishes at July '95 Dallas Conference

2nd Speaker: Toshiaki Aoki, Yokogawa Engineering Service

Theme: Talking about all sorts of things for NCSL '95 Dallas.

3rd Speaker: Tokio Hamada, TANAKA KIKINZOKU KOGYO

Theme: Guidance for the thermometer calibration and his experienced temperature measurement method for the oil bath of standard resistors.

4th Speaker: Toshiaki Aoki, Hewlett Packard Japan

Theme: Calibration of Ratio Transformer

This theme was presented at NCSL '95 Dallas.

5th Speaker: Ryousuke Yasuda and Kunihiko Takabashi, JEMIC

Theme: Calibration method of AC/DC transfer standard at JEMIC

Final wrap up was made by Katsumi Yokoi. He announced that Mr. Mitsuo Ishii is officially appointed as the secretary of NCSL Japan in this meeting. Mr. Ishii then told about his offering services for members of NCSL Japan. The five presentations were all of excellent contents for 72 participants, and covered introduction of global trend and renewal traceability environment concerning the adopting of ISO Guide 25 and the Japan Calibration Service System (JCSS) for accredited laboratories.

Attendees:

Hisao Nishiyama
Jun Takayama
Syuzo Suzuki
Mitsuo Kamada
Masaru Ikeda
Mitsuo Ishii
Takashi Satoh
Noriaki Hakamada
Hideo Usumi
Yutaka Ikeda
Hideo Kobo
Yuya Uchida
Katsuhiko Setoakura
Toshio Kato
Eiji Ogita
Kazutoshi Yoshii
Naoyi Hayashi
Yoichi Uchida
Yasuji Kihara
Kazuhiro Kiyono
Yoshitaka Zenitani
Mitsuo Tanai
Toshiro Katagiri
Junko Katoh
Takeshi Komatsuzaki
Fuji Xerox
Alpha Electronics
SOSHIN
Panasonic
Metrology and Calibration
Metrology and Calibration
Yokogawa Rental & Lease
Yokogawa Rental & Lease
Yokogawa Rental & Lease
G&G Japan
G&G Japan
G&G Japan
Yokogawa Engineering Service
Yokogawa Electric Co.
OKI Engineering
OKI Engineering
OKI Engineering
OKI Engineering
Fujitsu
Matsusita Communication
Matsusita Communication
Matsusita Communication
Dave Abell of HP reviews NCSL goals and priorities, then presents some global trends on ISO Guide 25.

Toshio Katoh of Yokogawa Engineering Services summarized events and results from the 1995 NCSL Conference in Dallas.

Tokio Hamada from Tanaka Kikinzoku Kogyo presented technical details of thermometer calibration including oil bath principles.

Japan Area welcomes an impressive turnout of 72 metrology experts.
Thirty-three personnel were in attendance at the Region 11 St. Louis Section Sept 19, 1995 fall meeting. Morning coffee and drinks for breaks were provided by B.C. MacDonald and Company.

The St. Louis Section Coordinator opened the meeting, with the formal welcome presented by Peter Racen from ISL Corp.

The first guest speaker was Dave Cross from Newport Electronics. Dave discussed temperature sensing technologies and applications. The presentation highlighted the various types of temperature measurements available.

The second guest speakers were Bernard Baird and Robert Gregg from Norfox Software. The presentation covered Labmate and Calmate and the connection with ISO9000 and Z-540 compliance.

The third guest speaker was to have been Michael Kircher from Carl Zeiss, who was unable to attend. The last-minute fill-in for Michael was Reggie MacDonald from B.C. MacDonald. Reggie covered the company history and suggested inviting Michael back for the next meeting.

After a lunch break, which was supplied by ISL Corp, the meeting continued with the fourth guest speaker, John McGuire from MKS Instruments. John’s presentation covered the development of a Pressure Based Primary Standard Gas Flow Rate Calibrator.

The fifth guest speaker was Bob Kral from B&K Precision Oscilloscopes. The presentation highlighted the various types of oscilloscopes, basic controls, applications utilizing a scope, and guidelines to consider in the calibration of them.

I would like to thank Peter Racen and ISL Corp., for being the host and for the lunch they supplied for all attendees.

I would also like to thank Dick Eilers from Dynamic Technology for the three copies of Philosophy in Practice Calibration from Fluke for the door prizes.

