Come to St. Paul, MN
For the 2007 NCSLI Annual Workshop and Symposium
July 29 - August 2, 2007
EDITOR'S MESSAGE--

Uncertainty and Proofreading

In a real sense, our life mission as metrologists is to keep reducing the numbers in OUR Uncertainty Columns in a lifelong continuing quest for the best accuracy we can attain. It occurred to me that I probably should apply the same criteria to writing and proofreading, although I know of no one who even has. Writing is such a personal thing, both in the creative process and reading steps, so the creative parts probably don't have an uncertainty factor in their birth. But the proofing parts do.

What brought my thoughts to this subject, is an object lesson in the April 07 issue. If you look at the Region Reports on pages 29-34, in 6 different region logos, the identical section number 1210 appears 6 times. How could that happen? I must have personally looked at and scanned past those very pages more than 10 times total. Plus there were 20 pairs of eyes on the review committee which sees each issue before rolling the presses.

I think it must have something to do with what our eyes and mind EXPECT to see. So when one scans over the logo, one doesn't expect that those numbers might be redundant and the eye blows right by them, seeing nothing wrong. The human brain/eye interaction is a wonderful thing, capable of doing enormously powerful things in reading and perception. So it comes as a true embarrassment when I as editor give final approval to the April 07 issue, and then too late discover a real bonehead failure of our proofreading.

(Continued on page 47)
St Paul, Here We Come.

By the time you read this message you should have completed your registration for the 2007 Workshop and Symposium in St Paul Minnesota July 20 through August 2. If you haven’t registered for this year’s conference you should do so without delay!

This year’s conference theme is “Metrology’s Impact on Products and Services.” It will feature 26 tutorials on various topics and six parallel technical program tracks including one track devoted to metrology education. There will be 46 committee and special meetings held during the conference. Please feel free to attend any committee meetings that are of interest to you. Participation is open to all conference attendees. The committee activities are of benefit to all members of NCSLI and your participation is needed to strengthen the organization. Be sure to include at least one committee meeting in your plans for the conference.

The International Evening this year is being held at the Wabasha Street Caves on Wednesday evening. This 1930’s prohibition era nightclub has been frequented by various gangsters, flappers and movie stars. Be prepared to travel back in time at this historic venue.

A highlight of every conference is the exhibit hall and this year is no exception. We will have over 140 vendors exhibiting their products and services. They are all available for discussion and questions about their offerings. An excellent time to get a preview of the exhibits is during the Sunday evening reception in the exhibit hall.

April Board Meeting

The second board meeting for 2007 was held in Toronto, Canada, on April 22nd through April 25th. Georgia Harris, our Vice president for Education, presented the finalized proposal for the creation of an Educational Development Fund for NCSLI. This fund is being created to support scholarship, grants and special education-related projects and activities in NCSLI. Her proposal received unanimous support from the board and the work of establishing the fund and the methods for obtaining contributions is underway. Watch for more information on this fund arriving in your e-mail box soon.

Mark Lapinskes, chair of the Education System Liaison committee presented and the board accepted a recommendation for scholarship awards to be presented by NCSLI.

The board accepted a proposal to create a “New Graduate Welcome Package” for graduates of schools participating in the NCSLI scholarship program.

A proposal was presented by Lonnie Spires, Vice President for Operations, for changes to the look and format of the Quarterly newsletter, which will include advertising. This has been successful with our Measure Magazine, and will help defray costs of the Newsletter. The proposal was accepted with provisions for a transition plan and other matters to be presented to the board at the July meeting.

BIPM Visit

In early April I was honored to lead a delegation of Carol Hockert, Executive Vice President, Jeff Gust, Immediate Past President and myself on a visit to the Bureau International des Poids et Mesures (BIPM) in Sevres France. During our visit we met with Professor Andrew Wallard, Director of the BIPM, to discuss issues of mutual interest to NCSLI and to BIPM. As part of our visit, Professor Wallard escorted us on an extensive tour of the BIPM labs including the experiment on the watt-balance for realization of the kilogram, the BIPM calculable capacitor experiment, ionizing radiation and organic and inorganic chemical metrology.

We also had the opportunity to tour the machine shop where prototype kilogram weights are fabricated and prepared for use. A highlight of the tour was the presentation of the search engine for the Key Comparisons Database (see story on KCDB on page 6). This presentation will be repeated at the conference in St Paul and I encourage you to attend this valuable session.

College Francais Metrologie/ Laboratoire national de metrologie et d’essais

As part of the visit to France, the NCSLI delegation met with the College Francais Metrologie (CFM) at the Laboratoire national de metrologie et d’essais (LNE) in Paris. The purpose of our visit was to meet with the leadership of CFM to begin exploration of mutual cooperation between our organizations. CFM is the sponsor of the International Metrology Congress held bi-annually in France. We found several areas of potential cooperation between the organizations and NCSLI will have a representative attending the 13th International Metrology Congress in Lille France. In addition to the meeting with CFM we were privileged to take a tour of the LNE laboratory facilities including their mass and pressure metrology labs...

INMS visit

Following the April board meeting in Toronto, Carol Hockert, Jeff Gust and I traveled to Ottawa to meet with Director General Dr. Jim McClaren, Dr Alan Steele and Katalin Deczky at the National Research Council of Canada Institute for National Measurement Standards. In that meeting I presented an overview of the activities of NCSLI and learned about the activities of the NRC and INMS. We were treated to a tour of some of the INMS labs including nanometrology, dimensional metrology and the INMS calculable capacitor experiment. We continued discussions of areas of cooperation between NCSLI and INMS and the future of NCSLI in Canada.

As you can see by the activities listed above, the NCSLI leadership team including the executive board and the board of directors as a whole has been very busy this last quarter with activities to advance NCSLI in our mission of Serving the World of Measurement. I look forward to attending the conference in St Paul and to meeting with everyone there.

Jack Ferris
NCSLI President
The 2007 NCSLI Technical Program includes eleven parallel sessions in Six Tracks spread over four days -- over 130 speakers and panelists covering a wide range of metrology topics and issues.

New this year: Entire Tracks on Dimensional Metrology and Education and Training.

Technical Program Tracks
Education and Training Track
Dimensional Metrology Track
Analysis and Management Track
International Track
Research/Theoretical Track
Electrical Metrology Track

This year’s conference also includes two Internationally focused Plenary Sessions covering International Developments and SI Developments.

Panel Discussions
Traceability Panel
The Quality Measurement Data Specification for the Automotive Industry Action Group
NCSLI Education Liaison Outreach
The NIST US Measurement System Initiative and NCSLI's US Measurements Requirements Committee

Poster Sessions
Two poster sessions, with 5 poster presentations each, will be set up at the entrance to the exhibit area during the Tuesday and Wednesday AM breaks. You can’t miss them!

The interstate highways, air traffic management system, and the electrical grid are ubiquitous, yet one rarely thinks about this infrastructure until a problem arises. But without this infrastructure, our economy and lives would be significantly and negatively impacted. And when the infrastructure is stressed due to congestion or bad weather we definitely notice the impact on our daily lives.

Similar to the physical infrastructure -- there is an "innovation infrastructure" -- an underlying structure that helps foster innovation and transition scientific discoveries into the marketplace. This innovation infrastructure helps to define our nation's capacity to innovate. And just like the physical infrastructure, when it is not functioning smoothly -- significant barriers to innovation can -- and do -- arise.

Both the American Competitiveness Initiative and the National Academies, "Rising Above the Gathering Storm", specifically address the nation's innovation infrastructure. This includes Federal R&D spending; policies to encourage private sector R&D investment through tax credits; re-emphasizing our commitment to education; and reforming our immigration policies to attract and retain the best and brightest high-skilled workers from around the world.

William A. Jeffrey, Director, National Institute of Standards and Technology (NIST), will describe the role that NIST plays in the Nation's innovation infrastructure and why NIST is specifically called out in the President's American Competitiveness Initiative.
ILAC/NACLA REPORT

Anthony Anderson

International Laboratory Accreditation Cooperation (ILAC)

In March, I attended the ILAC Arrangement Committee (ARC) and Laboratory Committee (LC) in Paris, France. Of considerable interest to both committees was an update on the proposal from the European Union (EU) that would make the European Accreditation Cooperation (EA) responsible for all accreditation policy in Europe. At the ILAC 2006 General Assembly (GA) back in November, some members of ILAC felt that the proposal would be in conflict with the ILAC Arrangement. Of particular concern is the requirement for only one not-for-profit accreditation body per EU economy.

It was reported at the ARC and the LC, that a decision was made to go forward on February 14, 2007 regarding the proposal. The final form of the proposal was a “Regulation for the European Parliament and of the Council setting out the requirements for accreditation and market surveillance relating to the marketing of products.”

Jacques McMillan from the EU had addressed the ILAC Executive Committee earlier in the week and had assured ILAC that the EU proposal was only an internal European issue and ILAC and the rest of the world need not be concerned. Emphasis was placed on the fact that for the moment bi-lateral arrangements of non-European organizations with the EU are unaffected.

This position was not totally accepted in either the ARC or the LC. The question was asked whether ILAC would have any direct contact with the EU on this issue and the feeling was that it would not achieve anything; there is little ILAC can do except to monitor developments. EA is saying it will be two years before there will be any changes although the EU Parliament could implement quicker if the EU Regulation goes unchallenged. This is unlikely. Concerns were again expressed that there could be serious ramifications for the ILAC Arrangement and ILAC as a whole. Full disclosure to the ARC is promised for the Sydney meeting.

The difficulty of getting specifiers and regulators to participate in ILAC was discussed in the ARC. Currently there is no membership category which would allow participation by individual specifier/regulator organizations. A suggestion was made that a consultative group similar to the PT group might be set up. A WG has been formed to look into involving global specifiers.

The ARC was asked if the document ILAC 11:1994 “Legal Liability in Testing” is needed. The decision was to withdraw it, as it not pertinent in today’s world and could be causing confusion.

There was a vigorous debate over financial pressure, for-profit ABs versus not-for-profit. It was agreed there is no difference; financial/resource pressure can occur in both types of organizations. However, it could become an issue in the future for ILAC because of the new direction in Europe, where it is proposed to forbid for-profit AB organizations to operate within the EU.

It is generally agreed that Calibration Measurement Capability (CMC) and Best Measurement Capability (BMC) are the same thing, but NMI’s use CMC, whereas most laboratories use BMC. The ARC would prefer moving to Measurement Capability (MC) but if the NMI’s want to remain with CMC, the ARC would accept that. (Also, see the BIPM report on page 6)

ILAC is considering evaluating alternative accreditation schemes, but still based on ISO/IEC 17011. However, there are several prerequisites being considered for an AB to be evaluated to alternative schemes. Most significantly, the AB would have to already be a signatory to the MRA. No consensus was achieved in the ARC; discussion will continue.

ISO 15189:2007 “Medical laboratories — Particular requirements for quality and competence” is published and now aligned with ISO/IEC 17025:2005. ILAC signatory ABs will have 2 years to implement it for their accredited laboratories.

A resolution from the Cancun GA regarding compliance with G21 (Cross Frontier Policy) included a phrase “not to be in conflict with national laws”. It was proposed to include the same phrase in the revision of P4. After discussion it was taken out. It is possible that G21 may have to be revised again.

The next ARC and LC meetings will be in Sydney, Australia, October 19 to November 1, 2007.

National Cooperation for Laboratory Accreditation (NACLA)

I attended the NACLA Board of Directors meeting in Columbia, Maryland, in conjunction with the 2007 Annual Forum and Annual General meeting (AGM). The Forum was the first since NACLA announced its new direction last summer. Many of the presentations reflected the new direction with its focus on a market driven/specifier approach to accreditation in the US.

A new evaluation program for Construction Material Testing was announced at the forum. The Federal Highway Administration (FHWA) requires accreditation of laboratories for Construction Material Testing under regulation 23CFR 637.

To facilitate this requirement the FHWA has established NACLA as the recognizing authority for evaluation of ABs in this field by the Federal Register Notice of September 22, 2004. An AB requiring this scope of recognition will be evaluated to ISO 17011:2004 with the additional requirements of “NISTIR 7012 Technical Requirements for Construction Materials Testing.”

Other presentations at the Forum included an unusual location for a calibration laboratory. The presentation covered the support of equipment being used in the Iraq war from a laboratory out in the middle of the desert. The laboratory was made up of a series of modules designed to work in the most hostile of environments including being under attack.

From the product certification world there was a very interesting presentation about International Product Counterfeiting.
The new direction for NACLA was very well received at this year’s Forum and support for the approach was expressed by many attendees in the Q & A sessions during the AGM following the Forum. Not surprisingly, specifiers were extremely enthusiastic about the new approach. Next year’s Forum will be held April 2 & 3, 2008.

During the Board meeting, the agenda was suspended for a special meeting with representatives of ACIL, ANSI and NIST, who were the original founders of NACLA, to update these organizations on the new direction and share ideas on the way forward for US accreditation. Interestingly the model NACLA is now following was originally envisioned by the founders, but they were persuaded that the International model was the only way to go.

The new NACLA Evaluation Procedure Rev A was adopted during the Board meeting. It is available on the NACLA web site at <www.nacla.net>.

NACLA will be hosting two training courses immediately prior to the NCSLI Workshop and Symposium in St. Paul, Minnesota. On Thursday July 26, 2007, there will be a course titled “Investigation of Non-Conformances through Root Cause Analysis,” and on Friday July 27, 2007, “Evaluations which meet Specifier Needs.” Both courses will be held in the St. Paul Hotel. More information can be found on the NACLA web site. [$350.00 each].

Contact: NACLA Secretariat, Phone: (321) 275-0610; E-mail: <secretariat@nacla.net>; Web Address: <www.nacla.net>

ILAC-G24 Guidance Published

Edition 2007(E) of ILAC-G24, “Guidelines for the determination of calibration intervals of measuring instruments,” has just been published.

Tony Anderson, who is “Custodian” of the NCSLI membership in ILAC can furnish a copy to any NCSLI Member Delegate who requests one from him. Contact: <tanderson@gcscalibration.com>.

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THE CMC-BMC ISSUE

Reported by Andrew Wallard, BIPM

Background: After its meeting in Nashville, during the last NCSLI conference, the working group set up by the BIPM and the ILAC to consider proposals for a common wording of BMC (Best Measurement Capability) and CMC (Calibration and Measurement Capability) received a number of comments. These came from the Regional Metrology and Accreditation Organisations (ROMs) and Regional Accreditation Bodies (RABs) as well as from some NMI Directors. One of the proposals from the Nashville meeting was that the term Measurement Capability might be an acceptable way forward.

Subsequently, during a meeting between RMOs and RABs in March 2007, a slightly revised definition was developed. It was then reviewed during May 2007, first in a meeting of the Joint Committee of the BIPM and the RMOs and then in a meeting of the ILAC Accreditation Issues Committee. These two meetings came to the conclusion that the revised description of the term CMC, based on the consensus achieved in Nashville and in the March meetings, was best suited to a description of what was actually meant by BMC and CMC. This description was accompanied by a substantial set of Notes, some of which are still being refined. The new proposals will be put to the ILAC membership and to the International Committee for Weights and Measures for approval later this year.

The BIPM Key Comparison Database Newsletter

BIPM has just published their seventh KCDB Newsletter.

A new text-based search engine was implemented on the BIPM website on 6 March 2007, allowing it to become one of the world’s reference portals for metrology. The BIPM metrology portal Webmaster is Dr Janet Miles. The KCDB Office took the opportunity of the availability of such software at the BIPM to offer a new means of searching the database and also to make significant changes in the design of the KCDB website.

We outline this major event in the present issue of the KCDB Newsletter, and also give some updates related to the CIPM MRA, the JCRB, and the contents of the KCDB. To improve future editions of the KCDB Newsletter, please send us feedback at <BIPM.KCDB@bipm.org> so that we may meet your specific interests and concerns.

Contact us: <BIPM.KCDB@bipm.org>.

- Visits to the KCDB website
- Redesign of the KCDB website
- Use of a new search engine on the KCDB website
- Current status of the participation in the CIPM MRA
- Key and supplementary comparisons
- Calibration and Measurement Capabilities (CMCs)
- Feedback from the 18th JCRB
- Workshop on enhancing the participation in the CIPM MRA
- Demonstration of the KCDB at NCSLI, St. Paul
- Future meetings

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EUROLAB

Horst Czichos

General Assembly 2007

The EUROLAB General Assembly 2007 took place in Bristol, UK, on 14 March 2007. As the previous EUROLAB President Bent Larsen retired, a new President was elected. He is Jean-Luc Laurent, the Director of the Laboratoire National de Métrologie et d’Essais (LNE) in Paris. Guy Jacques, AIB Vinçotte, Brussels, was re-elected as Vice President.

As a member of the pertinent working group, Steve Ellison presented a new document “Measurement uncertainty revisited - Alternative approaches to uncertainty evaluation,” which was approved by the GA as a EUROLAB Technical Report. See the note at the end of this report.
As a guest, Harry J. Moody, Past President of NCSLI, gave a presentation of this organization, its mission and activities and described the internal structure of NCSLI which is divided into divisions, the largest of which being the “international” division. He underlined that the most important thing in an organization such as NCSLI is the networking at all organizational levels.

EUROLAB “Cook Book”

It is one of the tasks of EUROLAB’s Technical Committee for Quality Assurance (TCQA) to actively support the national member laboratories with hands-on guidance facilitating their quality work. For this purpose the TCQA started developing a series of short guidance documents on issues relevant for the implementation of an effective quality system or during the accreditation process. This series of documents, which will be made available via EUROLAB’s website <www.eurolab.org>, is named “Cook Book”.

At present the existing “Cook Book” papers deal with:

- Validation of test and calibration methods,
- Management reviews for laboratories,
- Criteria for the selection of a proficiency testing scheme,
- Use of interlaboratory comparison data by laboratories,
- Conflict handling during the accreditation process,
- Handling of untestable samples.