Attendees:

David Luetkemeyer
Leon Barnes
Mel Whitten
Ken Brown
Mike Quinlan
Reggie MacDonald
Darryl Gibbons
Dave Cross
Dick Eilers
Robert S. Lourash
John Cleary
Mark Longrie
Peter Racen
Buddy Stricker
Mike Kunz
Dennis Files
Mark Maxwell

Ace Electric
Allied Signal
AT&T
Bio-Resources
B.C. MacDonald
B.C. MacDonald
BDC Inc.
Newport Electronics
Dynamic Technology
Illinois Power Co.
ISL Corp.
ISL Corp.
ISL Corp.
ISL Corp.
R.W.Kunz
McDonnell Douglas
McDonnell Douglas

Mike Herries
Jim Daddato
John P. McGuire
Marty Worth
Jerry Bearden
Bryan Bicker
Joe Bunning
Peter Lewis
Robert McDaniels
Daniel Pell
Glenn Thompson
Bernard Baird
Robert Gregg
Dan Herzberg
Orville Tull
Gheorghe Zidaru
Brian Howard
James Shaw
David Russell
Midwest Control Prod.
MKS
MKS
Monsanto
Monsanto
Monsanto
Monsanto
Monsanto
Monsanto
Monsanto
Norfrox Software
Norfrox Software
Promac
Sigma Chemical Co.
Sigma Chemical Co.
White-Rodgers
White-Rodgers
Protimeter

Oct 27, 1995
St. Jude Medical Inc.
Minneapolis, MN
Mike Miskus
Twin Cities Section Coordinator

The Twin Cities Section, Region 11 meeting was held at St. Jude Medical, Inc. on October 27, 1995. Mike Miskus (3M), Section Chairman opened the meeting and gave an overview of the previous survey and agenda for the meeting. The Twin Cities Section continues to have strong support with this meeting having approximately 90 people in attendance. The Section would like to give special thanks to Mike Czech for the hospitality and use of their facility.

Leon Barnes, Region 11 Director, spoke about the Dallas Conference and the growth of Region 11 membership.

Carol Hockert from the State of Minnesota Weights and Measures Department gave an overview of the NCCLS Conference in Dallas. She was very enthusiastic and felt she got a lot of useful information from the conference.

John Locke from A2LA spoke about the Expression of Uncertainty and Traceability in Measurement for Calibrations, and about Accreditation to Guide 25 vs. ISO 9000. All A2LA Accredited Calibration Laboratories are expected to determine their uncertainty of measurement in a way compatible with the way described in the following documents.


A2LA has included, in the scope of accreditation for calibration laboratories and a number of mechanical testing laboratories performing measurements, the following type of information:

Parameter Being Measured
Range of Measurement
Best Measurement Capability Expressed as an Uncertainty Technique/Standard

This type of information is routinely reported on the scopes of accredited calibration laboratories throughout the world so that the users of these laboratories may be able to judge whether the calibration service provided is adequate to meet the user’s needs. This information supports both the ISO 9000 quality system requirements and the ISO/IEC Guide 25 calibration requirements for accrediting testing laboratories.

John also spoke about: Traceability—he stated that A2LA uses ANSI/NCSL Standard Z540-1 for its calibration requirements; Documentation—each piece of equipment in the chain needs to be accompanied by a certificate or calibration report; and Uncertainty—an expression of the result of the measurement is incomplete unless it includes a statement of the associated uncertainty of that measurement.

The uncertainty of a measurement is a parameter that characterizes the spread of values that could reasonably be attributed to the measurement within a stated level of confidence. There are two types of uncertainty: Type A—those that are evaluated by statistical methods (mostly random) and Type B—those that are evaluated by other means (mostly systematic).

Regarding ISO Guide 25 vs. ISO 9000, John stated that before laboratories jump on the ISO 9000 bandwagon, they should understand whether this type of third-party recognition is really appropriate for the needs of their customers. From the point of view of the user of test data, the quality management systems approach to granting recognition to laboratories is deficient in that it does not provide any assessment of the technical competence of personnel engaged in what can only be described as a very technical activity, nor does it address the specific requirements of particular products or measurements. The better method of achieving these two objectives is through laboratory accreditation bodies, requiring laboratories to adopt best practices and by engaging assessors who are expert in the specific tests in which the customer is interested.

Tom Brunmeier from Minnesota Technology Services gave an overview of the organization. They are jointly sponsored by NIST and the State of Minnesota. They are a free service to Minnesota business for the purpose of investment in manufacturing and technology. Their services include: Small Business Development, Marketing, an Equity Fund, a magazine and Information Services which includes such activities as workshops and events, workforce development, Minnesota Consortium for Defense Conversion and Partnerships (ex: U of M, NASA, Federal Labs).

Dick Weber from 3M Metrology Services and Bruce Adams from the State of Minnesota Weights and Measures Dept, spoke about Making Good Measurements and Selecting Standards. Dick spoke about: What—Units of Measurement, Resolution and Accuracy; How—Equipment Selection, it must be suitable for the intended job, have good resolution, sensitivity, stability, repeatability, accuracy and environment control; and Who—Operators, are they properly trained, they must be competent and they must have integrity.

Necessary things in the calibration of equipment must include correct standards, correct procedures and trained personnel. There is a need to know the difference between normal product variation and measurement uncertainty. Bruce spoke about the importance of how you use and care for your standards and equipment. He provided a handout on weight and balance specifications. They brought in some examples of equipment that had been properly handled and some that had obviously been misused.

There was a panel discussion on the “Pros and Cons—Certification of Metrologists.” The general consensus among those present was that certification would be advantageous to everyone concerned. Leroy Britain spoke about the NCSL Training Committee he is chairing. Certification is one of the issues they will be addressing. He is looking for additional members for his committee.

Mike Czech showed a film about his company, St. Jude, and gave a general overview about where they are going. We were then taken on a tour of the metrology area of the facility.

Members of the Twin Cities Section Steering Committee: Bruce Adams, Steve Bjorseth, David Dikken, Chuck Ellis, Mike Miskus (chairman), Pat Riley, Ross Nelson, Chuck Rheault, Dick Weber and Leroy Britain.

Attendees:

<table>
<thead>
<tr>
<th>Randy Pohl</th>
<th>Palen-Kimball</th>
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<td>George Parker</td>
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<td>Jamie Durand</td>
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<td>Chuck Rheault</td>
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<td>Rod Enke</td>
<td>Rosemount</td>
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<td>Ed Wetterstrom</td>
<td>Twin Pines Services</td>
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<td>Jerry Trepczyk</td>
<td>Base Eight Inc.</td>
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<tr>
<td>Bill Swanson</td>
<td>Northern Balance &amp; Scale</td>
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<td>Mavis Hedlund</td>
<td>Northern Balance &amp; Scale</td>
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<td>Joey Kaluser</td>
<td>United Standards Labs</td>
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<td>Jim Dolezal</td>
<td>Cardiac Pacemakers</td>
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<td>Larry Roden</td>
<td>Cardiac Pacemakers</td>
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<tr>
<td>Mitch Johnson</td>
<td>Rockwell Intl.</td>
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<td>Clifford Koop</td>
<td>Kato Engineering</td>
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<td>Ralph Brandenberg</td>
<td>Kato Engineering</td>
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<tr>
<td>Keith Braun</td>
<td>Computing Devices Int'l.</td>
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<td>Doug Erickson</td>
<td>Computing Devices Int'l.</td>
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<tr>
<td>Wally Holznagel</td>
<td>Computing Devices Int'l.</td>
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<tr>
<td>Jerry Janousek</td>
<td>Northwest Airlines</td>
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<td>Mike Smith</td>
<td>Andersen Windows</td>
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<td>Jay Killian</td>
<td>Rosemount Aerospace</td>
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<td>Mike Steggall</td>
<td>Rosemount Aerospace</td>
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<tr>
<td>Ruth Kidd</td>
<td>Rosemount Aerospace</td>
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<tr>
<td>Dan Laust</td>
<td>Workplace Training</td>
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<td>Paul Hanson</td>
<td>Seagate Technology</td>
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<td>Bill Baeten</td>
<td>Seagate Technology</td>
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<td>Tom Schneider</td>
<td>Seagate Technology</td>
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<td>Frank Lopp</td>
<td>3M Metrology</td>
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<td>Mike Miskus</td>
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<td>Dick Weber</td>
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<td>Ross Nelson</td>
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<td>Chuck Regal</td>
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<td>Sema Lamin</td>
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<td>Jeff Otto</td>
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<td>Tim Mohrnant</td>
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<td>Pat Riley</td>
<td>3M Metrology</td>
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<td>Richard Vangilder</td>
<td>Hutchinson College</td>
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<tr>
<td>Mohammad Ardestani</td>
<td>3M Prairie Du Chien</td>
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Dick Weber talks about making good measurements.

Meeting Host Mike Czech (l) receives appreciation from Mike Miskus for supplying the facility for the meeting.

We are pleased to report on the success of both our Fall Regional Symposium and the Fall meeting of the Western Canadian Area.

15th Annual Canadian Region Workshop and Symposium

The meeting was held at the Bedford Institute of Oceanography (BIO) in Dartmouth, Nova Scotia on October 19 and 20, 1995.

The 80 persons attending were hosted in fine style by Rick Boyce of BIO. Co-ordination and promotion were ably handled by Wayne Sampson of Litton Systems in Enfield, Nova Scotia the NCSC Eastern Canada Area Co-ordinator.

This was our first regional symposium held outside of the Montreal, Ottawa, Toronto triangle. Its success was due to the dedicated efforts of Wayne and Rick. The symposium was technically excellent and all attendees enjoyed good old Down East hospitality.
Marilyn Ross, the Canadian Region Secretariat was on hand to record the proceedings. Marilyn is currently assembling the presentations for mailing to all attendees and regional members. The proceedings contain information valuable to anyone involved in making measurements or in measurement quality control. Persons interested are encouraged to contact Marilyn who will gladly supply copies. Contact information is listed under her picture in the back of the newsletter.

As is our custom at our fall symposium, several member companies, eight this year, took advantage of this opportunity to contact so many metrologists in one place by displaying their products and services. Carlo Rea of Technel Engineering in Woodbridge, Ontario is thanked for soliciting and organizing the exhibitors again this year. Exhibitor fees aid a great deal in offsetting symposium costs.

The symposium was opened by Dr. Jim Elliot, Acting Regional Director of Science at the Bedford Institute. Dr. Elliot outlined the importance of accurate measurements in the oceanographic studies carried out at his Institute. His hosting of this symposium is indicative of the importance which the scientists of his institute place on the acquisition of accurate field data. His Institute is also involved in laying undersea cables for the Department of National Defence and in mining countermeasures. Staff are expecting further changes as the Department of Fisheries and Oceans is presently being combined with the Canadian Coast Guard.