EUROLAB inquiry

In co-operation with the EA / EUROLAB / EURACHEM Permanent Liaison Group (PLG) the EUROLAB Secretariat will perform an inquiry among the accredited laboratories in Europe concerning their use of the accreditation logo and the appreciation of the accreditation with a flexible scope.

Reference laboratories

A new EUROLAB Position Paper on the concept of reference laboratories is available on the EUROLAB website. The paper describes the possible role and benefit of reference laboratories in the traceability chain.

Coming workshop

As a joint activity of EA, EUROLAB and EURACHEM, the PLG is preparing a workshop on “Accreditation – a tool to develop competence?” which will take place at the Federal Institute for Materials Research and Testing (BAM) in Berlin on 20 September 2007. This workshop will address the competence of staff and the accreditation procedure conceived as a learning process. Additionally the European development in the field of accreditation will be discussed.

New Uncertainty Report Finalised.

This report was prepared by a Eurolab expert group on measurement uncertainty, affiliated to the Eurolab Technical Committee on Quality Assurance in Testing (TCQA), that was established for this purpose and disbanded after completing the work. The group held a series of meetings in Berlin from October 2004 to November 2006.

The members of this group were: Stephen Ellison, UK; Manfred Golze, Werner Hässelbarth, Ulf Hammerschmidt, Wilfried Hinrichs, Ulrich Kurfürst, Burkhard Peil, Anita Schmid, all of Germany; Bertil Magnusson, Sweden; Teemu Näykki, Finland; Marc Priel, France; Pedro Rosario Ruiz, Spain.

The draft technical report was approved by the EUROLAB Technical Committee for Quality Assurance in Testing (TCQA) at its meeting in Prague on 19 October 2006 and by the EUROLAB General Assembly in Bristol, United Kingdom, on 14 March 2007.

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EUROPEAN COOPERATION IN METROLOGY (EUROMET)
Seton Bennett

The last EUROMET report ever

By the time you read this, EUROMET will have ceased to exist! As expected, the EUROMET General Assembly, at the end of May, passed the following resolution:

“Following the foundation of EURAMET e. V. (hereinafter EURAMET) and the progress made towards the EMRP, the General Assembly decides that all EUROMET activities shall be transferred to the association EURAMET. Therefore, the EUROMET Memorandum of Understanding, formally established on 23 September 1987 in its current version of 25 July 2002 shall be terminated with effect from 30 June 2007. EURAMET will take over the EUROMET activities on 1 July 2007.”
As reported in the April Newsletter, EURAMET, the new European Association of NMIIs had already been established at an inaugural event in Berlin in January and all EUROMET’s activities and responsibilities are being transferred to the new Association. All the EUROMET members have joined EURAMET except Cyprus, which expects to become a member within a year, and the European Commission’s IRMM, which has a special associate status. The EUROMET GA was followed by a short General Assembly of EURAMET, which accepted the transfer of responsibilities, elected a Board of Directors, established budgets for 2007 and 2008 and voted to establish Technical Committees to succeed those of EUROMET.

As well as being the Regional Metrology Organisation for Europe, EURAMET will manage the European Metrology Research Programme. The first call for Expressions of Interest (EOIs) under this programme has been published, with four targeted programmes:

- metrology addressing the possible redefinition of SI units;
- a targeted programme for research in metrology for health;
- research in dimensional/length metrology;
- research in electromagnetic metrology.

Those submitting EOIs will participate in a formulation process to generate a €63M research programme of joint projects involving European NMIs and Designated Institutes in 20 countries.

Watch out for the first "EURAMET NEWS" in the October newsletter.

Can metrologists change their spots? Here is a group of international metrology experts who literally changed their group name. They came to their meeting as EUROMET and left as EURAMET.

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**REMEMBERING FRANK HERMACH**

Francis L. Hermach 1917 -- 2007

Francis L. Hermach, 90, chief of electrical instruments for NIST, died May 11 in Sandy Spring, MD. Dr. Hermach was well known to many of our NCsli engineers and scientists for his work in support of national ac–dc standards.

In 1952, Mr. Hermach published a paper considered to have launched the field of AC–DC thermal transfer metrology, which forms the basis for alternating current voltage and current measurement and calibration throughout the world. His paper is the most-cited in its field. The paper is important, said Joseph Kinard of NIST, because Mr. Hermach figured out a simple method for using thermal converters.

Hermach's work established the ac–dc difference calibration service at NBS. Later Hermach papers provided the framework for high-frequency ac–dc transfer measurements [2], the establishment of Multijunction Thermal Converters (MJTCs) as the NBS primary standards of ac–dc difference [3], and a complete redetermination of the NBS ac–dc uncertainties in 1984, consistent with CIPM recommendations [4]. Hermach is generally acknowledged as the founder of the technique now used at all National Metrology Institutes for ac current and voltage metrology.

He was born in Bridgeport, Conn., and graduated from George Washington University in 1943. He began working for NIST’s predecessor in 1939 and served as chief of electrical instruments from 1963 to 1972. He retired in 1975 and continued working on contract through 1982. He was chairman of the IEEE I&M Group and wrote more than 30 technical papers. He held two patents, and received numerous technical awards.

Survivors include his wife, Elfriede Hermach of Silver Spring; and two children from his first marriage.
NCSLI MEETINGS
August 3-7, 2008
NCSLI Workshop & Symposium
Swan & Dolphin Hotel, Orlando, FL
CONTACT: NCSL Business Office, (303) 440-3339
Fax: (303) 440-3384
e-mail: <info@ncsli.org>
website: <www.ncsli.org/conference>

REGION/SECTION MEETINGS
NORTH CENTRAL US REGION
Twin Cities Section Meeting
September 18, 2007
Donaldson Company, Bloomington, MN
CONTACT: Bruce Adams/Mitch Johnson, (651) 284-4104
Fax: (952) 435-4040

INDUSTRY MEETINGS
2nd International Metrology Conference
April 22-24, 2008
Tunisia
CONTACT: Secretariat
E-Mail: <secretariat@acmetrology.com>

First Arab Conference For Calibration & Measurement
6-8 November 2007
Cairo, Egypt
CONTACT: Mamdouh Halawa, 20105402742
<http://www.nis.sci.eg/acmc>

CHECK WEBSITE FOR UPDATES
<www.ncsli.org/events/>

You can submit information on your upcoming Region/Section meeting, Committee meeting, or other Metrology-related event on the web! Just click on “Calendar” then “Submit an upcoming event”. Get listed and increase awareness and attendance!
Christopher L. Grachanen

Job Descriptions and Education / Training Linkage

Recent ASQ MQD and NCSLI Metrology job description initiatives / activities have been pursued under the banner of Metrology education. One might ask, “What is the linkage between Metrology education and Metrology job descriptions?” This question may be best answered in terms of obtaining and using job-related demographics to make informed decisions.

Job-related demographics are often the starting point for determining the relative health of an occupation in the guise of how many personnel are in an occupation versus how many are leaving in light of industry, government and academia labor requirements. The ratio of “critical mass” needed to meet industry, government and academia labor requirements versus the population of an occupation gives an insight as to the resources that may likely have to be expended in order to recruit / maintain enough qualified personnel in an occupation to avoid adversely impacting labor requirements. In addition, job-related demographic information is routinely acquired for the purpose of determining the skill sets, education and training necessary to be competent to perform job tasks in an occupation.

Job benchmarking surveys and various census-related activities strive to document job expectations in order to determine what skill sets, education and training are perceived by employers / employees as needed to meet these expectations. From this line of reasoning it may be postulated that job-related demographics provide substantiating data used to 1) determine / justify resources needed to recruit / maintain qualified personnel in an occupation and 2) establish what skill sets, education and training are required for personnel to be qualified in that occupation.

Most statistically-derived job-related demographics are based on classification grouping of job titles and their associated job descriptions with the assumption that these job titles and associated job descriptions faithfully represent unique job expectations. Realistic job titles supported by credible job descriptions help to insure job-related demographics are truthful for a particular occupation and that decisions based on them are accurate and germane. Unrealistic or out-dated job titles and associated job descriptions increase the likelihood that job-related demographic inferences are invalid or at best misleading.

Decisions based on flawed job-related demographic inferences can result in the non-allocation of resources that could otherwise be used to help enable an adequate occupation labor force. Thus the linkage between job descriptions and education and training can be viewed on the macro level as a cause-and-effect relationship where education and training decisions regarding content and resources are routinely made using job-related demographics compiled by means of job titles and associated job description qualifiers. One can easily see that the old adage ‘garbage in, garbage out’ holds especially true for decisions based on job-related demographics.

Job-related demographic inferences, like most statistically derived data, are deemed more credible as sample size is increased. Without diving into the merits of having a large sample size for statistically-derived data, suffice it to say that the more information that is known about something the more we can infer about it. The same holds true for job-related demographics. The reality of job-related demographics is that across industry there are many different job titles and their associated job descriptions for very similar job expectations.

Sometimes these differences can be explained in terms of trying to keep job titles and their associated job descriptions in ‘boilerplate’ agreement with established job families within an organization. Also, existing job titles and their associated job descriptions may be badly in need of updating. Sometimes, human relations (HR) personnel simply missed the mark when writing up job titles and their associated job descriptions. Whatever the reason, standardization of job titles and their supporting job descriptions for similar job expectations can be seen as a good thing when it comes to compiling and summarizing faithful job-related demographics.

As previously stated, the more information the better when it comes to making statistical inferences. Standardization of job titles and their associated job descriptions across industry would help to derive more accurate and reliable job-related demographics, which in turn would make for better-informed decisions when it comes to resource allocations and establishing skill sets, education and training requirements.

It is acknowledged that it would be very difficult, if next to impossible, to get industry to agree upon standardized job titles and associated job description templates for similar job expectations. It is, however, realistic to assume that there should be some acceptable level of correlation for similar job expectations such that a unique occupation should be easily distinguished from other occupations in the same job family. Contrary to this assumption is the common industry practice of categorizing calibration technicians as electronic / electrical technicians with the only identifiable distinguishing attribute in their associated job description being the mantra catch phrase “performs calibrations.”

Efforts of Metrology advocate groups like ASQ’s MQD and NCSLI have been to help bring some level of acceptable job description coherence for calibration practitioners across industry to better understand industry, government and academia labor requirements and how best to allocate resources to meet these requirements. Without such efforts, compiling calibration practitioner job-related demographics across industry lends itself to a quasi hit-or-miss scenario depending on whether an organizations job title and associated job description are recognized by an informed individual as being applicable for inclusion into the demographics. Needless to say, much more work is needed to get industry on the same page, or at least the same chapter, when it come to calibration practitioner job titles and associated job descriptions.
ISO 9001:2000 LEAD AUDITOR TRAINING RABQSA-TPECS
Georgia Tech Global Learning Center
Katie Takacs, Fax: (404) 894-1820
www.dlpe.gatech.edu/quality-association

2007: July 23-27 Atlanta, GA
October 22-26 Atlanta, GA

$1595 per person. Learn how to approach ISO 9001:2000 registration from the professional auditor's point of view and focus on key audit skills that enhance auditing capability. This intensive 36-hour workshop covers key aspects of leading an audit team for your firm, another firm, or vendors/suppliers.

NACLA TRAINING COURSES
NACLA, (321) 275-0610
Fax: (321) 275-0615
secretariat@nacla.net
www.nacla.net

2007: July 26-27 St. Paul, MN

$350 per person per day. Course 1, July 26, 2007, "Investigation of Non-Conformances through Root Cause Analysis" Course 2, July 27, 2007, "Evaluations which meet Specifier Needs"

ANALYTICAL CHEMISTRY FOR METROLOGISTS
Stranaska Scientific LLC, (970) 282-3840
Fax: (970) 282-7040
education@stranaska.com
www.stranaska.com

2007: July 27 St. Paul, MN

$695 per student. This introductory workshop is intended for metrologists and calibration specialists who have no formal background or educational training in analytical chemistry. It is not a tutorial per se on the calibration and qualification of analytical instruments.

Workshop participants will acquire a basic introduction to the terminology, simplified theory (minimum of equations and math), and concepts of selected topics in analytical chemistry. Such knowledge forms the backbone of the underlying principles and distinctions for scientific approaches to sample and standard preparation, sample presentation, analysis, and calibration/ qualification in analytical measurement techniques.

Although it is taught from an academic perspective, this tutorial workshop includes practical ramifications of the theory and concepts relevant to many of the analytical measurement techniques which metrologists may encounter in their workplace. Interactive class exercises include problem-solving examples of analytical chemistry in practice.

UNDERSTANDING MEASUREMENT UNCERTAINTY
IG Technology
Gary Meyer, (952) 935-1108
Fax: (952) 935-1108
gary.meyer@comcast.net
www.ig-technology.com

2007: August 1-2 Minneapolis, MN
December 4-5 Minneapolis, MN

$695 per student. This course provides the participant with an overview of measurement uncertainty including applied statistical principles, measurement applications, types of distributions, type A and type B errors, individual error components, development of an uncertainty budget, calculations for combined uncertainty, expanded uncertainty, and reporting uncertainty to customers. Uncertainty budgets will be analyzed in class exercises.

MEASUREMENT DECISION RISK ANALYSIS
Integrated Sciences Group
Howard Castrup, (800) 400-7866
training@isgmax.com
www.isgmax.com/training.asp

2007: August 6-8 St. Paul, MN

$1495 per student (software included). This 3-day course provides a conceptual background in measurement decision risk analysis methods and techniques documented in NASA Reference Publication 1342, “Metrology - Calibration and Measurement Processes Guidelines.” Topics include achieving accuracy ratios and other quality requirements through the analysis and management of false accept and false reject risks, establishing and using tolerance guard-bands, and interpreting and reporting measurement decision risk. Concepts and principles are reinforced through hands-on use of ISG’s Accuracy Ratio software.

NIST LASER MEASUREMENT SHORT COURSE
NIST
Marla Dowell, (303) 497-7455
marla.dowell@colorado.edu
www.boulder.nist.gov/div815/lmsc.htm

2007: August 7-10 Boulder, CO

$995 per student. The National Institute of Standards and Technology will offer a Short Course in Laser Measurements in Boulder, Colorado, August 7-10, 2007. The three-and-one-half-day course will emphasize the concepts, techniques, and apparatus used in measuring laser parameters and will include a visit to NIST laser measurement laboratories. The most comprehensive seminar of its type, this course is ideal for those who need to understand the characteristics of lasers and laser measurements or who are responsible for laser systems. The seminar is taught by laser experts from NIST, industry, and other government agencies and is intended to meet the needs of metrologists, scientists, engineers, laboratory technicians, educators, managers, and planners involved in the use of laser systems. A degree in physics or engineering or equivalent experience is assumed, and some experience in the use of lasers is desirable.

MEASUREMENT UNCERTAINTY WORKSHOP
Quametec Institute
Karen Moor, (810) 225-8588
info@quametec.com
www.quametec.com
Mapping as a tool to guide implementation efforts. Ingsystemsandproduceoncustomerdemand. Utilize Value Stream leanenterprise. Eliminate overproduction from traditional schedul-ing systems. Gain a competitive edge by transforming your business into a

$495
Atlanta, GA
2007: September 12-13
www.dlpe.gatech.edu/quality-association
Katie Takacs, Fax: (404) 894-1820
Georgia Tech Global Learning Center

PROGRAM: OVERVIEW AND LIVE SIMULATION
JUMP-STARTING YOUR LEAN MANUFACTURING
2007: August 20-22 Wixom, MI
October 8-10 Wixom, MI
November 28-30 Wixom, MI

$1695 per student. The Complete Measurement Uncertainty Analysis Solution! ISO GUM Concepts, Hands-on Workshop, and features/techniques unique in the industry to QUAMETEC, such as; "Measurement Range Uncertainty" analysis for analyzing an entire measuring range, "Uncertainty Matrixing" for addressing the measurement uncertainties of an entire laboratory and "Uncertainty Toolbox™ software, reported to be the favorite measurement uncertainty analysis software of America's accredited laboratories and assessor's alike, due to it's ease of use and full calculation and reporting in Microsoft® Excel®, allowing users to provide their analysis work in digital form to their assessor. The developer/instructor is a trainer/technical advisor for several ISO/IEC17025 accreditation bodies. This assures the attendees receive up to date and appropriate guidance in meeting the accreditation requirements for uncertainty analysis. To ensure the attendee's learning objectives are met, each attendee receives FREE review of uncertainty budgets for 30 days.

ISO/IEC 17025 QUALITY MANAGEMENT SYSTEM AND INTERNAL AUDITING
Quametec Institute
Karen Moor, (810) 225-8588
info@quametec.com
www quametec.com

2007: August 23-24 Wixom, MI

$895 per student. Learn how to develop and manage your quality system. Become qualified as an Internal Auditor for ISO/IEC 17025. This 2-day course provides a full understanding of the standard, provides tools and guidance on how to perform and document your Internal Audits, and prepares the attendee to be able to create a Quality Management System compliant to the standard. Get it right the first time with professional training on your side.

ISO 9001: 2000 INTERNAL QUALITY AUDITING
Georgia Tech Global Learning Center
Katie Takacs, Fax: (404) 894-1820
www.dlpe.gatech.edu/quality-association

2007: September 10-11

$750 per student. Learn to evaluate an organization's ability to meet internal and external requirements with ISO 9001. Implementing an internal auditing process can benefit your company in problem-solving, targeted decision-making, and overall product performance.

JUMP-STARTING YOUR LEAN MANUFACTURING PROGRAM: OVERVIEW AND LIVE SIMULATION
Georgia Tech Global Learning Center
Katie Takacs, Fax: (404) 894-1820
www.dlpe.gatech.edu/quality-association

2007: September 12-13

$495 per student. As the world grows smaller, competition increases. Gain a competitive edge by transforming your business into a lean enterprise. Eliminate overproduction from traditional scheduling systems and produce on customer demand. Utilize Value Stream Mapping as a tool to guide implementation efforts.