A description of current oceanographic work at Bedford Institute was presented by Dr. Neil Oakley. One of the instruments described was a moving vessel CTD (conductivity, temperature, depth) which was rapidly deployed with it’s cable over the ship’s stern allowing a vertical profile to be completed before the ship drew the cable back up and started the recovery.

David Friedel, Quality Assurance Manager of the L.S. Starrett Company came up from Cleveland, Ohio to present Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement results as applied to gauge blocks. David presented data from the calibrations of their gauge blocks at NIST and at NRC in Canada. He talked of laboratory repeatability and how operators had an effect on this. This subject proved to be of great interest to our members and David’s presentation invoked strong audience participation. Recognizing this importance has prompted the meeting organizers to arrange for Dr. Jennifer Decker of the National Research Council to make a lengthy presentation on this subject at our 16 May 1996 meeting at the NRC in Ottawa.

The position of the federal government’s Department of Consumer and Corporate Affairs in the Enforcement of Legal Metrology was explained by Roland Bourdage, Legal Metrology Atlantic Region. Roland stated that Weights and Measures is one of the oldest regulatory bodies in the federal government; ensuring “fair measure” in the market place. Supplier compliance and Legal Metrology enforcement was very well described.

Dave Agy of the Fluke Corp in Washington State, USA, came up to present Statistical Methods for Improving Confidence. We greatly appreciated Dave coming from Washington State to make this presentation recognizing how busy he was getting ready for the Region 9 meeting the following week.

Lunch was arranged, as were coffee breaks, to provide the attendees with ample opportunity to solicit measurement solutions from the many experts at the exhibitor tables.

NCSL and NRC managers present held their annual meeting to discuss items of common interest. Meeting minutes are reported under News From NRC in this issue.

Andre Lagace of the Quality Assurance Section of the Department of National Defence described their Quality Assurance programme as it relates to their suppliers. Andre stated that his department has adopted the ISO-9000 standards for the procurement of goods and services and now recognizes the calibration laboratory standard CAN-P4-C (ISO Guide-25) as administered by the Standards Council of Canada/National Research Council Calibration Laboratory Assessment Service as replacing their own recognition programme.

Graham Cameron of the Standards Council of Canada reported that ISO Guide-25 is currently under revision and expects it to be completed next year. This standard is equivalent to Standards Council of Canada document CAN-P4-C, “General requirements for the Competence of Calibration and testing Laboratories”.

A panel presentation on Measurement Process Control was organized by Frank Doucet of the NRC’s Institute for National Measurement Standards. On this panel were Robert Armand of Quebec Hydro and Karel Ebenreiter of Ontario Hydro. Both these participants head calibration laboratories accredited by the SCC/CLAS to ISO Guide 25. Frank described the use of Statistical Process Control (SPC) in Measurement Process Control (MPC). He described the seven major SPC problem-solving tools; histogram, check sheet, Pareto chart, cause and effect diagram, defect concentration diagram, scatter diagram and control charts.

Following Frank’s description of the programme requirements for using SPC, Robert and Karel discussed how they are complying with these requirements. Being able to hear the actual laboratory experiences of Robert and Karel is one of the major benefits of being an NCSL member. We appreciate them taking the time and effort to relate their experiences to us.

Following the first days sessions hospitality suite was provided by the Institute for National Measurement Standards (INMS) at the official symposium hotel, the Park Place Ramada Renaissance Hotel in Dartmouth. Here we were treated to the unveiling of a display on Canada’s National Measurement System (CNMS) and the release of a new document describing it. This document contains input received from NCSL members who attended last year’s symposium in Montreal. Details on CNMS are described under News from the NRC in this newsletter.

The second day was opened by John Joynt of Guildline Instruments in Florida who described “Salinity: it’s measurement, calibration and derivation of standards”. John described how in 1978 the Practical Salinity Scale was established enabling salinity to be calculated from conductivity ratio at a given temperature and pressure. Standard seawater used worldwide comes from only one source, Ocean Scientific International Ltd (OSIL) in Surrey, England. It is collected by them from a location in the North Atlantic Ocean and prepared for sale.

Al Bass of the Institute for National Measurement Standards described the current status of pressure and vacuum calibrations at NRC.
Development of a LAN Based Weather Station for a Gas Turbine Engine Test Facility was described by Carl Kumpic, Manager of Engine Testing at Rolls Royce Canada Limited in Montreal. Carl described how his receipt of the proper formulas for calculating and converting between dew point, specific and relative humidity had allowed the inhouse development of a computerized central weather station. This station provides each of its test cells with consistent and accurate meteorological parameters critical to the performance declaration of gas turbines under test in his facility.