UV/VIS SPECTROPHOTOMETER CALIBRATION AND TRACEABILITY
Stranaska Scientific LLC, (970) 282-3840
Fax: (970) 282-7040
education@stranaska.com
www.stranaska.com

2007: September 17-18 Atlantic City, NJ
November 5-6 Las Vegas, NV

$1215 per student. This comprehensive training workshop is intended for all individuals who have some degree of responsibility for ensuring the quality and acceptance of UV/VIS data and who are involved with the routine quality control, performance evaluation, and/or regulatory qualification of UV/VIS absorption spectrophotometers. Tutorial instruction explains the principles and applications of UV/VIS absorption spectrophotometry including definitions, relevant mathematical relationships and applied statistics, Beer's Law, and metrological considerations (measurement traceability chain pathway, timeline, and uncertainty budget); optical designs, configurations, sampling accessories, and instrument specifications for commercial UV/VIS spectrophotometers; fundamental scales and parameters of spectrophotometers; validation tests for spectral resolution, stray radiant energy (stray light), wavelength accuracy, photometric accuracy and linearity; and interactive calibration and traceability scenarios.

An overview of relevant primary NIST artifacts, secondary NIST-traceable artifacts, and ASTM documentary standards intended for UV/VIS spectrophotometer evaluation, metrological calibration, traceability, and quality assurance of analytical measurement data is provided. Value-added expert guidance and helpful laboratory tips for science-based UV/VIS calibrations are also provided.

UNCERTAINTY/SPC ANALYSIS
Integrated Sciences Group
Howard Castrup, (800) 400-7866
training@isgmax.com
www.isgmax.com/training.asp

2007: September 24-27 Springfield, MA

$1895 per student (software included). This 4-day uncertainty analysis course is intended for engineers, scientists and other technical personnel responsible for designing, testing, calibrating, installing or maintaining measurement equipment and monitoring systems. This course is also beneficial for research and development personnel and quality assurance engineers in all fields of science and technology.

This course provides a comprehensive presentation of the principles of measurement uncertainty analysis for direct and multivariate measurements and measurement systems found in the ISO GUM, published papers and current research. Instruction includes advanced measurement uncertainty analysis topics that extend these methods and concepts. Hands-on analyses using ISG's Uncertainty Analyzer software provide practical application of important concepts to the development of uncertainty estimates for direct measurements, multivariate measurements and measurement systems. Applying uncertainty estimates to control measurement processes, establish calibration intervals, and minimize decision risk is also discussed.
LEAN BOOT CAMP: TRAINING A LEAN CHAMPION
Georgia Tech Global Learning Center
Katie Takacs, Fax: (404) 894-1820
www.dlpe.gatech.edu/quality-association

2007: October 2-5 Atlanta, GA

$1195 per student. Discover how lean impacts profit, lead-time, inventory, quality, and customer service. Understand and develop a strategy for successfully applying lean enterprise principles. Learn the most common lean tools and techniques (VSM, 5S, Set-up Reduction, TPM, etc.) through our interactive simulations and how to apply them using rapid process improvement (Kaizen) events.

ISO 17025 COMPLIANCE
Workplace Training, Inc.
Paul Hanssen, (952) 471-8554
phanssen@wptraining.com
www.wptraining.com

2007: Oct. 15-18 Boulder, CO

$1895 per person. Uncertainty Management section covers specifications, tolerances, accuracy, and uncertainty ratios, and guardbanding. Introduction to ISO/IEC 17025 for Technicians section will cover the requirements of the standard, how it is applied to calibration and test laboratories, and what a technician who works for an accredited lab needs to know. Assessment to the Requirements of ISO/IEC 17025 section will cover the details and interpretations of the requirements of the standard as it is applied to calibration and test laboratories. It explains how to plan and organize an assessment, how to conduct one, and how to report the results.

MAKING ACCURATE LOW LEVEL MEASUREMENTS
Keithley Instruments, Inc.
(800) 552-1115
info@keithley.com
www.keithley.com

2007: Oct. 16-17 Cleveland, OH

$990 per person. This course provides users with a detailed understanding of how to make accurate low-level electrical measurements. Users will learn what constitutes a low-level measurement, the limitations of these measurements, sources of measurement error, and techniques to eliminate these errors. Additional topics include selecting the proper product for a desired measurement and understanding the basics of how to communicate with an instrument from a PC. The session consists of lectures, demonstrations, and hands-on labs. The course is designed for engineers, scientists, and technicians who need to make low-level electrical measurements.

INSTRUMENTAL ANALYSIS: INTRODUCTION TO OPTICAL SPECTROSCOPIC TECHNIQUES
Stranaska Scientific LLC, (970) 282-3840
Fax: (970) 282-7040
education@stranaska.com
www.stranaska.com

2007: November 7-9 Minneapolis, MN

$995 per student. This course prepares individuals working in the metrology field to take the ASQ (American Society for Quality) certification exam to become a Certified Calibration Technician (CCT). The body of knowledge defined on the ASQ website will be covered.
We recently received the sad news that one of our most effective International Coordinators, Katsumi Yokoi of Japan, passed away on May 4, 2007. Katsumi-san was instrumental in establishing NCSLI in Japan. He became Japan Region Coordinator in 1992, and his picture first appeared in the October, 1992 newsletter roster. It was the period when NCSLI was opening up membership to International member organizations. Canada was first, then many other nations joined. Katsumi retired from his NCSLI-Japan Region Coordinator job in 2001, and handed it off to our present coordinator, Kazumi Hayakawa.

Katsumi was born in Shimane, Japan, in 1945. He joined the fledgling Yokogawa-Hewlett-Packard in 1964, as one of YHP’s earliest employees. At that time, HP was widening its interests within the nation of Japan, and had decided to accomplish this with a joint venture with a venerable national organization there, Yokogawa Electric Works. YEW was a supplier of electric meters, and had some product lines in instrumentation. The new joint venture took on those products and set up manufacture of a few of HP’s products at first.

He started as a production engineer, helping to bring a line of popular HP instruments into local production. He later moved to activity as a Quality Engineer, and then a Manufacturing Engineer for the Component Measurement/ Semiconductor Test Products. He designed many factory automatic test systems during that period. From 1983 to 1986, he worked on the design and development of the EMI open site. From 1986 to 2005, he managed Measurement Standards Center.

In 1999, HP spun-off the instrumentation product line to Agilent Technologies Japan. He retired on October 2005, and stayed as an advisor for 1 year. From October 2006, he worked at ORIX Rentec Corporation.

Katsumi’s accomplishments with NCSLI are legendary. He started NCSL Japan with his first region meeting in 1992, with only 12 attendees. He was the Japan Region Coordinator from 1992 to 2001. During this period he was instrumental in organizing the Japan Annual Conference, which grew to encompass most of the metrology thought leaders and executives of his country, and International experts. Attendance at the Japan Conference now exceeds 600 people. After his retirement from NCSLI in 2001, he remained as an advisor for NCSLI Japan.

Katsumi enjoyed philosophical pursuits, his private works were concentrated in global (astronomic) relations between measurement and the religious world. The Mandala represents in part, the world of Buddhism, but he extended it to the measurement world, and explored it through Mandala. He found interesting challenges to thought about many analogies between different subjects and enjoyed discussing these at meetings with his good friends who loved and understood him and his nature.

He leaves his wife, a daughter and a son.

Katsumi Yokoi
1945 – 2007

At the 2002 Japan Annual Conference, Katsumi was honored with a floral tribute to his past NCSLI activities, and his key role in serving as the first Japan Region Coordinator.
TOURING OUR MEMBER LAB —
NAVY PRIMARY STANDARDS LAB

NAVY PRIMARY STANDARDS LABORATORY,
NORTH ISLAND, SAN DIEGO, CA
Tour Guide: James Wheeler

We are proud to welcome you for an overview of our Navy Primary Standards Laboratory. For decades, this facility has served to meet the readiness needs of the U.S. Navy. We are also proud of our decades-long connection to the National Conference of Standards Labs International (NCSLI).

As I approach my retirement this year, I want to offer my thanks to the US Navy for sponsoring my participation in the global activities of NCSLI, and the Measurement Comparison Program committee work which I managed for a number of years. I appreciate the contributions and participation from all the member organizations in the important measurement data gathering work we did annually.

NPSL Mission Statement
Highly skilled and dedicated metrologists at the Navy’s Primary Standards Laboratory maintain and disseminate the most accurate physical units of measurement within the Navy. This provides Navy laboratories with direct measurement traceability to the National Institute of Standards and Technology. Laboratory personnel also provide technical assistance and training to Navy Metrology and Calibration Program personnel. We are committed to continually improve the Navy’s capability to make quality measurements, and to ensure that FLEET READINESS IS MAINTAINED THROUGH CALIBRATION.

Our Guiding Principles

Quality - We believe that the quality of our measurements must not be compromised. We are continually improving our measurement systems, procedures, assurance, and technical skills to ensure delivery of quality products and services to our customers.

Customers - We believe that customer satisfaction is essential to successfully fulfilling our role within the Navy. We are committed to being sensitive and responsive to our customer’s needs, whether those customers are within our laboratory, NAVAIR North Island or anywhere throughout the world.

Products - We believe that we are responsible for constant improvement of our products and services. Our sustaining value and influence in the Navy’s Metrology and Calibration Program are dependent on this.

Teamwork - We believe that cooperation is the way to get the job done. We respect each other, and each other’s rights and opinions. We work together to improve our Laboratory, other Navy laboratories, the Navy’s Metrology and Calibration Program and the Nation’s calibration community.

Workplace - We believe that our workplace should be kept clean and safe. Our people have the right to work in such an environment, and to have the equipment, facilities, and other support necessary to do a quality job.

Management - We believe that our managers should operate in an honest and straightforward manner. Communications up, down, and across organizational lines is emphasized. We hold our managers accountable for improving the systems and processes which constrain our metrologists from doing a better job. We expect our managers to be leaders, mentors, and role models in the laboratory.

Self-Improvement - We believe that each of us, manager and metrologist alike, has an obligation to improve our capabilities. College classes, short courses, seminars, outside reading, and outside contacts are considered essential to self-improvement. We know that we cannot improve our Laboratory unless our people continually improve.

Community - We believe that we must be responsible and active in the Navy’s Metrology and Calibration (METCAL) community; the Department of Defense’s Calibration Coordinating Group (CCG); the National Conference of Standards Laboratories International (NCSLI); the Measurement Science Conference (MSC); Fleet
Touring our Member Lab

Readiness Center Southwest, and the greater San Diego area communities. Our reputation and future influence depend on it.

Importance - We believe our position as the Navy’s Primary Standards Laboratory is vital to the defense of our nation. We value our role in helping to ensure that Navy weapons systems are maintained mission-ready and capable. The safety of Navy personnel throughout the world depends on accurate and reliable measurements. We take our responsibility seriously.

History

The Navy Primary Standards Laboratory, Naval Air Station North Island, has a rich history in the US Navy and Marine Corps, being created in the heat of World War II. From the 1943-46 the lab was originally designated as the Assembly and Repair (A&R) Department, Naval Air Station San Diego (NAS North Island), with the role in the design and repair of test equipment used by Fleet Air activities.

Since a majority of test equipment required calibration, the Bureau of Aeronautics (BUAER) assigned a project to the Naval Research Laboratory (NRL) in 1946 to determine those standards and facilities required to formally establish a Navy Calibration Program.

In May 1947, a Test Equipment Standards Laboratory was established, and several years later was redesignated as the Electronics Standards Laboratory Branch of the Electronics Engineering Division of the Aeronautical Engineering Group of the Overhaul and Repair (O&R) Department; and in 1953, redesignated as the Navy “Reference Standards Laboratory.”

Through the 1960s and 70s, the lab went through a series of different titles, and authorities, although performing much the same technical activity, North Island Western Standards Lab. It continued to function as one of the Navy’s two Type I laboratories, the other being the Eastern Standards Laboratory located at the Washington Navy Yard, Washington, DC. These two laboratories functioned in loosely-coordinated cooperation with each other to provide the Navy with Type I calibration support.

Through the 1980s and 90s, the lab continued to improve measurement standardization equipment and operator skills. Various transfers of calibration coverage and responsibilities were made between several different Navy laboratories, and the name changed several more times.

In 1989, our new laboratory, Building 469, was ready for occupancy. Building 469 on NASNI is a 25,000 square foot, environmentally-controlled laboratory designed by laboratory engineers/technicians. Due to workload growth over the years, the laboratory also utilizes Buildings 319-2, 66, and 378 to accomplish its assigned tasks. The anechoic chamber in Building 469 was completed to support radiation hazard probe calibration. New environmental modules were installed and are occupied by Mechanical Standards Division personnel.

In 1993, the Navy Primary Standards Laboratory East was closed and unique measurement systems were sent to Navy Primary Standards Laboratory North Island, while other systems were sent to the Standards Laboratory, Naval Aviation Depot, Norfolk.

As we passed into the new millennium, we were 37 folks strong. Workload was stable, continuing to provide our customers over 5,000 calibrations per year. Our microwave laboratory received its Direct Comparison Measurement System from National Institute of Standards and Technology Laboratory (50 MHz to 50 GHz supporting 3.5 and 2.4 mm connectors using a new thin film technology) Thin film sensors are directly calibrated by the NIST Microcalorimeter. Additionally, the NIST 2-18 GHz 6-Port Systems was upgraded.

New tasking was established for NAVAIR Certified Auditors (ISO 9000 Lead-certified Auditors). Five lab members received this certification, and all have participated in NAVAIR and Joint Navy Audits. These metrologists support the Joint Navy Audit Certification (JNAC) Program. The audit standard is a Navy version of Z-540.

Laboratory Capabilities Profile

As can be easily imagined, with the diverse technologies employed in operational and weapons systems globally, the measurement standards needed to support those technologies are sophisticated and in high variety. These listings give just a broad overview of the operator skills and equipment power that we bring to our jobs.

Electrical

[Image of Josephson Junction DC Volt Standard]
Electro-Optics

Optical Power Measurement System

- Blackbody Radiation
- Spectrophotometry
- Infrared Thermometers
- Fiber Optic Power
- Photometry
- Ultra Violet Power (NDT UV Meters)
- Laser Energy Nd YAG (1064 nm)

Flow

STS Flow Fixture

- Gas Flow
- Hydrometry
- Liquid Flow
- Air Velocity

Gas Analysis

Gas Analysis Measurement System

- Services and Products
- Measurement Systems Used

Microwave

Power Density Measurement in Anechoic Chamber

- Microwave Noise
- RF Power (Coaxial)
- Coaxial Attenuation
- RF Power Density
- 30 MHz Attenuation
- Coaxial Impedance
- RF Power (Waveguide)
- Waveguide Attenuation
- Time and Frequency
- Waveguide Impedance

The NPSL Carl Lucas Microwave Laboratory provides S-Parameter measurement calibrations including attenuation, reflection coefficient and phase of both coaxial and waveguide transmission line components. The lab provides calibration factor and effective efficiency calibrations of RF power devices including thermistor mounts and thermoelectric and diode power sensors. Measurements are made using both commercial and NIST-built Vector Automatic Network Analyzers (VANA). VANAs include the Agilent 8510 (45
MHz to 50 GHz), Agilent 8753 (30 KHz to 3 GHz), Agilent Precision Network Analyzer (PNA) (10 MHz to 50 GHz), NIST Coaxial 6-Port VANA (250 MHz to 18 GHz) and NIST Waveguide 6-Port VANA (18 to 40 GHz). RF Power calibrations are also made using the NIST Direct Comparison Measurement System. Microwave noise calibrations (30 MHz to 26.5 GHz) are also provided using a noise figure meters and Excess Noise Ratio (ENR) Calibration Test Set.

The lab also employs an anechoic chamber and TEM cells for power density measurements of radiation hazard meters. The anechoic chamber uses a precise computer-controlled antenna positioner to align the radiation hazard probes within the EM field. The NIST Frequency Measurement & Analysis Service provides traceability for the lab’s Agilent 5071A Cesium Standard. This capability provides the Naval Surface Warfare Center (NSWC Corona) Frequency Measuring and Monitoring System traceability for monitoring the performance of the Warfighter’s Datum Model 9390-6000 Exactime GPS Timecode and Frequency Generators used throughout the fleet.

**Physical and Dimensional**

- Mass
- End Standard
- Optical Wedges, Cubes, Prisms, etc
- Vacuum
- Dimensional
- Thread & Gears Wires
- Force
- Temperature
- Surface Flatness
- Master Balls & Cylinders
- Acceleration
- Humidity
- Angle
- Rotary Indexing Tables and Polygons
- Pressure
- Surface Finish

**Special Metrology Functions**

It may come as a surprise to many active metrologists, but the NIST is not the Guardian and Custodian of ALL Primary National Standards. For a number of parameters, for which the demand for standardization is low, that responsibility is delegated to other prominent laboratories where the need is crucial to their mission.

Such is the case with Magnetic Field standards, which are in the custody of NPSL. Naturally, for the Navy’s role in demagnetizing ship hulls with the utmost accuracy and result, the need for quality measurements is demonstrated. See the picture below of the low-gauss calibration standard and the available article below.

**NPSL also has the new Quantum Hall Effect Resistance Standard made by Measurements International. NPSL also has the latest Precision Network Analyzers (PNA) from Agilent Technologies.**

NPSL works very closely with the Measurement Science Directorate at the Naval Surface Warfare Center (NSWC) at Corona. NSWC is responsible for providing technical leadership in support of the Metrology and Calibration (METCAL) program, preparing and supporting technical Instrument Calibration Procedures (ICP) and supporting new procurements.

**Articles**

These articles are available for downloading on the NPSL website at <www.nadepn.navy.mil/npsl>. Select “About Us” followed by “Publications” on the left hand menu.

- “Magnetic Calibration at the United States Navy Primary Standards Laboratory”
- “NIST Journal of Research article declaring NPSL capability in magnetics”
- “Navy Primary Standards Laboratory Accepts Delivery of the NIST Direct Comparison Measurement System”
- “Status of Night Vision Detector Calibrations at NPSL”
- “WR-42/28 6 Port Automatic Network Analyzer”
- “National Magnetic Measurements are Alive and Well at NPSL”
- “Phase Noise Measurement Capability at NPSL”
- “Completion of Upgrade to NPSL 6-Port VANA”

**Engineering Support**

The Navy Primary Standards Laboratory (NPSL) Metrology Engineering Support Office provides a variety of metrology services to the Navy calibration community, many of which are intended to directly benefit NAVAIR FCAs.

**In-Service Engineering**

We are designated as the Cognizant Field Activity (CFA) for calibration standards. As CFA, we are responsible for in-service engineering of calibration standards that have reached the stable operations phase of their life cycle. One CFA duty is conducting engineering investigations (EIs) on failed calibration standards when engineering or design problems are suspected as the cause of failure. When necessary, NPSL issues technical directive changes and releases bulletins concerning calibration or equipment problems. Another CFA task is to determine suitable replacement equipment for calibration standards that are obsolete and no longer procurable.

**Technical Assistance to FCAs**

An increasing area of involvement as CFA for calibration standards is to provide engineering technical assistance to FCAs. NPSL’s objective is to provide a rapid reply to information requests regarding specific calibration problems that are beyond the scope of routine ICP corrections that could be resolved by CPR submission. Types of CFA assistance that we have provided in the past include providing test fixture information, giving advice regarding equipment substitution and alternate test methods, and finding repair information (schematics, etc). NPSL has links with other metrology activities, industry tech-reps, and other Navy calibration activities to obtain information that may not be readily available to FCAs direct-
ly. If information is not immediately on-hand at NPSL, answers to calibration problems can usually be obtained through these contacts. FCA requests for technical assistance can be initiated by telephone, fax, or e-mail. This information helps the TYCOM to determine if the problem is isolated or may represent a wider problem that will affect other calibration labs.

**CPAR Program**

Calibration Problem Assistance Requests (CPARs) are mainly for use by the Navy Calibration Laboratories and NAVAIR Regional calibration labs. Their purpose is to facilitate listing test equipment and standards in the METRL, determining calibration requirements, and providing interim calibration procedures. The program was originally developed by NADOC and was transitioned to NPSL in 1989. Since 1989 we have acted on over 6,000 CPARs.

**Operation Interlab**

- Electrical
- Electro-Optics
- Electromagnetics
- Mechanical
- Flow
- Gas Analysis

An innovative program, called the Operation Interlab (OI), was designed to provide for the calibration of selected standards by the Navy Primary Standards Laboratory (NPSL) for exchange with participating Navy calibration activities. The OI Program was authorized by the Bureau of Naval Weapons in December 1965 with the goal of reducing overall calibration program operating costs and minimizing the loss of capability resulting from critical standards being out-of-service while being calibrated at the NPSL. Through this program, customers exchange out-of-calibration standards with the NPSL for calibrated units on a scheduled basis.

**Acknowledgements**

I would like to express my appreciation to Patty Leyva and our NPSL management team for their dedicated support for our technical activities and excellence in quality metrology. Al Teruel and I have also been supported in our NCSLI committee activities for several decades now. NCSLI is a two-way street, our laboratory gains from the personal and technical connections with industry and NIST, and we like to think that NCSLI gains from the technical knowledge and expertise in leading edge measurement procedures and technology used in our labs.

*Editor’s Note: As Jim rides off into his retirement sunset, all of us at NCSLI owe him a tremendous debt of gratitude for his decades of personal dedication to his Measurement Comparison Committee. I doubt that even Jim could count the number of Round Robin standards comparison programs he has organized and completed. I know I have been reporting on them for decades. It must be near 100. Thank you Jim for your career and capabilities and NCSLI activities. Happy Trails.*

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**REMEMBERING "BEV" CALDWELL**

**Beverley Jean Caldwell**

*21 September 1938 - 28 March 2007*

We received word that Del Caldwell's wife, Beverley, passed away in March. Del was our NCSLI President for the year 1989, and because of the considerable involvement in travel and meetings by member delegate spouses at the time, we wanted our membership to be aware of her passing.

Bev had been fighting for a number of years to endure Lupus and its many debilitating effects. Del has been with her in this difficult path through life. Bev was born in Pritchett, Colorado, and moved to California as a young girl. She was married in 1958, and moved to Chula Vista, California. The family subsequently moved to the Inland Valley in the early 1960's and established Claremont as their home, where Del worked with the US Navy during his career. She was a true, creative artist and applied that talent to a wide variety of unique clothing, meals, crafts, and artwork. She leaves Del, two daughters, and four grandchildren.

In retirement, Del remains active on several NCSLI committees.

If donations are considered, there are two; Lupus Foundation of America-N.O. (301-670-9292) or Lupus Research Institute (212-685-4116).

* This snapshot was taken the day new cabinets were installed in Bev's remodeled kitchen, about August 2004. Bev was beside herself with the feeling of the new kitchen coming together. Her expression reflects her outlook on life.
Roger Burton, Craig Gulka and Terry Conder discuss some Board issues in the corridor.

Malcolm Smith, Jack Sompii and Dave Agy relax during a break, to cover other matters.

Malcolm Smith and Seton Bennett find some international operations discussions useful.

This looks like the NCSLI Information Center, sort of like the shipborne CIC, where orders go out to the far-flung NCSLI global operations. Treasurer Dave Agy, Exec. V.P. Carol Hockert, and President Jack Ferris.

The Board turns out on the lobby steps for the mandatory attendance picture. My Canadian trip memories: on my first trip to Canada for a Board meeting in the 1980s, my luggage got lost for a day at the entry port.

Jeff Gust, Jim Allred and Derek Porter gather in the lobby to plan their evening activities, usually a shared dinner organized by our meeting planner, Tom Huettemann, who provided these pictures.
TORQUE WRENCH INSTRUCTIONS Correction!

In the April 07 issue, Rich Fertell’s Region 1410 report might have given the wrong impression on the “Care and Feeding of Torque Wrenches.”

Guy Fleming, who presented the talk on torque wrenches, noted that in the April Newsletter under his presentation summary, Rich indicated that torque wrenches should not be stored above 80% setting. This is not true. They should never be stored with ANY load applied.

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May 17, 2007
Setra Systems
Boxborough, MA
Tim Cooke,
New England Region Coordinator

The Spring meeting was called to order May 17, 2007 at 9:00AM by Tim Cooke. The agenda was distributed with one scheduling change but no change of content. There were no previous meeting minutes available.

Dallen Baugh of Hart Scientific discussed temperature calibration techniques and practices.

Paul Richards of Setra Systems, along with a Setra Systems Engineer, discussed the unique application of NASA technology they’ve incorporated in new ultra-low pressure calibrators. Pressure calibration techniques for transducers and gages were discussed.

The NCSLI 2007 Workshop, “Metrology’s Impact,” was discussed and brochures distributed.

There was a tour of the Setra facility and numerous door prizes that had been provided by NCSLI, Setra Systems, and Hart Scientific were distributed by a raffle-type drawing.

A meeting survey was distributed, with the goal of obtaining direction for a proposed fall meeting. A copy of our Survey Response.xls file is available on request.

Paul Richards of Setra Systems presents some unique ultra-low pressure calibrators in their product line.

Obviously an alert, intelligent and eager group of metrology learners.

**Attendees:**
- Julius Parrott Allegro Microsystems
- Alex Chevereki Allegro Microsystems
- William Falk Astra Zeneca, LP
- John Conroy Aveco
- Tony Fontes BAE Systems
- Michael Medai Draper
- Jim Thompson Draper
- Paul Watson Draper
- Stan Williams Draper
- Mike Olsen Esco Calibration Lab
- Noem Deacons Esco Calibration Lab
- Matt Sherritt Fairchild Semiconductor
- James Kossuth Genzyme Corp.
- Joe Fornier Genzyme Corp.
- Jim Sodillo Genzyme Corp.
- Paul Dillara ImmunoCien, Inc.
- Steven Valezio Kidde-Fenwal
- Noeman Harper Kidde-Fenwal
- John Young Kidde-Fenwal
- Larry Rodkey Mannkind Corp.
- Mark Loranger Pratt & Whitney
- Elke Dickinson Pratt & Whitney
- Peter Burgess Pratt & Whitney
- Wayne Logue Protex
- Earl Almy Q.C. Services, Inc.
- Howard Maxim Q.C. Services, Inc.
- Thomas McLain Wyeth Biopharm
- Chris Brett Wyeth Biopharm
- Shane Ells Wyeth Biopharm
- Jonathan Nauman Wyeth Biopharm
- Mike Englert Wyeth Biopharm
The NCSLI Spring Meeting for Section 1122 in Central New York was held on March 27th, 2007 at the Holiday Inn in Liverpool, NY. The meeting was hosted by Michelle Foncannon of CalSource, Inc. and Brad Darios Section 1122 Coordinator. The meeting began with coffee and a light breakfast, followed by group introductions.

Our first speaker was Ted Doiron, PhD, of the National Institute of Standards and Technology. Ted entertained the crowd with metrology humor while unraveling the mysteries of measurement uncertainty. He explained that, although complicated budgets work for NIST, they are not necessary on an industry level. Ted showed that most calibration uncertainty budgets realistically need only two or three components to capture most of the error seen. The presentation was very informative as well as entertaining and was a great way to begin the meeting.

After lunch, Nancy Foncannon, an A2LA auditor and founder of Quality Systems Consulting, woke up the crowd with a few rounds of Calibration Jeopardy that resulted in launching mini candy bars around the room. Her presentation on ISO 17025 described the evolution of the document and its relation to other standards such as Z540, ISO 9000, and MIL-STD 45662A, etc. When a question was posed to her, the group had the opportunity to toss the candy bars back at her for the correct answer. Overall, the presentation was very enlightening and lots of fun.

The final presentations began after a short break, with Jim Ingram from J.M Ingram and Associates, Management and Metrology Consulting, who spoke about ISO 17025 Section 5.9, “Assuring the Quality of Test and Calibration Results.” This being an ambiguous section, the presentation helped shed light on the important aspects of the standard as well as general interpretation guidelines.

After that, Jim Ingram presented on the proper goals and techniques for assigning calibration intervals to equipment. He stressed that one should not simply assign the manufacturer’s recommended intervals and never change them. Rather, the goal is to evaluate each piece of equipment specifically and assign an appropriate interval based on its individual performance. Additionally, when necessary, the interval should be adjusted to account for regularities.

The meeting ended with questions, door prizes, and a quick group photo before everyone headed back home after a long, but informative day.
The NSCLI Section 1211 Spring 2007 Meeting was held on April 18th at the Columbia, Maryland office of Rohde & Schwarz, who provided a continental breakfast to kick off the networking session. As the attendees arrived, two tables were set up to display a variety of leaflets and information packets from the various attendees and speakers.

Vernon Alt opened the meeting with a welcome to all and a slide showing the names and phone numbers of the Region Coordinator and affiliated Section Coordinators. After a quick run down of the day’s agenda, Dana Leaman of A2LA, who serves on the NSCLI Board of Directors, updated the group on News from the Board. Dana spoke about the recent NSCLI BOD meeting held in Morro Bay, CA, which focused on the upcoming Workshop & Symposium. Dana also talked about the new journal ‘Measure’ that contains technical papers on Metrology. She also discussed the new 164.1 project on “Education and Training,” web site, outreach resources and lesson plans. Guide 43 provides guidance on proficiency testing and eventually will be released as ISO 17043. There were 723 gaps identified in the US Measurement System (SP 1048). The Optical Atomic clock under development at NIST will redefine the second.

Phil Winn, Service Manager at Rohde & Schwarz, gave us a history of the R&S / Tektronix alliance and how the U.S. Sales and Service operations transitioned from Tektronix to Rohde & Schwarz.

Kay-Uve Sander of Rohde & Schwarz Headquarters Germany was slated to speak on the advancements in the linearity circuitry of Spectrum Analyzers, which have drastically increased their ability to make accurate RF Level measurements. Due to a backup at the airport in Dallas, Texas, Kay-Uve was not able to make it to the meeting until the end of the day. Fortunately, Bill Bock of R&S received a call from Kay-Uve the prior evening and crammed late into the night in order to give Kay-Uve’s presentation. Bill’s many years of work in Spectrum Analysis and close collaboration with Kay-Uve allowed him to give the technical presentation flawlessly.

Elizabeth Gentry of NIST’s Weights and Measures Division, discussed the mission of the NCSLI Metrology Education and Outreach subcommittee 164.1 to reach the next generation of Metrologists. She described a few outreach tools: A multimedia “Metrology Awareness DVD” and an “Introduction to Metrology” power point presentation in development. Elizabeth handed out a questionnaire and call for volunteers for the 164.1 committee, so here’s hoping the responses will be plentiful!

Rudy Stirn, of Northrop Grumman, gave a Measurement Science presentation which he had recently presented to 5th graders at a local school. Rudy said he had been overwhelmed by the students, “not by the great number of questions, but by the depth of the questions these 5th graders asked me!” This was a wonderful example of the efforts Elizabeth Gentry had just discussed.

To show off our brightest smiles, we took our group picture just prior to the delicious lunch which R&S so graciously catered.

Kenneth Sloneker of Electronic Development Labs Inc. spoke on “Thermocouple Testing” and educated the group on the meaning of inhomogeneity. Fortunately it’s more meaningful to understand this word than it is to pronounce it. Kenneth used PowerPoint and the whiteboard to describe the effects of inhomogeneity and the importance of immersion depth in both practical use and in calibration. A disconnect between the immersion depth used during calibration and the immersion depth in actual use can provide large errors of uncertainty caused by inhomogeneity.

Tickets were handed out to everyone for door prizes which were provided by NCSLI, Rohde & Schwarz and Electronic Development Labs. Vernon Alt then closed the meeting by asking everyone to fill out the meeting surveys and asking the attendees to pick a date for our Fall Meeting. We decided on mid October.

Vernon then thanked Bob Glosenger and Rohde & Schwarz for providing a wonderful meeting place and delicious catered food. Special mention was made of the signs R&S posted in the immediate vicinity to easily direct us to parking and the meeting entrance. Each sign sported the R&S logo and NSCLI Meeting in big bold letters along with arrows pointing the way. Of course a hearty Thank You went out to each of the presenters and all of the attendees.

Bob Glosenger and Barry Fleming then took a group of interested attendees on a tour of the Rohde & Schwarz facilities.

A comment from the survey: “Specialty topics could have better defined jargon. i.e. give acronym’s full name first time”.

Vernon says that his group exhibited their best smiles of the day because they were able to see the catered lunch that R&S had arranged.

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Attendees:

<table>
<thead>
<tr>
<th>Attendee</th>
<th>Organization</th>
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<tr>
<td>Vernon Alt</td>
<td>Northrop Grumman Corp.</td>
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<tr>
<td>Bill Bock</td>
<td>Rohde &amp; Schwarz, Inc.</td>
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<tr>
<td>Sally Bruce</td>
<td>NIST</td>
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<tr>
<td>Mariana Buzduga</td>
<td>Scantek, Inc.</td>
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<tr>
<td>Barry Fleming</td>
<td>Rohde &amp; Schwarz, Inc.</td>
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<td>Chuck Gartside</td>
<td>Northrop Grumman Corp.</td>
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<td>Elizabeth Gentry</td>
<td>NIST</td>
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<td>Robert Glosenger</td>
<td>Rohde &amp; Schwarz, Inc.</td>
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<td>Phil Graham</td>
<td>Northrop Grumman Corp.</td>
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<td>Tracy Harper</td>
<td>Constellation Energy</td>
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<td>Thomas Hettenhouser</td>
<td>NIST</td>
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<tr>
<td>Dana Leaman</td>
<td>A2LA</td>
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<tr>
<td>Roger Muse</td>
<td>ACLASS Accreditation Services</td>
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<td>Vincent Pugh</td>
<td>A2LA</td>
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<td>Kayusw Sanders</td>
<td>Rohde &amp; Schwarz, Inc.</td>
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<td>Kenneth Sloneker</td>
<td>Electronic Development Labs, Inc.</td>
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<td>H. Rudy Stirn</td>
<td>Northrop Grumman Corp.</td>
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<td>Tom Wendmyer</td>
<td>Fairchild Controls Corp.</td>
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<td>Suzi Wesch Davis</td>
<td>Inotek Instruments</td>
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<td>Phil Winn</td>
<td>Rohde &amp; Schwarz, Inc.</td>
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May 9, 2007
OpLink Solutions & Inst Calibration
Alpharetta, GA
Ron Kirstatter,
Atlanta Section Coordinator

There is definitely nothing uncertain about the professionalism and business potential of NCSLI Atlanta Section 1221’s host for our spring meeting. Mike Alfred of OpLink Solutions & Instrument Calibration Service, Inc. in Alpharetta, GA greeted attendees and facilitated sessions on Measurement Uncertainty, Electrical Uncertainty Estimation and DHI Standards at Robins WRALC/MAI.

The numerous approaches and complexity to calculating and managing uncertainty budgets continues to be a topic of interest among metrologists. The May 9th meeting brought in 24 interested attendees to listen to 2 experienced individuals presenting this complex topic.

Mike opened the meeting with introductions of their multi-business unit management including himself, Don Petersen and Allen Nelson.

Dana Leaman, a program manager for A2LA and the Southeastern U.S. Board of Director’s Representative for NCSLI, traveled in from Maryland to bring everyone up-to-date on the recent Board of Director’s meeting in Toronto, Canada. With World Metrology Day and the 2007 Workshop & Symposium just around the corner, the information could not have been timelier.

James Jenkins, President of Quametec Corporation, followed by bringing his expertise and the well known reputation of Quametec in the field of metrology training, consulting, and accredited proficiency testing to bear on the subject of measurement uncertainty. He presented examples of Quametec’s “Uncertainty Toolbox™” software tool, which makes the task of computing measurement uncertainty in compliance with ISO 17025 easy and efficient.