Wayne Sampson, chair of the Canadian National Measurement Requirements Committee, described how his committee had closed the loop on their two year survey project with the delivery from NRC of a report describing how the INMS has enhanced their calibration services to respond to the needs outlined in this survey. The response from participants was acknowledged. Wayne and his committee are thanked for their persistence in bringing this cycle to a very satisfactory closing, a closing which demonstrates to those surveyed that their opinions do indeed count. Next year starts the cycle again under the direction of David Stevens of Pulse Engineering in Winnipeg, Manitoba.

The Development of Canadian National Standards and other documentary standards was discussed by Charles Ender, Manager of the Standards Division of the Standards Council of Canada (SCC) in Ottawa. SCC is a Federal Crown Corporation reporting through the Department of Industry to Parliament. Within Canada the SCC has accredited five organizations as consensus based standards developers. Charles detailed the activities of the SCC in world standards organizations.

Rounding out our symposium was an informative tour of the Bedford Institute conducted by Ms. Marie MacDonald, Communications Officer.

Our spring 1996 regional meeting will be on May 16 at the Institute for National Measurement Standards at the National Research Council in Ottawa. For the three days prior to our meeting the INMS will be running a mass measurement course. For meeting information phone the Eastern Ontario area co-ordinator, Dave Morgan at 613-952-3528. For information on the mass course phone Dr. George Chapman at 613-993-2351.

For May 15 we are also considering arranging training on several aspects of metrology. Feedback from members to myself or our area co-ordinators is wanted here.

**Attendees:**

- Frank Doucet
- Charles Ender
- David Friedel
- Dave Gascoigne
- Bert Grespan
- Gilbert Guertin
- Ray Hamilton
- Neil Harden
- James Ingram
- Harry James
- John Joynt
- Kim Kavanagh
- Carl Kumble
- Guy Lavoie
- Denise LeBlanc
- Gill Lefebvre
- David Legge
- Antje Loucke
- Andrew Love
- John Mayich
- Kevin McClure
- Declan McEvoy
- Paul McIntyre
- Adrien Michaud
- George Mihailov
- Ronald Mills
- David Morgan
- Bernard Morris
- Jim Mullins
- Bryan Murphy
- L.R. Murray
- Dr. Neil Oakey
- Bill Ormerod
- Peter Oster
- Les Peer
- Martin Pelrine
- Philip Pilgrim
- Michel Portugais
- Rodger Purcell
- John Richards
- Neil Richter
- Alan Robertson
- Larry Rodrigues
- Chris Rogers
- Marilyn Ross
- Donald Sampson
- Wayne Sampson
- Tracy Sanford
- Joe Sarto
- Alexandra Shaw
- John Smiciklas
- Joe Soucy
- Pat Stuart
- Tim Tarie
- Doug Thompson
- Anthony Ulrich
- Neil van Rossum
- Alex Watson
- Denis Wiart
- Rod Williams
- Bob Morash
- Karel Ebenstreit
- NRC/INMS
- DND
- Starrett Company Ltd.
- Litton Systems Canada
- Fluke Electronics Canada
- Transport Canada
- Supply & Services Canada
- Interfax Systems
- Guildline Instruments
- Nova Scotia Research
- Guildline Instruments
- Industry Canada
- Rolls Royce Canada, Ltd.
- Industry Canada
- NRC Biosciences
- IBM
- Imperial Oil Ltd.
- NRC/INMS
- Saint John Shipbuilding
- Focal Technologies
- Fluke Electronics Canada
- QETE
- NRC/INMS
- Canadian Marconi Co.
- GIS Mass Measurement
- Consultant
- Industry Canada
- ASL
- Pylon Electronics
- NRC/INMS
- Pylon Atlantic
- BIO
- Technel Engineering
- Litton Systems Canada
- Environment Canada
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- DND
- F. Ulrich Gage Lab, Inc.
- AllTemp Sensors
- Nautical Electronics
- AllTemp Sensors
- DND
- Nova Scotia Research
- Ontario Hydro

………
The Fall 1995 Region 12 Western Canada Area Meeting was held at Powertech Labs, Inc., in surrey B.C. on October 29, 1995.

It was a half-day meeting and 14 people attended. John Vandermaar of Powertech Labs, host of the meeting, welcomed attendees and explained briefly about the company’s profile.

E.S. (Bud) Rosenberg, Tool Standards and Control of Canadian Airlines International (CAI), talked about his experience in the ISO-9000 standards implementation. CAI consists of several branches, each of which had their own quality procedures in place. Bud re-organized those procedures and has new manuals written. The quality manuals were written using play script format which made them easy to understand and follow. Also, he emphasized the importance of quality training and education in the organization’s grassroots. CAI is currently under the final stage of ISO-9000 registration.

John Vandermaar, Powertech Labs, presented his expertise in high voltage measurements. The Powertech Labs handles high voltage DC/AC and impulses up to several hundred kilovolts. He explained how they measure and calibrate high voltage equipment using high voltage dividers and spark gaps.

We took a very interesting tour of the Powertech facilities, including high voltage, high current, chemical, mechanical and metallurgical laboratories.

Door prizes were supplied by NCSL. The next meeting will be at Canadian Airline International, Richmond B.C. April or May, 1996.

Attendees:

- Wladislaus Nefedow - BC Tel Systems Support
- E.S. (Bud) Rosenberg - Canadian Airlines Intl.
- Tony King - Cardiowest
- Barry Yee - Consultant
- Neil Wickstrom - Pinting Tool Lab
- David Love - Fluke Electronics Canada
- Gerry Adams - Imagic Design Ltd.
- Alik Shereshevsky - Imagic Design Ltd.
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- Gordon Muhler - Miller Instruments Ltd.
- Satoshi Nishie - Powertech Labs Inc.
- John Vandermaar - Shepard Instruments Ltd.
- Tom Wood - Tektronix Canada Inc.
- Willie Boetzkes

Software Package for Safety & Evaluation Engineering.

Electronics Regional Test Laboratory (West), Bombay (NCSL member) has developed a computer based training-information package -- GRATIS. The package is based on international safety standards such as IEC-950, UL-1950 and encompasses Information technology and Telecommunication equipments including SMPS. The package elaborately covers explanations of Safety and Evaluation Engineering, Standards and Specifications of worldwide safety regulation of electronic equipments and systems. The package has five modules:

1. Introduction
2. Standards
3. Product Evaluation and

It helps the user to extract specific information pertaining to the desired subject. The target users are R&D and manufacturing professionals of electronic products, students and researchers in the field of electronics.

The package is entirely menu driven and runs on a PC with DOS. The software is available in 1.2 MB and 1.44 MB distribution diskettes. A demo diskette is also available for quick demonstration of the package in PC-XT/286/386. For further details please contact Director ERTL(W) Bombay (fax: +91 22 8225713).

NABL Accreditation for STQC Labs

Five STQC Labs viz. Electronics Regional Test Laboratory (ERTL) (West) Bombay, Electronics Test & Development Centers (ETDCs) at Madras, Bangalore, Jaipur & Mohali (all NCSL members) have been accredited as calibration labs in the field of Electro-technical measurement by National Accreditation Board for Test & Calibration Laboratories (NABL), under Department of Science & Technology. ERTL (N) Delhi & ERTL (E) Calcutta have already
received accreditation. With this, so far total seven STQC labs for calibration and five for testing have been accredited under NABL program.

STQC Participates in Pacific Accreditation Co-operation Programme for ISO-9000

STQC Dte, a registrar for ISO-9000 certification, has participated in the recently held meetings of International Auditor & Training Certification Association (IATCA) & Pacific Accreditation Co-operation (PAC) at Cairus, Australia. IATCA is an international body, set-up with an objective of bringing in uniform criteria for certifying Auditors & Auditor training courses for assessment of ISO-9000 Certification. PAC is the technical advisory group set-up under APEC structure for achieving the international co-operation and agreement on ISO-9000 certification between accreditation bodies working in Asia Pacific Region.

STQC became a member of IATCA & an associated member of PAC and signed a MOU to this effect. STQC also proposes to run IATCA recognised auditor courses in India, which will help in establishing an internationally accepted certification scheme for personnel in India.

Solar Energy Center & STQC Co-operates to Set Up New Test Facilities

There is a concern for identification of alternate energy sources. One of the alternate sources identified is Solar energy. Solar Energy Center (SEC) under Ministry of Non-Conventional Energy Sources (MNES), Govt. of India, has established facilities for undertaking testing of Solar Photovoltaic (PV) modules and PV lighting systems. SEC is at present the only independent institution having facilities for testing of PV modules & lighting system and have felt a need to establish test facilities at various other locations in the country.

SEC has chosen STQC as their partners and extended support to STQC for establishing testing facilities at Electronics Test & Development Center, Bangalore and Electronics Regional Test Lab (East), Calcutta (both NCSL members). These facilities will complement the work being carried out by SEC and help Indian industry in getting their PV products tested to National & International Specifications.

STQC - Phillips EMT Training Center

Electronics Regional Test Lab (North) Delhi (NCSL member) has been organising training courses on inter-connection technology. The center is upgraded with the help of M/s Philips Electronics Manufacturing Technology Division (EMT) Eindhoven, Netherlands. Under an agreement between STQC and M/s Philips Electronics Manufacturing Technology Division (EMT) Eindhoven, Netherlands, a state-of-the-art training center has been established at Electronics Niketan, New Delhi.

Trained operators in production area are indispensable for producing reliable & quality products. This center will provide the much needed training in this field. The centre has started conducting training courses (training calendar is given below). This center would become a model center and cater to the training requirements of industries in India and the neighboring countries.

Additional Training Centers being established under SETE

STQC Directorate lays a great stress on education and training as it believes “Quality of Product depends on Quality of Person.” To provide training to personnel at the shop-floor level, a society namely Society for Electronics Test Engineering (SETE), (NCSL member) has been formed. The courses run by SETE through its center at Calcutta have become very popular.