Randy Fowler, southeastern region and government sales manager for Fluke Corporation, was up next with a challenging opening exam. Everyone was asked to document on his mark the exact time of day by whatever method they choose. The results of this helped to emphasize several points in his presentation on Estimation of Uncertainties in Electrical Measurements. The results of the exam remained uncertain!

What was certain was that by then everyone was hungry. A barbecue lunch was catered, then attendees were treated to a tour of the OpLink Solutions facilities.

Giving the last presentation of the day was Randall Francis of Kay & Associates Inc. Randall briefed attendees on the recently increased capabilities at Robins Air Force Base Type II lab with the deployment of new DHI pressure standards. The standards giving Robins Air Force Base highly accurate low pressure, air data, and high pressure (to 30,000 psi) capability include:

PPC3 -200KBG15KP Low Pressure Secondary Standard
PGC-10000-AF Pressure Gauge Calibrator
ADCS-601-AF Air Data Calibration System
PG7202 10,000 PSI Pneumatic Deadweight Pressure Gauge

We would like to thank Mike Alfred and OpLink Solutions for hosting, all the presenters for their time and commitment to keep us educated, and Phil Smith of A2LA for providing some great parting door prizes for our attendees.

All our local meetings offer excellent opportunities for technical talks, networking and informal discussions of questions and issues that concern attendees.

Attendees:
Dana Leaman
A2LA

Cole Miller
Cryolife, Inc.

Greg Strathoff
Cryolife, Inc.

Jeanie Devine
Delta Airlines

Bob Van Patten
Delta Airlines

Glen Steams
Delta Airlines

Randy Fowler
Fluke Corporation

Keith Stephen
Instrument Calibration Service

Ted Kowalski
Instrument Calibration Service

Randall Francis
Kay & Associates

John Rutherford
Lockheed Martin - Aernonautics

Michael Smith
Mordson

Allen Nelson
OpLink Solutions

Don Petersen
OpLink Solutions

Mike Alfred
OpLink Solutions

Jim Jenkins
Quametec

Alan Rusan
Rosing Group

Ed Polz
Savannah River National Laboratory

Azira Alizadeh
Southern Marketing Associates

Mick Riley
Southern Marketing Associates

Chris Wright
TekNet Electronics

Rob Richardson
TekNet Electronics

Pete Dembowski
USMC - Albany

Ron Kirstatter
USMC - Albany

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May 15, 2007
Harris Corporation
Melbourne, FL
Elly Speary,
Central Florida Section Coordinator

The Central Florida Section of the NCSLI held its spring meeting on April 5, 2007 at Harris Corporation in Melbourne, Florida. Our host Roger Coleman, Calibration Lab Manager at Harris, welcomed the speakers and attendees to Harris Corporation and provided a brief summary of Harris Corporation’s business operations and the Calibration Facility. To kick the meeting off, Roger provided a large assortment of pastries and coffee to the members.

Dana Leaman of A2LA delivered the current NCSLI Board Update to the members and also provided a presentation on “Laboratory
Dana’s presentation sparked a lot of interest resulting in many questions by individuals interested in laboratory accreditation. She provided a wealth of information involving the accreditation process.

Our next speaker was Kenneth Sloneker of EDL, Inc. His presentation, “Thermocouple Testing,” provided a vast amount of information concerning minimum requirements, techniques & applications, consistency for measurements, and homogenous vs. non-homogenous testing of thermocouples. Kenneth’s methods and knowledge demonstrated better results and improved repeatability measurements of laboratory verification of thermocouples both in the calibration and production areas.

Tim Stark of Guildline provided the next presentation “Resistance Measurement Extremes & Accreditation.” He provided invaluable information relating to basic specifications, measurement requirements and techniques for different levels of resistance, calibration stability and drift uncertainties, and proficiency testing of standard resistors. Tim also demonstrated how power and positioning of standard resistors will change measurement results, and showed the differences between calculated standard deviations and manufacturer’s specifications.

Following lunch, our next speaker was Randy Fowler of Fluke Corporation. Randy’s presentation was titled “Uncertainty Estimation.” Randy discussed the classification of uncertainty types, stages of analysis, and why results vary. He then explained how statistical analysis can be applied to uncertainties through normal distributions, standard deviations, and prediction methods.

Our final speaker for the day was Walt Strickler from Keithley Instruments, Inc. Walt’s presentation “Applications of Software-Defined Radios in RF Instrumentation,” overviewed the next generation of instrumentation which involves high-performance digital processing hardware to eliminate analog hardware, thus enhancing performance. Walt described methods of obtaining this and provided the benefits of this next generation of instrumentation.

The final event for the day was a tour of Harris Corporation at the Customer Briefing Center which provided brief descriptions and demonstrations of Harris Corporation’s world-renowned products.

We would like to thank all of our presenters, their respective companies, and NCSLI for providing a great meeting. We would also like to give special thanks to Roger Coleman and Harris Corporation for hosting and sponsoring this conference.

Kenneth Sloneker, of EDL, Inc., gave us the theory and practice of thermocouple testing. While this is a very old technology, it still delivers excellent data, when you know what you are doing.

Randy Fowler of Fluke Corporation, gave us more information on uncertainty estimations. Since uncertainty calculations are often the main reason for our existence, it was well received.

All conference rooms look alike, but you attendees know you were there.

Attendees:
Roger Coleman Harris Corporation
Frank Wisdo Harris Corporation
Scott Peterson Harris Corporation
Robert Zimmer PAT Associates
Jerry Gaffney GEI Instruments
Tim Stark Guildline Instruments Limited
Bill Wood Lockheed Martin
Mike Frisz Gulf Calibration Services
Kenneth Sloneker EDL, Inc.
Paul Reese Wyle Labs
The NCSLI Puerto Rico Section meeting was held on March 9, 2007 at the Hotel El Faro in Aguadilla, PR. The meeting was conducted by Dimaries Nieves, PR Section Coordinator for 2007.

Dimaries started the meeting with introductions, welcoming everyone, followed by brief information of NCSLI. She presented to the audience the many benefits of becoming an NCSLI member. In attendance were 22 individuals. We had participants from different pharmaceutical and services companies. Also we had a participant from the Trinidad and Tobago Bureau of Standards.

Georgia Harris, from NIST Weights and Measures Division, is the V.P. of NCSLI for Education and Training. She presented updates from the Board of Directors and important information for NCSLI Education and Training.

After a short break, Reinhard Schwind, from Sartorius, discussed very interesting information for balances and scales in an analytical environment. He presented the key parameters that affect the balances and the outcome of the measurement values. He explained the different parameters; Temperature, Air buoyancy, Magnetic properties, Gravitation, Contamination/corrosion, Air draft and Vibrations. Also, he demonstrated the old and the new designs of balance cells from Sartorius and explained that new designs consist of the same material but are more stable, and as a consequence, we can obtain more accurate measurements.

Mark Ruefenacht, from Heusser Neweigh in California, provided highly beneficial information regarding, “Uncertainties of Balances and Scale Calibration and Use.” He described the different sources that cause balance inaccuracies such as sensitivity, nonlinearity, hysteresis, drift, repeatability, temperature and buoyancy, gravity, off center and balance operator. He defined the term ‘uncertainty,’ explaining how we can calculate and evaluate the uncertainties of the balances and/or scales.

In the final part of his presentation, Mark prepared a hands-on section where the attendees were divided into groups and worked together making measurements on different balances provides by Reinhard from Sartorius. They could determine the linearity, hysteresis, corner load/off center, repeatability of the different balances, and very simple exercises such as balance calibration.

The meeting was concluded with a drawing for door prizes and solicited the attendees for their ideas for future event content and activities. The next NCSLI section meeting is tentatively scheduled for September, 2007 with Pfizer as host. I would like to thank our speakers for ensuring our event’s success with their contributions and all the attendees for their participation and interest in the topics presented.
The Twin Cities Section had its spring meeting March 20, 2007 at the New Brighton Family Service Center in New Brighton, Minnesota. The day’s host for the meeting was Palen Kimball Company of St Paul, Minnesota.

The meeting was attended by 72 local members and guests. There were 32 different companies or locations represented at the meeting. We are very glad to see our meeting attendance back to our historical meeting size of about 80 people after a few years of staff downsizing and company attrition in the area.

Doug Evink introduced the group to a history of Palen Kimball and a description of services provided and business activity at Palen Kimball. Palen Kimball of St Paul provides a wide band of calibration services to companies across the upper Midwest. Palen Kimball is able to provide a calibration tracking system to their customers in addition to just the calibration services. For areas of calibration that they do not handle in house, they have ongoing work arrangements with calibration suppliers in the Twin City area to handle their customer’s needs.

Through their service section they provide both site-based calibration services and home-office-based calibration services. In addition to the calibration services they market, Palen Kimball is still one of the leading HVAC companies in the area to provide the customer with quality controlled environments and traceable measurements for those conditioned spaces. In addition to Doug, Steve Markert and Dennis Brady were on hand to meet with those attending and share information on the company. Thank you again to Palen Kimball for providing a meeting site and refreshments and snacks for the day.

A very special Thank You goes out to Doug, for his long-term involvement in the Twin Cites Section Steering Committee and his past service as Section Coordinator. As a great example of his dedication, one of his last actions on the committee was to recruit and introduce a replacement for himself on the committee and we welcome Greg Mjoen to the Steering Committee.

Our first presentation was by Dilip Shah of E=MC3 Consulting and Education Services. We are very fortunate that Dilip is willing to travel to our area to share his wide range of knowledge with us, as he has been a repeat presenter and panel member for the Twin Cities Section. The presentation today was on “SPC for Metrology.” Dilip provided insight into the many tools that can be incorporated into a SPC system in a laboratory. From possible software options to getting out of the system a form of final output that is useful in the laboratory, Dilip is always very willing to visit with those present and attempt to help with ideas or concepts to address questions for those that talk to him during the days’ break times.

The next presentation was by Larry Johnson, VP of Production Ag Alliances in Edina, Minnesota. Larry presentation was “Ethanol and Alliances.” Larry has a wide bandwidth of knowledge in the ethanol industry from basic feed stock producer (read Farmer) to working with the State of Minnesota on ethanol promotion, to consultant in design, finance, and marketing of ethanol as part of our nations’ renewable fuels industry. He reviewed the change in physical size of the plants, the cooperative location of plants with other industries, and process evolution in the last decade. Larry talked about the many measurement aspects of the production of ethanol and the possible calibration opportunities for NCSLI member companies. Larry’s presentation was a great general information talk for all those in attendance, whether you might be directly affected, or only concerned as a consumer of motor fuels.

This was the first time the Section Steering Committee arranged a general interest speaker, and the feed back at this point was overall quite favorable. We will likely consider additional topics of general interest and information at future meetings.

Completing the morning we had the BOD Report by Terry Conder bringing the Section up to date on Board activity and plans.

Barry Eisan, Regional Sales Manager for Vaisala, presented “Calibration of Humidity Instruments and How to Avoid Problems.” Barry has a long history in environmental measurements and the application of equipment to those measurements. He addressed different methods of approach to calibration of equipment, from shipping to a central location “factory” to on-site calibration of equipment and discussed the benefits or difficulties of each type. Barry also talked about combination devices that can measure temperature, humidity, and barometric pressure and advantages or tradeoffs of such devices. Barry had brought along an example device which he shared information about during break times. Thanks to Dave Mueller of Control House in working with the section in arranging Barry’s attendance.

The next afternoon presenter was Walter Novocin, Laboratory Manager for Corporate Metrology at Medtronic in Fridley, Minnesota. Walter’s presentation was “Implementation of a Calibration Management Software System.” He has a long-running experience in Metrology at Medtronic and the Military before Medtronic. Walter also serves on the Twin Cites Section Steering Committee. Walter’s presentation was a subject he had lived at Medtronic. In the past Walter has shared the beginning process of concept, beginning exploration, and selection of a path of action to get to a management system. Today Walter shared in the final selection, beta testing, rollout, and actual full implementation of the selected software management system. Walter emphasized the length of time, cooperative company philosophy, and commitment needed to pull off such a task for a large firm that needs to address many regulatory agencies. Walter was able to share real world expe-
A fine attendance, near their usual 80 people, came to Bruce’s latest meeting. This year the group discussed the BIG EVENT; the 2007 Annual NCSLI Workshop and Symposium is coming to town. All leaves are cancelled because there will be many conference volunteers from this group.

The end of the day came with the new Section Meeting Feature called “I Have a Question.” A form is provided as an attachment to our section meeting announcement with possible question topics or ideas. An attendee can fill out the form in advance of the meeting and place it in an incoming box or pile (usually short) at the meeting and not have to stand up and ask a question or for some help or guidance in anonymous manner if they wish. We have found this to be a useful tool at this point and will likely continue the method.

Thirty-two people were in attendance at the November 1st 2006 presentation of the NCSLI Uncertainty Road Show. This Saint Louis Section Meeting, hosted by The Boeing Company, was held at the Crowne Plaza Airport Hotel in Saint Louis, Missouri.

After welcoming remarks were made by the Section Coordinator, Terrance M. Conder, outgoing Vice President of the Central U.S. Division, presented the latest updates from NCSLI and its Board of Directors.

Our first speaker of the Uncertainty Road Show was Jim Salsbury from Mitutoyo America. Jim provided an “Introduction to Measurement Uncertainty,” discussing how uncertainty is involved in everything from objects as simple as wrist watches to the more complex calculations for instrumentation uncertainty. His hands-on exercises had everyone involved and thinking about how uncertainty is applicable to our different work situations.

Next, Karl Kurtz from DH Instruments gave us a presentation on “Uncertainty in Pressure Metrology.” He touched on the various factors that affect pressure uncertainty including environmental conditions, head pressure, gravity, and air buoyancy.

Following a lunch break and photo taking, the third speaker was Warren Lewis from Sandia National Laboratories. Warren provided the group with an “Uncertainty Analysis of an Automated Resistance Measuring System.” A software package was demonstrated that simplified the complex mathematical calculations.

Then Jim Salsbury returned for a discussion of “Dimensional Measurement Uncertainty.” We learned that when working on dimensional uncertainty calculations, temperature is the all-important factor.
The last presentation was by Ron Ainsworth of the Hart Scientific Division of the Fluke Corporation. Ron gave us some valuable insight into “Temperature Measurement Uncertainty” that included the formulation of a measurement uncertainty budget for a system of temperature measurements made using high-accuracy temperature equipment.

At the meeting’s conclusion, evaluation forms were handed out along with door prizes courtesy of NCSLI and the 3M Company.

What you don’t see in this picture was the indoor pool right outside our doors. We tried to investigate the uncertainty of the water temperature, but no weighting (or is that wading?) was allowed.

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April 11, 2007
Linda Hall Library
Kansas City, Missouri
Ron Hanshaw
Kansas City Section Coordinator

The spring’s 2007 NCSLI Kansas City Section meeting was held on April 11th, 2007 at Linda Hall Library of Science, Engineering & Technology in Kansas City, Missouri. The meeting was sponsored by Vaisala. Twenty-seven people from eleven different companies were in attendance.

After refreshments and networking, Ron Hanshaw welcomed the attendees to Linda Hall Library, introduced the sponsor, gave a brief history of the library, provided information on the library’s current exhibit and reviewed the meeting agenda. Ron introduced Roger Burton, the incoming V.P. of the Central Section, who gave an NCSLI Board of Directors update. Following the update Roger discussed the different type of NCSLI memberships available.

Bruce McDuffee of Vaisala gave the first presentation of the day on “Calibrating Humidity Instruments.” Bruce began by overviewing the different types of humidity instruments that have been developed, starting with older mechanical humidity instruments and progressing to the modern instruments that we use today. Of the older mechanical types, the revolving figurine type was particularly interesting. He then moved to the calibration of humidity instruments. His discussion of calibration included reference instruments, humidity generators, saturated salt solutions, calibration procedures and good humidity calibration practices. Bruce talked about one point and two point adjustments and gave recommendations when each would be appropriate. He ended his presentation by talking about common sources of error.

Ron Hanshaw of Honeywell Federal Manufacturing & Technologies (KCP) was the second speaker. Ron gave a presentation on “Calibration Management System Improvements at KCP.”

He began by discussing the origins of their current Calibration Management System and the factors that contributed to its evolution. Next, he talked about some of the recent changes that have been made to the system to make it easier to use and more efficient. The changes included online service requests, automated recall notices, paperless calibrations, online out-of-tolerance reporting, and improvements in the calibration procedure and software index.

The next item on the agenda was lunch at Jack Stack Barbeque on the Plaza.

Jack Somppi of Fluke gave his presentation after lunch. His presentation on “Improving Test Ratios using Reference Multimeters,” began with a case study involving calibration using a multi-product calibrator to calibrate a high-performance resistance measuring instrument. The goal of the case study was to improve the test uncertainty ratio (TUR) from 1.5:1 to 6:2:1 through the use of two different techniques. The first technique involved the use of an 8½ digit multimeter to improve the accuracy. The second technique included Calibrator characterization using ohms ratio. In both cases, Jack provided the data taken during the case study and demonstrated improvement of the TUR.

Kathy Alshouse and Bruce Bradley of Linda Hall Library provided a fascinating tour of the library. Bruce showed the group the rare book room where he brought out some examples of their rare books which included Nicolaus Copernicus, De revolutionibus orbium coelestium (Nuremberg, 1543); Galileo Galilei, Sidereus nuncius (Venice, 1610); and Isaac Newton, Philosophiae naturalis principia mathematica (London, 1687). He also took requests and brought out books by Benjamin Franklin and Thomas Edison. Kathy gave a tour through the rest of the library. She gave details of the history of the library, talked about the additions to the library, the grounds surrounding the library, and the services offered.

After a short break, Maurice Smith gave a presentation on “Replication of Egyptian Artifacts and Processes” (REAPS). Maurice is on the Executive Committee of the “Friends of Linda Hall Library” and, before he retired, worked at Honeywell FM&T. Maurice talked about the project that he is leading at Linda Hall Library to replicate two Egyptian Artifacts: a Royal Cubit Bar and the Rosetta Stone.

He began by describing the pyramids and the precision with which they were built and aligned. This led into a description of the Royal Egyptian Cubit and the origins of the Royal Egyptian cubit bar from which they are developing the duplicate. Maurice introduced the artist, Anita Shikles, who is duplicating the Cubit and the Rosetta Stone. He then talked about the origins of the Rosetta Stone and how the REAPS project would carry out the duplication of this historical artifact.

The day concluded with the completion of the evaluation forms and the drawing for door prizes. There was quite an assortment of door prizes, which were provided by NCSLI, A2LA, Fluke, and Spirit Aerosystems.
I would like to thank all of those who attended the meeting as well as those who gave technical presentations: Bruce McDuffee, Jack Somppi, and Maurice Smith. I would also like to thank Vaisala for sponsoring the meeting. A special thanks to Linda Hall Library for allowing us to use their auditorium and to Kathy Alshouse and Bruce Bradley, who provided an impressive tour of the library.

The next meeting of the KC Section of NCSLI will be at Spirit Aerospace in Wichita, Kansas, sponsored by Marion Foster.

Coordinator Ron Hanshaw used the Linda Hall Library of Science for his meeting, which allowed them to see some related technical offerings of rare books, and a project replicating the Egyptian cubit.

**Attendees:**
- David Jones
- John DePaul
- Scott Rainbolt
- Pat Ganbrea
- Beth Karriker
- Randy Baldo
- Fred Stimpfle
- Warren Rudd
- Keith Wilson
- Steve Pound
- Jason Hendricks
- Dave Upton
- Bill Wilkins
- Eric Gunkle
- John Roberts
- Pete Delhock
- Chester Mott
- Dennis Berger
- Lori Loney
- Marion Foster
- Doug MacClymont
- Maurice Smith
- Cory L. Tourville
- Bruce McDuFfee
- Roger Burton
- Ron Hanshaw
- Jack Somppi
- Aptuit
- Test & Measurement
- Test & Measurement
- Test & Measurement
- Honeywell FM&T
- Honeywell FM&T
- Midwest Research Institute
- Midwest Research Institute
- Midwest Research Institute
- Wolf Creek
- Wolf Creek
- Wolf Creek
- Wolf Creek
- Honeywell FM&T
- Spirit AeroSystems
- Spirit AeroSystems
- Dynamic Technology
- Linda Hall Library
- Bombardier/LeaJet
- Vaisala
- Honeywell FM&T
- Honeywell FM&T
- Fluke

Reports from the Region

Host Jay Bucher welcomed everyone, and opened the meeting by having all the attendees give their name, where they worked, and what they did for their particular organization. There was a large variety of companies and experience on hand, as can be seen from the attendee list below.

Our first speaker of the day was Dilip Shah from E=MC^3 Solutions, who provided an informative presentation on “TURs, TARs, Guard Banding and Assessing Risk.” His power point presentation, examples, and answers to questions helped clarify and expand everyone’s limited knowledge on a very important but often overlooked subject.

After a short break and some networking, Keela Sniadach was acknowledged for all the support she has provided over the years to the Madison Wisconsin Section. She received a special box of 3M brand products as well as a much-deserved round of applause from the attendees. Thank you, Keela, for the many years of flawless work behind the scenes that has helped make the Madison Wisconsin Section of NCSLI International as successful as it is.

Jay Bucher gave his presentation on “Paperless Calibration Records: Designing and Creating Your Own Forms.” There was a lot of discussion on how and why different parts of MS Word and Adobe Acrobat were used to create electronic forms, and it was obvious that there is a need for more information to be disseminated. Jay informed the attendees that he was writing his third book on this very subject, hopefully which will be available by the fall of 2007.

Next up we had our new Central Division Vice President, Roger Burton from Honeywell FM&T, give an update on the latest Board of Directors’ meeting. After his presentations the group picture was taken, and lunch provided by the kind folks at Harley Davidson.

Door prizes were handed out, with all attendees receiving something from Bucherview Metrology Services, Promega Corporation, NCSL International, or 3M. A tour of the Harley Davidson facility was given, which included a 12-minute video on the history of Harley Davidson motorcycles.

I would like to thank all of the attendees for their participation and interest in the topics presented, and a special thank-you to Marcus Harwitz, for coordinating our meeting at Harley Davidson.

Twenty nine people were in attendance at the April 5th, 2007, Madison Wisconsin Section meeting held at Harley Davidson in Wauwatosa, Wisconsin. Harley Davidson furnished excellent facilities and provided the coffee, juice, and goodies for the morning refreshments and a $7.00 voucher for lunch, which was much appreciated by all of the attendees.

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April 5th, 2007
Harley Davidson
Wauwatosa, WI
Jay Bucher
Madison Section Coordinator

In my industrial career, I always loved the tours I took through Middle-America manufacturing plants, where real metal bending and fabrication was going on.
After a catered lunch provided by Dynacal, Mr. Chris Grachanen, NCSLI’s South Central US Region coordinator, presented the NCSLI Board of Director (BOD) meeting summaries. The BOD update was followed by a presentation on Uncertainty & Tolerance Calculator. Uncertainty Calculator, a “FREEWARE” software program developed to address uncertainties for commonly-made measurements in a simple, straightforward manner; congruent with the basic guidelines / recommendations of ISO “Guide to the Expression of Uncertainty in Measurement,” (commonly referred to as the “GUM”) and NIST Technical Note 1297, ‘Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results.’

Tolerance Calculator is a “FREEWARE” software program designed to perform calculations associated with the interpretation of equipment tolerances and other metrological functions such as test uncertainty ratios (TUR), accumulated uncertainties, consumers and producers risk, etc. TolCal4 is intended to provide users with a ‘bottom line’ method for evaluating equipment specifications using the same nomenclature equipment manufacturers use when advertising their equipment capabilities, i.e. % of Range, parts per million (ppm) of Reading, % of Span, etc.

Mr. Grachanen’s ability to simplify a very complicated subject matter allowed the audience to easily understand and comprehend the need to account for all the variables and influences in the measurement for determining the measurement uncertainty. A classroom discussion followed and a better understanding on measurement uncertainties was evident by the responses from the audience.

The meeting was concluded with drawings for door prizes, from our exhibitors/sponsors list: NCSLI, Tegam, Lambda, Hewlett Packard, A2LA, Cal Labeling, Weight Test & Scale, Dixie Tools and OneRedX. Thank you for your contributions! Also, special thanks go out to Mr. Val Champion and all of his staff at UTB/TSC ITEC Campus College, for helping to ensure that the event ran smoothly and for providing us excellent accommodations, which resulted in a very successful event!

The next NCSLI-RGV Section meeting will be held in Reynosa, Mexico.
Felipe’s meeting turnout is remarkable. During my 1955 USAF tour of duty in the “Magic Valley” of Texas, there was zero technology there.

Attendees:
- Alcom Electronicos Baldemar García
- Alcom Electronicos Milton Rangel
- Beamar Industries Mauricio Martínez
- Consulting Point Joel González
- DCMM 2 Gilberto Saer
- Delphi-Deltronicos Victor Lara Rodríguez
- Delphi-Deltronicos Joel Hernandez de la Cruz
- Delphi-Deltronicos Rubiel Rabies
- Delphi-Remir Rene Saucedo H.
- Delphi-Remir Eduardo Hernández P.
- Dixie Tool Robert Sanchez Jr.
- DS Calibration Mark García
- Dynaeal Felipe Narcio
- Eloy Conde Janice Santa Rosa
- Fresenius Medical Care Jorge Rubalcaba
- Fresenius Medical Care Guillermo Guerrero
- Fresenius Medical Care German Ramos
- Hewlett Packard Chris Grachanen
- Instrument Services John Zummada
- Lambda Ramon Bruno
- Magna-Litek Edmond Pettila
- Magna-Litek Francisco Acuna
- Metrics Roberto Benitez
- Ochid International Jose De Lira
- Ortho International Benigno Cruz Ayala
- Sicaam Adrian Leonel Lara
- Sicaam Adriana Berlanga Benavidas
- Summertstamping Roger Molin
- T&M Industries Victor Gonzalez
- Tescor Electronics - Lifetfluse Fahim Diaz Rivera
- Tescor Electronics - Lifetfluse Maribel Perez Ruiz
- Tescor Electronics - Lifetfluse David Simerly
- Telem TI Automotive-HVAC Keren de la Luz Cruz
- Telem TI Automotive-HVAC Evangelina Contreras
- Transcat Keith Bennett
- Trikon Scientific Raimundo (Ray) Gil
- Trikon Scientific Dr. Peter Gwenda
- UC/UY Ruperto Tovar
- UTB/TSC Adrian de la Cerda
- Weight Test & Scale Industrial Daniel Castillo
- Weight Test & Scale Industrial Luis Torres

The ASU-NCSLI Measurement Symposium was held on April 10th and 11th, 2007, at Arizona State University’s Polytechnic Campus in the Student Union Ballroom.

This entire symposium was arranged with the assistance of Jorge Carlo and Rachel Manjarres, from Boeing, along with Rose and Charlie Motzko, NCSLI volunteers. Arrangements were made to provide eight speakers for the two-day measurement symposium. Much of the credit for this successful meeting goes to these folks and to the speakers, including their supporting companies. 40 persons attended.

The ASU-NCSLI Measurement Symposium speakers included:

**Day One**

"Reducing Voltage Noise and Error in Challenging Measurements" - Jane Sabitsana-Nakao of Keithly

"17025 and Z540 Developments and Amendments" - Roxanne Robinson of A2LA

"Measurement Techniques and Uncertainty Requirements for Spectrum Analyzers of Calibrating Signal Generators and Attenuators" - Kay-Uwe Sander of Rohde and Schwarz

"What Major Factors Affect Load Cell Accuracy in Testing" - Ken Bishop of Interface Force

**Day Two**

"The 3 Uncertainties of Pressure Calibration" - Mike Bair of DHI Instruments

"Temperature Measurements Using Thermal Imagining" - Don Cacioppo of Fluke

"Improving Measurement Uncertainties through Proficiency Testing" - Richard Brenia of Southern California Edison Metrology

"Deployment of a Test Equipment Management Function" - Rob Parchinski of the Boeing Company

The ASU Polytechnic campus has more than 6,500 students who are enrolled in 40 degree programs. ASU shares more than 700 acres at Power and Williams Field Roads with Chandler-Gilbert Community College, Mesa Community College, Embry-Riddle Aeronautical University, an Air Force research laboratory and a Maricopa County elementary school. These entities make up what is known as the Williams Campus in Mesa, Arizona.

Each morning, a continental breakfast and networking started our busy schedule. On the first day, the Measurement Symposium was opened by Dr. McHenry, ASU Vice President and Executive Vice-Provost. Dr. McHenry’s welcome was followed by the presentation of the NCSLI Board of Directors Report given by Charles Motzko, NCSLI Past President. Following the morning introduction, the technical program was launched for each day. Lunchees were no-host in the adjacent ASU Student Cafeteria.

On the second day, the session wrapped up with a tour given by Dr. Tamizhmani, Director of the world-class ASU Photovoltaic Testing Laboratory. This laboratory is 17025 accredited by A2LA and is only one of the three in the world that performs the level of testing required for characterization of prototype photovoltaic cells.
The NCSLI Utah Section meeting was held on May 4th, 2007 at Fluke’s Hart Scientific division in American Fork, Utah. Special thanks go to the Fluke Corporation for sponsoring the event.

Arrangements were made to provide five speakers on calibration topics for the meeting. Special thanks go to two NCSLI board of directors members, Jesse Morse and Jim Allred, who came to speak to the group. Without the willingness of all of the speakers who volunteered their time, some who traveled great distances to be with us, the meeting would not have been the success that it was.

The NCSLI Utah section Spring meeting speakers included:

“Calibrating Humidity Instruments” - Jeff Bennewitz, Vice President of Sales and Marketing – Thunder Scientific

“Fundamentals of Pressure Calibration” - Larry Renda, DH Instruments

“Improvements to the INL calibration system” - Jim Allred, Idaho National Labs

A SPECIAL REPORT from the NCSLI Accredited STANDARDS WRITING COMMITTEE “174” Presenting ANSI/NCSLI Z540.3-2006 Requirements for the Calibration of Measuring and Test Equipment - Jesse Morse, NCSLI V.P. Marketing

“Introduction to Temperature Calibration Uncertainties” - Tom Wiandt, Director of Metrology – Hart Scientific

Hart served a fine continental breakfast in the morning and the 40 attendees had an opportunity to meet and network with each other. Some who happened to be in the job market had an opportunity to meet with those looking for talent.

The meeting was opened by Dallen Baugh, US sales manager for Hart Scientific, who was standing in for Ron Ainsworth, our Utah NCSLI section coordinator, who had the misfortune of losing his voice that week. This was followed by the NCSLI Board Update given by Jim Allred who was elected to the board in 2006.

Ron turned out an excellent attendance for his Great Basin section.

May 4, 2007
Hart Scientific
American Fork, UT
Ron Ainsworth,
Utah Section Coordinator

Not all the 40 attendees made it outside for the attendance picture.
May 11, 2007
Seattle Museum of Flight
Seattle, WA
Keith Cable and Tammy Branch
Northwest US Region
Coordinators

Our Spring meeting returned to the Seattle Museum of Flight after a hiatus of three years. Participants were treated to a phenomenal chance to once again tour the museum facilities in between great speaker presentations. Our speakers focused on metrology training opportunities. Also participating in the day’s activities were students and guests from several local colleges in the Seattle area.

Georgia Harris (NIST), "Metrology Education and Training," Phil Smith (A2LA)-"Student Outreach-Metrology Education and Training," and Dilip Shaw (ASQ)-"ASQ CCT Program," provided some fascinating insights into career opportunities for the student attendees in the metrology disciplines.

On the technical side, Kevin Bull (Veriteq) "Humidity Measurement-How Hard Could It Be?", Jane Sabitansana-Nakao (Keithley Instruments) "Achieving Accurate and Reliable Resistance Measurements in Low Power and Low Voltage Applications," and Dave Deaver (Fluke) "Traceability for AC Voltage," made very clear and informative presentations.

We are indebted to all of these speaker participants for their contributions to the success of the NCSLI Region 1430 2007 Spring Conference.

Also greatly appreciated were the following sponsors who willingly provided their time, financial assistance and great equipment displays for the benefit of the attendees:

Boeing Puget Sound Metrology, Geis-Davis Inotek Calibration, Fluke, Keithley Instruments, Tektronix, Veriteq and GE Sensors.

Everyone really enjoyed seeing the latest measuring equipment from the OEM's.

Many thanks also for all the help from Tamara Branch and Randy Van Wie (Registration/attendance), Mike Suraci (Door Prizes) and all the photo guys for the pictures of the facility and the day’s activities. Jim Allred, Western Region Vice President, kept everyone up to date regarding NCSLI board meetings.

The staff of the Museum of Flight as usual were very gracious hosts and kept the activities moving along smoothly throughout the day. We will hopefully see everyone back for our fall conference in Vancouver, Washington on November 9 at Clark College.
STANDARDS POLICY
*Doug Sugg, V.P.*

U.S. MEASUREMENT REQUIREMENTS
*Jeff Walden*

On April 14, the 2007 USMRC Survey was sent via e-mail to 3500 recipients. By mid-morning of the following day over 600 people had opened the e-mail, and over 100 had gone to the survey site. Survey responses started coming in to the committee on the same day. Those responses will be routed to appropriate measurement experts for resolution. Results of the survey, and other sources, will be published in a report later this year.

The committee will host a panel discussion on measurement requirements at the NCSLI Workshop & Symposium in August. The panel will include representatives from other NCSLI committees, industry and the NIST committee that conducted the U.S. Measurement System survey.

Members of the USMRC will also participate in an Industry Day event being organized by the Program Manager of the Navy Metrology R&D Program during the AUTOTESTCON convention in September, and the DoD Metrology Session at the MSC 2008 conference.

GLOSSARY AND ACRONYMS
*Emil Hazarian*

The spoken words fly away, written words remain

(Verba volant, scripta manent)

Since last activity report the Glossary Committee activity consisted of routine work directed mostly at selecting and organizing the information for existing glossary entries, as well as new arrived ones. Currently the 2nd edition of the NCSLI Glossary, issued in September 1999, contains entries with more than one definition from different sources, each source indicated at the end of the definition. For instance, the term "calibration" carries no less than 10 definitions from NCSLI Recommended Procedures, Department of Defense documents, military standards, ANSI/NCSL Z540-1, VIM and ANSI/ASQC STD MI-1987. We think that the approach of multiple definitions serves best the private enterprises and government organizations, while disseminating the definitions for uniformity.

The revised NSCLI Glossary is still in process and we will maintain the same format. It will not be a parallel to VIM or VIML. It is our intention to introduce terms from measurement assurance, measurement statistics, measurement computing, etc. The glossary also contains most-used related acronyms. We are waiting for the VIM final version for inspiration and to avoid overlapping.

We also envisioned a meeting with all other committee chairs, to coordinate the usage of glossary into RPs and other NCSLI documents; also classification of glossary entries in core word acronyms and secondary words (resting or parking section).

At the last meeting it was also recommended to develop guidelines for inserting new terms into the glossary. The guidelines may constitute a separate new NCSLI document.

LEGAL METROLOGY
*Val Miller*

The 2007 NCSLI State Laboratory Workload Survey has been posted on the NCSLI survey web site and participants provided with passwords and instructions for data entry. This year the survey will be gathering data from the 2005 and 2006 calendar years to evaluate whether or not the collection of data from alternate years is failing to capture significant variations in workload. A significant number of participants have already entered their data. There will be a follow-up survey asking for information related to position titles and assigned duties in a continuing effort to better define position descriptions for various metrology-related positions. The form of the questionnaire will parallel that being used by the NCSLI Benchmarking Committee so that data can be compared and possibly combined.

Planning continues for the Legal Metrology Committee meeting to be held on Sunday, July 29, at the 2007 NCSLI Conference and Symposium where the results of the 2007 State Laboratory Workload Survey will be presented to the members of the Legal Metrology Committee prior to the Conference opening.