To meet the growing demand for knowledge based skill development training programmes, SETE is establishing few more training centers at Hyderabad, Bangalore and Jaipur. It is a pleasure to inform that these training centers would be co-located and run by STQC labs which are NCSL members. These centers can organise and conduct standard as well as tailor made courses for regular and captive audience. It is also possible to organise courses in India as well as in the neighboring countries. Interested NCSL member organisations can contact NCSL Region 13 co-ordinator for further details (Fax: +91 11 4363083)

Comparative Testing of Electronics Products

STQC Dte. and its laboratories are taking keen interest in “Consumer Education” in India. Various Indian Consumer organisations viz. Voluntary Organisation in the Interest of Consumer Education - (VOICE), Consumer Education & Research Center (FERC) are utilising the services of STQC labs for carrying out Compara-
comparative testing on consumer items such as two-in-one, electronic ballast, copper ballast, etc.

All Local Advisory Committee of STQC labs (ERTLS/ETDCs) and Governing Council of Certification Schemes of STQC HQ, consumer organisations are taking a leading role and participating actively in the meeting. These forums are utilised by STQC labs to highlight some of NCSL activities in Consumer Education & Training.

Annual STQC Lab Director's (NCSL Members) Meet — 1996

Every year Directors of 21 STQC labs (NCSL members & non members) meet to discuss & lay down the plan of action for the next year. The 8th annual meeting is scheduled to take place at ETDC Madras (NCSL member) on 19 & 20, January 1996. The occasion of the meet will be utilised to discuss the progress made on the ongoing activities of NCSL and future plans for increasing the membership, organising more seminars under the banner of NCSL, etc.

STQC - Second National Certification Body

India has been participating in the IECEE meeting and three STQC labs have already been approved as CB labs under the scheme. During the recent meeting of IECEE held at Frankfurt in the last week of September 1995, STQC was proposed as the Second National Certification Body (NCB) for approval of manufacturers, in the areas of Consumer Electronics & Information technology under the scheme. Through this arrangement, Indian manufacturer will be able to get CB certificate based on the 'S' mark approval.

STQC Takes Active Role in IEC & IECQ Meetings

As part of IECQ activities, STQC has proposed an award scheme for best TQM practices among IECQ approved manufacturers. A scheme has been prepared and submitted to ICC chairman and IECQ secretariat. STQC has also suggested some points concerning a brochure publicizing IECQ registration, Registrar-Style certificates for IECQ approved manufacturers and promotion of IECQ in Electronics India exhibition. These were discussed in Workshop Group meeting and being circulated for CMC meeting.

METROLOGICAL ACTIVITIES IN BOMBAY AREA

Establishment of Radiation Standards at BARC Bombay

Standards of various radiation quantities, viz., air kerma, exposure, absorbed dose, neutron yield and fluency rate and radioactivity have been established at Bhabha Atomic Research Center (BARC). These standards are traceable to those maintained in national laboratories of different countries/international organisations through inter-comparisons organised by the International Atomic Energy Agency (IAEA), Bureau of International Weights & Measures (BIPM) and Asia/ Pacific Metrology Programmes. Calibration service for various detector systems is provided by BARC to ensure the traceability of measurements at different centers. Periodic measurement assurance programmes are conducted for the assessment of dosimetry accuracy in radiation therapy centers and activity assay in nuclear medicine centers.

Details on dosimetry calibrations and inter-comparisons can be had from Dr. S.C. Misra, Head, Radiation Standards Section, BARC, Trombay, Bombay - 400 085, India (Fax : 91-22-5560750).

Workshop on Quality Assurance of Radiation Therapy Equipment and Practices

A three day Workshop on “Quality Assurance of Radiation Therapy Equipment and Practices” was organised by the Association of Medical Physicists of India in collaboration with the Gujarat Cancer And Research Institute (GCRI) at GCRI, Ahmedabad during September 14-16, 1995. The Workshop co-sponsored by the United States-India medical Physics Foundation was attended by 21 participants. Faculty members were drawn from BARC, GCRI and Tata Memorial Hospital, Bombay. The topics for discussion included were:

1. Need for quality assurance protocol in radiation therapy
2. Documentation and quality assurance method
3. Quality assurance protocols for telegamma therapy equipment, medical linear accelerator, brachytherapy equipment, radiation therapy machine equipment, radiation measuring equipment, radiation dose measurement procedures, and treatment planning practices.

Practical exercises for demonstrating QA procedures on telecobalt unit, linear accelerator, high dose rate remote after loading equipment and treatment planning system were held on all days of the Workshop.

Nov. 30, 1995
Allison Transmission Co
Indianapolis, IN
James "Chris" Guy
Central Indiana Section Coordinator

The NCSL Central Indiana Section met at the Allison Transmission Company in Indianapolis. The meeting was hosted by Sherman Chancellor of Allison Transmission. Thanks to Sherm for all his efforts, especially on such short notice.

The meeting was opened by Chris Guy, with updates on his new employment. Three speakers could not make the meeting, but three others graciously volunteered.