The committee commends the NCSLI Technical Program planners for the increasing number of papers to be presented on topics related to Legal Metrology at the 2007 NCSLI Conference and Symposium and encourages continued development of topics relating to every day applications of metrology.

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MEASUREMENT SCIENCE & TECHNOLOGY
*Thomas F. Wunsch, V.P.*

AUTOMATIC TEST & CALIBRATION SYSTEMS
*David Seaver*

The Committee did not meet at the Measurement Science Conference, but is planning to hold a meeting at the NCSLI Workshop & Symposium in St. Paul.

MEASUREMENT COMPARISON PROGRAMS
*Jim Wheeler*
*Al Teruel*

Jim Wheeler has announced his retirement from the Navy Primary Standards Laboratory. He plans on staying active within NCSLI and is seeking out sponsorship for his participation in the annual conferences. Jim's new (retired) contact information is as follows: 3944 Del Mar Ave. San Diego, CA 92107-3735 Phone: 619-890-7854 e-mail: <wheeler513@cox.net>
The Measurement Comparison Programs Committee met at the 2007 Measurement Science Conference in January in Long Beach, CA. The meeting was attended by 6 people. Jeff Gust attended the meeting and suggested that the committee should get around to other committee meetings and extend a hand in starting new round robins and working with groups that are conducting round robins independent of the Measurement Comparison Programs.

Jim Wheeler attended the NCSLI Airline Committee meeting at the Measurement Science Conference. The Airline Committee expressed interest in starting a round robin in pressure. Al Teruel has contact information for the Committee members and will work with them.

Al Teruel has assumed full leadership for this committee and will be at the NCSLI Workshop & Symposium in St. Paul and will chair the Measurement Comparison Programs Committee meeting there.

142.03 Josephson Voltage System ILC

Sub-committee Chair, Yi-hua Tang from NIST, hosted a conference call of the JVS Working Group on January 17th. There were 26 participants in the conference call representing 14 different organizations. Participants were as follows:

AFPSL Randy Roberts
APSL Vernon Love / Paul Holms
Fluke Dave Deaver
HYPRES John Coughlin
INL Mike Stears / Jim Allred
KSC Paul Reese
LMA Bill Miller / James Goza / Pedro Leonard
LMS Ken Garcia
Navy Norfork Curt Kiser / Harold Robinson
NCSLI Dick Pettit
NIST Yi-hua Tang / June Sims
NPSL James Allen / Wedad Schlotte / Barry Vinson
Sandia Mel Salazar / Harold Parks / Tom Wunsch
Vmetrix Clark Hamilton

The Working Group nominated Harold Parks as the Josephson Voltage Standard Working Group Coordinator and Harold began performing this duty on January 24th.

Harold Parks and Dave Deaver organized a meeting at the Measurement Science Conference and will hold a subsequent meeting at the NCSLI Workshop & Symposium to prepare the 2008 NCSLI Josephson Voltage Standard inter-laboratory comparison (ILC), NIST will support the ILC in 2008 by making a JVS comparison with the pivot lab.

142.03 One G-Ohm Resistance ILC

Jay Klevens, Process Instruments Inc., continues to make progress on setting up a 1 G-Ohm ILC.

142.04 UV Round Robin

Tom Larason, NIST, and Wayne Benda, with Raytheon in Tucson, AZ, continue in the process of negotiating management support, schedules, NCSLI support, and protocols for the UV ILC.

DIMENSIONAL METROLOGY
Jim Salsbury

The Dimensional Metrology Committee has organized five sessions for the 2007 NCSLI Conference. The topics will be as follows:

1) Developments in US Standards
2) History, Philosophy, and Uncertainty
3) New Technology and Advanced Applications
4) Calibration Techniques

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INDUSTRIAL PROGRAMS
Roxanne Robinson, VP.

HEALTHCARE METROLOGY
Marcus McNeely, was Roger Hickey

The committee continues to focus on continued improvement of RP 6. There has also been discussion concerning traceability in medical/clinical lab settings that needs to continue.

Roger Hickey, of Hospira is replaced by Marcus McNeely of Blue Mountain Resources.

UTILITIES
William Hinton

The Utility Committee continues with plans for our next ILC and we currently have an additional recommendation for the next ILC topic. The schedule and focus of future ILC’s will be discussed during the NCSLI symposium in Minnesota.

Hackers (script kiddies) continue to be a pain in our database with recurring SPAM that needs to be removed from the Utility Committee Forum. Our latest attack was a bit more than a nuisance with the entire forum being deleted. The web administrator has backup files that will allow restoration to be performed but some recent content will be lost. Several members have submitted recommendations for increased security options and they were passed along to the web administrator.

Florida Power and Light continues with the pilot project for a metrology peer review currently scheduled for the third week in June. Entergy Nuclear (Pilgrim Station - Massachusetts), Dominion (Millstone Point - Connecticut) and Duke Energy (Metrology Laboratory - North Carolina) will provide subject matter experts during the 1-1/2 day event. New England is a great place for a peer review during the summer and the success of the review will be shared with the committee in August. Lobsters may be a topic of discussion.

Several Utility Committee members continue to support revision subcommittees working on RP-1, RP-5 and RP-12. The interaction between recommended practices strongly influences the committee involvement. Feedback from the group to the subcommittee members benefits from such close interaction among the members.
**TEST EQUIPMENT ASSET MGT**  
*Rob Parchinski*

Work continues on two RPs - one for shipping of test equipment and another for delayed dating of calibration intervals. Parchinski will participate on the Traceability Panel at 2007 Conference.

**AIRLINE METROLOGY**  
*Joe Cebulski*

Joe will participate in the Traceability Panel at the 2007 Conference.

**TESTING LABORATORIES**  
*Marlene Moore*

Moore's committee is discussing definitions of verification, standardization and calibration.

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**EDUCATION & TRAINING**  
*Georgia L. Harris, VP.*

**Education Development Fund**

The NCSLI Board of Directors passed a corporate resolution at the April 2007 Board meeting to authorize development of an Education Development Fund (EDF). The new fund will be used to support scholarship efforts, education and training outreach efforts, as well as new projects that are identified for inclusion in the Long Range Plan. Projects that are selected for the NCSLI Long Range Plan will have prepared requests for proposals and requests for grants and may be funded by the EDF pending adequate proposals and sufficient resources in the fund.

Individuals and Organizations may contribute to the EDF as a part of our sponsorship program NOW! You can contribute now through the NCSLI online Store at this time or contact the Business Office to mail a check. You can maximize your contributions to support metrology education and training by seeing if your company has matching funds.

Additional funding mechanisms are being investigated that include grant proposals, planned giving (through estate, property, and stock contributions), and participation in efforts such as the Combined Federal Campaign and United Way. NCSLI is a 501.c.3. non-profit educational organization. As such, contributions to NCSLI are tax deductible to the extent allowed by law.

Contact Georgia Harris with ideas and proposals for projects to be funded by the NCSLI EDF.

**Education & Training Award**

Nominations for the 2007 award are now closed [as of July 1.] Current nominations are being reviewed by the review committee with plans to make the award at the 2007 conference. This award consists of a trophy and a cash amount of $1,500. It is a major NCSLI award, second to the William A. Wildhuck award.

Contact Georgia with nominations for 2008.

**NCSLI 2007.** 2007 will be the best year yet to highlight and participate in Education and Training efforts. All committees and subcommittees will meet. Training for region and section coordinators will include topics on establishing regional training events and coordinating outreach to local schools for the section meetings. Scholarships will be presented to six schools and a significant number of students may attend free or at reduced rates. In addition, there will be 8 full sessions covering topics on Education and Training with the following themes:

- **Session 1:** International Education & Training Session
- **Session 2:** NCSLI Education Liaison Outreach Panel
- **Session 4:** On-line/Interactive Training
- **Session 5:** U.S. University Offerings in Metrology
- **Session 7:** Documenting Metrology Training
- **Session 8:** In-House Metrology Training Programs
- **Session 9:** Education and Training – Strategic Directions
- **Session 10:** Metrologist Assessment & Certification

Contact Georgia or any of the committee members to get involved with coordinating a session or speaking during a session in 2008. We are planning now!

Georgia L. Harris, Tel: (301) 975-4014, <gharris@nist.gov>

**TRAINING RESOURCES**  
*Helga Alexander*

The 161 Committee has begun planning for 2008 “Regional Training” efforts. A news announcement was sent through the Boulder Office soliciting input and participation from NCSLI members who are Training Providers. We hope to partner/collaborate to provide regional training events, such as a series of tutorials or linking training events with region and section meetings. Committee members will meet with region and section coordinators at the July Conference to discuss creative solutions for working with the sections. The committee has invited participation at the committee meeting to be held during the 161 committee meeting on Wednesday afternoon at the conference. Helga Alexander and Dilip Shah are working on the draft guidelines and preparing a questionnaire to obtain feedback from training providers about their specific ideas and concerns.

Please contact Helga for additional information and to participate. Section coordinators who would like to be test areas for regional training events are especially encouraged to get involved now so that events can be planned for 2008.

Helga A. Alexander, Tel: (440) 498-3056, <halexander@keithley.com>

**PERSONNEL TRAINING & QUALIFICATIONS**  
*Gloria Neely*

The NEW Recommended Practice for Documenting Training and On the Job Training has been reviewed by the committee and by outside teams. It has been sent to the Technical Editor for formatting and should be sent to the Board for approval prior to the July Board meeting. Anyone interested in seeing an early copy or providing last minute input before publication should contact Gloria Neely.

Gloria Neely, Tel: (951) 273-5469, <gloria.neely@navy.mil>
Job Description Working Group

Chris Grachanen

Information was submitted to the Benchmarking Committee for the Salary Survey. Working group members reviewed the Benchmarking survey content to help identify key issues that have been requested about metrology positions.

Chris Grachanen drafted a letter to the U.S. Office of Personnel Management (OPM) that was reviewed by working group members and sent to OPM. The group got an initial response regarding the OPM position description updating process and is awaiting further clarification. This is a follow-up effort to work that was completed with the U.S. Department of Labor to update position descriptions for metrology. The Department of Labor and OPM, though both are U.S. Federal agencies, do not use the same position descriptions and classification systems.

An article by Chris Grachanen was published in the June edition of MEASURE covering the position description efforts to date.

The next effort will be to prepare a "Standard HR Package." Input from the Benchmarking salary survey results and the position description information will be compiled and reviewed by Human Resource offices. We hope to have the package be a downloadable product that NCSLI members can obtain on our NCSLI website.

Contact Chris Grachanen for additional information and to participate.

Christopher L. Grachanen, Tel: (281) 518-8486, <chris.grachanen@hp.com>

Education Liaison

Mark Lapinskes

Scholarships. Scholarships for 2007 were approved at the April Board meeting. Funds will also be distributed in 2007 for the ParoScientific scholarships. ParoScientific funds will be presented to the three schools that have formal metrology programs.

Scholarships are presented to school representatives at the annual conference and symposium whenever possible. We began tracking the number of students graduating from these programs this year for special efforts we are beginning as a part of the Outreach efforts.

<table>
<thead>
<tr>
<th>School</th>
<th>Amount for 2006</th>
<th>Number of 2006 Graduates</th>
<th>Amount for 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butler County Community College</td>
<td>$3,000</td>
<td>11 Met grads</td>
<td>$3,000</td>
</tr>
<tr>
<td>Central Georgia Technical College</td>
<td>$3,000</td>
<td>2 Met AAS, 2 Met Diplomas, 8 Certs (12 total)</td>
<td>$3,000</td>
</tr>
<tr>
<td>University of North Carolina at Charlotte</td>
<td>$2,000</td>
<td>MS: 19 (8 Met based) PHD: 7 (4 Met based)</td>
<td>$2,000</td>
</tr>
<tr>
<td>University of Central FL Orlando, FL</td>
<td>$2,000</td>
<td>42 non-Met grads</td>
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</tr>
<tr>
<td>Subtotal from 2007 Budget Totals</td>
<td>$15,000.00</td>
<td></td>
<td>$18,000.00**</td>
</tr>
</tbody>
</table>

** Includes Paro-Scientific dedicated scholarship contributions for 2006 and 2007.

Outreach

Phil Smith

Internship Program! NCSLI members can now post Internships as well as Job positions on the Jobs Board. A press release was issued regarding the website modifications to allow posting of Internships in addition to Jobs. We encourage anyone with a documented Internship Program to share insights with the Outreach sub-committee so that we can expand on this effort. Ability to post Internships is only one piece of the puzzle. Sharing insight on how to actually coordinate and implement a corporate internship program is another area we are working on.

NEW Student Outreach Proposals Approved in April! The NCSLI Board of Directors approved student outreach opportunities for 2007 at its April Board meeting.

NCSLI will offer FREE 1-year individual memberships in 2007 to students graduating from NCSLI-member schools that we sponsor with scholarships. Scholarship applications for additional schools to participate are available on the NCSLI website. The six eligible schools for 2007 are listed above. Membership brochures and letters were sent to the schools for distribution to interested students. Students must apply for the free memberships.

NCSLI is offering FREE or REDUCED conference registration to students from the schools we are sponsoring in 2007. Up to 3 students from each school are eligible for free conference registration. Additional students from these schools, who are attending at least half-time, and who are working in the metrology field, may be sponsored by their employers to receive a $200 registration rate for the conference.

The committee continues work on an Outreach presentation that is being targeted at 16- to 24-year olds. The final presentation will be something that NCSLI members can download and use at local section meetings or during visits to local colleges and high schools.

Contact Phil Smith to become an active member of this exciting new subcommittee:

Philip Smith, Tel: (240) 535-2109, <psmith@a2la.org>
Three efforts are being pursued by the 171 Committee:

The first effort is the Handbook for the Application of Z540.3. The Working Group (WG) continues to meet by web/teleconference every other week. They are progressing methodically through all requirements of the Standard. The WG will conduct a three-day working session from June 6-8 at the Naval Surface Warfare Center Corona Division. The objective of this three day working meeting is to prepare for the upcoming NCSLI Conference in July and possibly provide a "Draft" Handbook at that time.

The second effort is the investigation of the need for a handbook for the application of ISO/IEC 17025, similar to the one for Z540.3. At this time, based on only a few inquiries, indications are that such a handbook could be beneficial.

The third effort is the consideration of a Recommend Practice for the "Selection of Standards - ANSI/NCSL Z540.3, ISO/IEC 9001, ISO/IEC 17025, and ISO/IEC 10012". A presentation given at the NACLA Annual General Meeting was well received and there is a general consensus that such a document would be very helpful to members of the acquisition community (i.e. the specifiers).

The Recommended Practice "Verification of Laboratory Environments" has been forwarded to Publications Oversight.

See the MSC reports in the April Newsletter

173.1 Mark Kuster -RP1 on intervals revision final draft due Jan 2008

173.2 Greg Cenker -new RP on risk final draft due Jan 2008

173.5 Suzanne Castrup -RP12 on uncertainty revision final draft due Jan 2008

The committee met at MSC. Z540.2 is in the process to be reaffirmed. VIM considered for release by NCSLI.

The vote to withdraw ANSI/NCSL Z540.1-1994 (R2002) as a National Standard concluded with the following results: 33 Yea, 1 Nay, and 1 Abstention. Per ANSI rules, a response was provided to the voting member responsible for the nay vote. Again, per ANSI rules, a reassessment period of 30 days was provided to allow members the opportunity to change their votes. The votes were unchanged and on 6 April 2007, the vote became final. As a result of this vote, ANSI/NCSL Z540.1-1994 (R2002) will be withdrawn in July 2007. The combination of ANSI/ISO/IEC 17025 and ANSI/NCSL Z540.3-2006 will then replace Part I and Part II, respectively, of Z540.1-1994 (R2002). The Committee will meet again in July at the NCSLI Conference in St. Paul, MN to discuss implementation of ANSI/NCSL Z540.3-2006, the status of the draft handbook, and future Committee efforts.

Initial draft of the Traceability RP is due July 2008

Elements of RP on Traceability were discussed at MSC.

VIM definition
Examples of a chain of traceability
ILAC Policy on Traceability
Competency through accreditation
Statements of good Traceability
Key Comparisons database - explanation and use
Traceability resources - 330, 811, SI brochure, ANSI document
What traceability is not? NIST numbers
Possible pictorial representation
Discussion of traceability for SRMs (Standard Reference Materials)

The final draft of RP-3 was routed to Board. Comments from Georgia & Jim Allred were submitted to the weekly committee meeting.

• The new "Membership Brochure", which includes an application, was well received.
• The 2007 conference flyer is done, and has been mailed.
• The new "MY NCSLI" web page is now active. It allows committee chairs to upload information directly.
• Region meetings have really taken off with the advent of regular promotional communication programs operated by the business office.
• An audit of all membership records is about two-thirds complete. This information is being entered into a database. The result of this effort will allow the marketing team to better understand trends, and to track results of future promotions.
• I met with the Benchmark Survey committee at MSC. The plan for the 2007 survey is underway and roughly on schedule. A "Watch for it" postcard is being readied to be sent out a while ahead of the survey.
• The marketing ad hoc team will be assembling for its spring meeting on May 8th and 9th at Fluke in Everett, WA.

In summary, there are many exciting projects underway and coming into fruition. It is beginning to appear that the marketing activities are taking effect. I am particularly excited that we have achieved the goal of preparing our marketing material for the conference over a year in advance - a breakthrough.
I want to thank all the marketing team (Craig Gulka, Jim Smith, Derek Porter, Malcolm Smith, Dave Agy, and Jack Somppi) for their efforts in helping to move the organization into the 21st century. They have contributed with eagerness, and some at personal expense.

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CONFERENCE MANAGEMENT
Terry Conder, V.P.

The Twin Cities section met on Jan 8th to develop a support plan for the St. Paul Workshop and Symposium. Areas for involvement include serving as new attendee mentors, helping out at the registration booth, helping with exhibits, helping to identify local entertainment for banquet and luncheon entertainment, and sponsoring selected events. Carol Hockert volunteered to chair "Mentoring" of 1st time attendees.