The first speaker was Mike Serwick of the Naval Air Warfare Center Aircraft Division, NAWCAD. Mike is the local American Society of Quality Control representative. He briefly covered some of the highlights of ASQC from Deming to present. The purpose of ASQC is to spread a quality philosophy throughout the United States. He mentioned some of the local efforts to further these goals through training, and through the success they have had in attracting exceptional speakers to regional training sessions.

(continued on page 74)
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1998 NCSL WORKSHOP & SYMPOSIUM
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| REGION 4 (242) | Central Florida Section  
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San Antonio, TX 78228-0510  
(210) 522-2702 FAX(210) 522-3692 |
<table>
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<tr>
<th>REGION 6</th>
<th>Boulder/Denver Section (313)</th>
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<tbody>
<tr>
<td>Greg Burnett</td>
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<tr>
<td>Hewlett Packard Co.</td>
<td></td>
</tr>
<tr>
<td>24 Inverness Place East</td>
<td></td>
</tr>
<tr>
<td>Englewood, CO 80112</td>
<td></td>
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<tr>
<td>(303) 649-5460 FAX(303) 649-5328</td>
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<tbody>
<tr>
<td>Ed Brookes</td>
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<tr>
<td>Hewlett Packard</td>
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<tr>
<td>321 E. Evelyn Ave., MS- B3</td>
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</tr>
<tr>
<td>Mountain View, CA 94039</td>
<td></td>
</tr>
<tr>
<td>(415) 694-2047 FAX(415) 694-2376</td>
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<tbody>
<tr>
<td>Wayne Benda</td>
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<tr>
<td>Hughes Missile Systems Co.</td>
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</tr>
<tr>
<td>P.O. Box 11337</td>
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</tr>
<tr>
<td>Tucson, AZ 85734</td>
<td></td>
</tr>
<tr>
<td>(520) 794-4483 FAX(520) 794-5656</td>
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<tr>
<th>REGION 8</th>
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<tbody>
<tr>
<td>Brian Conroy</td>
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<tr>
<td>Litton Guidance &amp; Control Systems</td>
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<td>MS: 33</td>
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<tr>
<td>19601 Nordhoff St.</td>
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<tr>
<td>Northridge, CA 91324-2414</td>
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<tr>
<td>(818) 717-6835 FAX(818) 717-6835</td>
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<tr>
<th>REGION 8</th>
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<tr>
<td>Mike Magin</td>
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<tr>
<td>Southern California Edison</td>
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<tr>
<td>7300 Fenwick Lane</td>
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<td>Westminster, CA 92683</td>
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<td>(714) 895-0686 FAX(714) 895-0686</td>
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<tr>
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<tr>
<td>Dave Agy</td>
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<td>Fluke Corporation</td>
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<td>P.O. Box 9090</td>
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<tr>
<td>Everett, WA 98206-9090</td>
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<tr>
<td>(206) 356-5471 FAX(206) 356-5992</td>
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<th>REGION 10</th>
<th>Great Britain Area (1012)</th>
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<tr>
<td>Mike Hutchins</td>
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<tr>
<td>Hewlett Packard, Ltd.</td>
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<td>Customer Support Center</td>
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<tr>
<td>Eskdale Road, Winnersh</td>
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<tr>
<td>Wokingham, Berkshire RG11 5D England</td>
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<tr>
<td>011-44-734-696-622 FAX:011-44-734-274377</td>
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| REGION 10 | Israel Area (1013) |
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<tr>
<td>Dr. T.M. Plantenga</td>
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<tr>
<td>NMI Van Swinden Laboratorium</td>
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<tr>
<td>Schoenmakerstraat 97</td>
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<tr>
<td>P.O. Box 654</td>
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<tr>
<td>2600 AR Delft, The Netherlands</td>
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<tr>
<td>Leon Barnes</td>
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<tr>
<td>AlliedSignal Aerospace Co.</td>
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</tr>
<tr>
<td>MS: D/422 BP26</td>
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<tr>
<td>P.O. Box 419159</td>
<td></td>
</tr>
<tr>
<td>Kansas City, MO 64141-6159</td>
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<tr>
<td>(816) 997-5840 FAX(816) 997-3656</td>
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</tbody>
</table>

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*See next page for acronym definitions
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A2LA  American Association for Laboratory Accreditation
AIA  Aerospace Industries Association
AMMAC  Asociacion Mexicana de Metrologia (Mexican Association of Metrology)
ANSI  American National Standards Institute
ASQC  American Society for Quality Control
ASTM  American Society for Testing and Materials
CORM  Council for Optical Radiation Measurements
CPEM  Conference on Precision Electromagnetic Measurement

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EAL  European cooperation for Accreditation of Laboratories
IEEE &M  Institute of Electrical & Electronics Engineers  
Instrumentation & Measurement
IMEKO  Internationale Messtechnische Konferenz (International Measurement Confederation)
ISA  Instrument Society of America
MSC  Measurement Science Conference
NACC  North American Calibration Cooperation
NSAI  National Standards Authority of Ireland
OIML  Organisation Internationale de Metrologie Legale (International Organization for Legal Metrology)
PMA  Precision Measurements Association

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