2007 Conference Director - Harry Spinks: Harry has been facilitating the monthly teleconferences and encouraging participating through the Twin Cities section.

Meeting Planner - Tom Huttemann

Registration/Exhibits/Sponsors - Craig Gulka

Technical Program - Karen Semer: 190 abstracts were submitted with 145 accepted. Planning for 5 ½ tracks. Acknowledgements have gone out to paper submitters. Some speakers have dropped out.

Tutorials - Klaus Jaeger: 27 tutorials, with 3 full-day sessions planned. Tutorials on Saturday and Sunday to be held in the Conference Center, with the Friday tutorials in the St. Paul Hotel. Will recommend that the tutorial presenter stay at the St. Paul Hotel because of convenience and location. Klaus has proposed 3 awards for contributions to the tutorial program. Already have 3-4 tutorial proposals for 2008.

Publicity - Jesse Morse

Finance - Dave Agy


Conference Evaluation - Terry Conder: Have agreement from 3M IT to provide support for evaluation analysis. Very little changes in the content of the surveys in order to maintain consistency over the years. Investigating a more robust solution than manually entering data into the spread sheets.

Entertainment - Barbara Belzer: All entertainment is confirmed. The International Event is a gangster party theme at the Wabasha Caves. The banquet entertainment is the "Dweebs." They are highly recommended by the Twin Cities area representatives, and have a wide variety of music and have agreed to learn a polka or two if needed. The Scandinavian Minnesota ensemble will perform on Monday lunch. On Wednesday, the Minnesota Raptor Center will come out and bring an eagle, hawk, falcon and owl. Georgia Harris and Randy Motz will share their travels on the Appalachian Trail on Thursday.

Door Prizes - Steve Doty: Continuing to investigate special prizes, including, high definition radio, GPS systems, digital cameras, nano Ipods, gift cards from Home Depot/Barnes and Noble, notebook chill mats, automatic ice cream maker. Budget is $1200.

Photography - Mike Suraci: In process of developing support plan and is contacting last year's photographers. A "Photo Op" space will be organized.

Site Selection Chair - Tony Anderson:

The Site Selection Committee is working on contracts for the conventions centers for San Antonio (2009) and Providence (2012).

2008 Conference Director --

I am working with marketing and the Business Office on the Call for Papers for 2008. It will be a departure from the traditional document and will be much more visually appealing and in line with our other image marketing tools.

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ARCHIVE COMMITTEE
Jim Allred

Meetings: The Archive Committee met at the 2007 Measurement Science Conference in Long Beach, California in January. Continued discussions were held on methods for transferring existing paper records and information for electronic retrieval. These records include text as well as pictures from the earliest NCSLI functions. Having a section in the Newsletter or Measure magazine that would feature old documents and/or photos is still being discussed. This would be done on a routine basis for informational purposes as well as aiding in identifying interesting and useful past NCSLI activities and members. Members also discussed guidelines that help dictate just what is valuable the NCSLI member and what is not, in electronic form.

Projects: I had the opportunity to visit with John Minck, long time NCSLI Editor of the newsletter. We discussed the same issues discussed at MSC. Most of the material has already been cataloged and filed for hard paper retrieval. Value for the members is to have a searchable electronic data base. The information in this data base should be items like: Conference proceedings and Newsletters that go back 10 years as well as the Names of: Board of Directors, Committee Chairmen, Regional Coordinators, and Liaison Delegates.
INMS REPORT
Alan Steele

VISITATION BY NCSLI MANAGEMENT

In conjunction with the meeting of the NCSLI Board in Toronto, key members of the Board made their annual visit to the INMS in Ottawa, to review matters of common interest and effort. They met with the INMS Management Team, including Director General Dr. Jim McLaren, and enjoyed a tour of some of our laboratory facilities. It was an excellent day, and we each enjoyed the chance for longer conversations and information exchanges than is usually possible during the Conference.

Ready for the meeting to begin are: Jack Ferris, NCSLI President, Carol Hockert, NCSLI Exec. V.P., Alan Steele, Director of the Canada INMS, Ms. Katalin Deczky, NRC-INMS Director of Business and Research Support, and Jeff Gust, Past President of NCSLI.

METROLOGY FOR NANOTECHNOLOGY

On 7 February 2007, the Tri-National Workshop on Standards for Nanotechnology took place at the National Research Council Canada. Organized by INMS, the workshop focused on topics relating to Measurement and Characterization, and on the Health, Safety and Environmental aspects of nanotechnologies.

The workshop provided a forum for the national metrology institutes of Canada, United States, and Mexico to share information and explore new ways to work together on issues related to trade, standardization, and characterization.

Tri-National Workshop on Standards for Nanotechnology Presentations:

1. Standards for Nanotechnology in Mexico
   Ruben Lazos, Centro Nacional de Metrología (CENAM), Mexico

2. Toxicologically Relevant Characterization of Carbon Nanomaterials
   Robert Hurt, Brown University, USA

   Claude Ostiguy, Institut de recherche Robert-Sauvé en santé et en sécurité du travail

4. Ecotoxicology of Nanoparticles: Issues and Approaches
   Geoffrey Sunahara, NRC Biotechnology Research Institute

5. The Small Force Metrology Laboratory at the National Institute of Standards and Technology
   Jon Pratt, National Institute for Standards and Technology (NIST), USA

6. Calibration and Standardization Issues in Scanning Force and Interfacial Force Microscopies
   Mark McDermott, David Munoz-Paniagua, NRC-National Institute for Nanotechnology

7. Joining Technology for Nanomanufacturing
   Gordon Shaw, National Institute for Standards and Technology (NIST), USA

8. Challenges in the Characterization of Carbon Nanotubes: the Need for Standards
   Chris Kingston, NRC-Steacie Institute for Molecular Sciences

9. Metrology Challenges in Nanofabrication of Photonics Devices
   Alexei Bogdanov, NRC-Institute for Microstructural Sciences

10. Nanotechnology for the Construction Industry: Applications, Research and the Role of Standards
    Jon Makar, NRC-Institute for Research in Construction

11. Issues Regarding Quality Assurance of Nanoscale Materials
    Chun Li, NRC-Institute for Aerospace Research

INMS QUALITY SYSTEM UPDATE

On February 14, the first INMS Quality System accreditation certificate was presented to Director General. Jim McLaren by David Dulmage, SCC Manager of Laboratory Programs. This significant milestone in our QMS implementation took place before a proud gathering of staff from the dimensional metrology activities in the Thermal and Mechanical Metrology Group, members of the Quality System Task Force and guests. The certificate was hung in the M-36 entrance foyer next to the institute Quality Policy document.

On March 29, the Quality System accreditation certificate for mass standard activities was added. Staff and visitors who climb our impressive staircase can now view two of the eleven certificates that are turning this wall into a gallery of success.

NEW INMS CALIBRATION SERVICES

Linac Services. The INMS Ionizing Radiation Standards Group now offers absorbed-dose-to-water calibrations for one ion chamber/electrometer system (one instrument range) at the three x-ray energies produced by the linear accelerator maintained at the laboratory - 6, 10 and 25 MV nominal energies. The standard for absorbed-dose-to-water in a 60Co beam is a sealed water calorimeter, which measures the radiation-induced temperature rise at a depth of 10 cm in a water phantom (10 x 10 cm2 beam, with the surface of the phantom at 1 m from the source). The standard dose rate at the point of measurement is 300 cGy/min. For reference-class 0.6 cc cylindrical ionization chambers the standard uncertainty in the absorbed dose calibration coefficient is typically 0.5%. The calibration process includes polarity and recombination measurements, as required for dosimetry protocols such as AAPM TG-51.
TRANSFER OF KNOWLEDGE TO THE METROLOGY COMMUNITY

Photometry, Radiometry and Colorimetry Course
(17-20 April 2007)

The INMS Photometry and Radiometry Group presented a course which focused on measurement of basic physical quantities, and recent developments in instrumentation, standards and procedures. The course was designed for scientists and technicians concerned with accurate and precise measurement of photometric, radiometric and colorimetric properties, whether in research, development, or manufacturing applications.

These issues are of increasing importance in a global marketplace for improving competitiveness, and the interoperability and compatibility of manufactured goods. The course was also of particular interest to participants working with applications in health and safety and environmental protection, where quality systems, such as ISO/IEC 17025 and the US Pharmacopoeia, require traceability of measurements. The course covered the basic principles of photometric, radiometric and spectrophotometric calibration, uncertainty estimation, applications such as industrial colorimetry and video displays, and special topics such as LED measurement issues, absolute radiometry, gloss and fluorescence measurements.

SIM GENERAL ASSEMBLY 2007

NRC-INMS will host the SIM General Assembly in Ottawa during the week of 22-29 September 2007, in concert with other international meetings.

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NIST NEWS

JAMES TURNER NAMED AS NIST DEPUTY DIRECTOR

National Institute of Standards and Technology (NIST) Director William Jeffrey announced the selection of James M. Turner to be NIST Deputy Director. Turner began work at NIST on April 16th.

As Deputy Director of NIST, Turner will assist in setting the strategic direction of the U.S. Commerce Department agency responsible for promoting U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology.

Turner, a physicist, former Assistant Deputy Administrator in the U.S. Department of Energy (DOE), managed the National Nuclear Security Administration’s Office of Nuclear Risk Reduction. He oversaw construction projects in Russia associated with the permanent shutdown of their last three nuclear weapons-grade plutonium-production reactors. The Office is responsible for working with foreign governments and international agencies such as the International Atomic Energy Agency to develop policies and procedures to deal with nuclear emergencies.

Prior to that assignment, Turner held several senior management posts at DOE concerned with nuclear weapons safety and assisting the former Soviet republics in securing their nuclear weapons after the fall of the Soviet Union. He also headed the Department’s Oakland Operations Office for six years. He holds a Ph.D. degree in physics from the Massachusetts Institute of Technology and a Bachelor’s degree in Physics from Johns Hopkins University, and taught for five years as an Associate Professor of Physics and Engineering at Morehouse College.

Among other honors, he has received the U.S. Government Presidential Rank Award for Meritorious Service, three times received the U.S. Department of Energy Exceptional Service Award, and the Secretary of Energy Gold Award. A native of Washington, he is married, has five children, and one grandchild.

Contact: Michael E. Newman, 301-975-3025, <michael.newman@nist.gov>.

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SOME NEWS ITEMS FROM NIST
Belinda Collins

- The NIST Director, in recognizing the importance of measurement services, has set up a process to regularly set aside funds from the initiatives coming into NIST to improve the highest priority measurement services needed by NIST customers. Over $2M is going into measurement services this year, including $130K to the Measurement Services Division of Technology Services.
- NIST has received approximately a 15% budget increase for 2007. Some of this budget increase will be seen in Technology Services for documentary standards, in the Weights and Measures Division on the hydrogen economy, work in Measurement Services on supporting infrastructure associated with information technology and increased funding for a web-access library to journals.

NIST in 2007 is working on:

- Nanotechnology
- Quantum information science
- Enabling the hydrogen economy
- Innovations in measurement science
- Cyber-security
- NIST Center for Neutron Research. Significant funds are assigned to expand this facility in Boulder.
- Synchrotron measurement with Brookhaven
- Supply chain innovation in the Manufacturing Engineering Laboratory
- Structural safety
- Bioimaging and biometrics
- The prospect for the FY2008 budget shows basic science support from both sides of the Congressional aisle.

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EEEL PULSE WAVEFORM MEASUREMENT SERVICES TRANSFERRED TO BOULDER

The high-speed pulse waveform measurement services for impulse spectrum amplitude, pulse transition duration and pulse time delay interval were transferred to the Optoelectronics Division in Boulder from the Quantum Electrical Metrology Division in Gaithersburg. As a result of this transfer, NIST now offers measurement services for the complex frequency-and time-domain impulse response with
full point-by-point uncertainty analysis in both the time- and frequency-domains traceable to fundamental SI units. An added benefit of the transferred services is the ability to provide phase measurements, traceable to SI units. The phase measurements will improve the wireless communications industry's ability to make calibrated measurements.

The transfer occurred after a lengthy internal comparison between the Boulder and Gaithersburg groups. A comparison of impulse spectrum amplitude measurements performed by the Boulder and Gaithersburg teams showed agreement within the expected uncertainties and a factor of two decrease in the magnitude uncertainty as well as an expanded frequency measurement range. A comparison of pulse parameter measurements showed excellent agreement for both pulse amplitude and transition duration. More importantly, the new services account for impedance mismatch and are extendable to frequencies of 110 GHz and above. This represents a fundamental advancement in electrical waveform metrology. The ability to correct for mismatch enhances the usefulness of the waveform calibrations making them useful at higher frequencies than before. This capability is not currently available anywhere else in the world.

To implement these new capabilities, EEEL researchers Paul Hale and Dylan Williams developed a fast electro-optic sampling system to calibrate electrical pulse sources for characterizing high-speed test equipment. The calibrated electrical pulse source is a fast photoreceiver that generates electrical pulses with calibrated magnitude and phase to 110 GHz. Using this photoreceiver, NIST researchers can calibrate high-speed test equipment, such as oscilloscopes and lightweight component analyzers, in such a way that the equipment is traceable to fundamental SI units.

Calibrated test equipment allows engineers to overcome some of the bandwidth limitations of their test equipment. Finally, these new calibrated pulse sources can greatly improve confidence in high-speed measurements by enabling direct calibration of both magnitude and phase of a variety of high-speed instrumentation. With this technology, chip designers can define product specifications with known uncertainties rather than the current practice of placing upper limits on signal accuracy, leading to needlessly large tolerances in high-speed components and systems. Customers can either have their equipment calibrated by NIST or purchase a NIST-calibrated electrical pulse source for their own internal use by contacting either Paul Hale or Dylan Williams.

Contact: Paul Hale, 303-497-5367, <paul.hale@nist.gov> or Dylan Williams, 303-497-3138, <dylan.williams@nist.gov>.

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IMPROVEMENTS IN THE NIST AC-DC DIFFERENCE CALIBRATION SERVICE FOR THERMAL CONVERTERS

During the past year, several significant improvements have been made in the Ac-dc Difference Calibration Service for thermal transfer standards at NIST. These improvements include:

- The incorporation of a quantum ac voltage source into the Ac-dc Difference Calibration Service. This quantum source is composed of over 5000 Josephson junctions in two separate arrays. The arrays are driven by digital pulse trains, and respond by providing an ac signal with quantum accuracy. The ac Josephson Voltage Standard (ac JVS) was developed by NIST in Boulder, CO, and a similar system installed in Gaithersburg has just been used to make the world's first quantum-based ac-dc calibration of a thermal transfer standard as part of a routine NIST calibration.

  - The quantum nature of the ac JVS allowed reductions in uncertainty for this calibration of more than an order of magnitude at the lowest voltages and mid-to-high-frequency comparisons compared to traditional scaling methods. The present system has a parameter space of 2 mV to 100 mV at frequencies of 2.5 kHz to 1 MHz; future development of this system includes a new Josephson chip in the testing phase that will deliver 200 mV. At 200 mV, the ac JVS can be measured directly against the NIST multijunction thermal converter primary standards, which will enable direct calibrations of thermal transfer standards from 2 V down to 2 mV without scaling, further reducing uncertainties.

  - The transfer of the calibration service for thermal converters at frequencies above 1 MHz (RF-dc calibrations) from NIST in Boulder to the Ac-dc Difference Project in Gaithersburg. Consolidating the calibration services for thermal converters from 10 Hz to 1 GHz means that customers no longer need to send their standards to both Boulder and Gaithersburg, and the increased efficiency of the calibration service has immediately resulted in lower calibration prices, especially for customers requiring many calibration points. In addition, the proximity of the RF-dc service to the low-frequency service enhances the checking of lower-frequency corrections on the RF standards, eliminates the rather artificial division at 1 MHz, and will result in lower uncertainties for thermal converters at frequencies above 1 MHz.

  - The Ac-dc Difference Project also assimilated thermal converter calibrations at voltages below 200 mV, which had previously been the responsibility of a different group at NIST. As with the RF-dc calibrations, this benefits calibration clients with increased efficiency and shorter turnaround times, and in conjunction with the ac JVS will result in lower uncertainties for low-voltage calibrations.

Contact: James Olthoff, 301-975-2431, <james.olthoff@nist.gov>.

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ATOMIC CLOCK SIGNALS MAY BE BEST SHARED BY FIBER-OPTICS

Time and frequency information can be transferred between laboratories or to other users in several ways, often using the Global Positioning System (GPS). But today's best atomic clocks are so accurate—neither gaining nor losing one second in as long as 400 million years—that more stable methods are needed. The best solution may be to use lasers to transfer data over fiber-optic cables, according to scientists at JILA, a joint institute of the NIST and the University of Colorado at Boulder.

The use of fiber-optic channels to transfer time signals allows accurate comparisons of distantly located atomic clocks of different types. This could lead, for example, to enhanced measurement accuracy in experiments to determine whether so-called "constants of nature" are in fact changing. Sharing of clock signals via fiber also
will enable synchronization of components for advanced X-ray sources at linear accelerators, which may power studies of ultrafast phenomena in chemistry, biology, physics and materials science; or link arrays of geographically-distributed radio telescopes to produce the power of a giant telescope.

Three state-of-the-art techniques for distributing ultra-stable time and frequency signals over fiber are described in a new review article* by NIST Fellow Jun Ye’s group at JILA. Fibers can be far more stable, especially when efforts are made to cancel molecules along the transmission path, than the paths through free-space used by GPS, which require days of measurement averaging to accurately compare today’s best frequency standards. Moreover, considerable fiber-optic infrastructure already exists. For instance, the new paper is based largely on research performed on a 3.45-km fiber link installed in underground conduits and steam tunnels between JILA and NIST laboratories in Boulder.

Microwave frequency signals such as from NIST’s standard atomic clock can be distributed over fiber using a continuous-wave (cw) laser. Another method can transfer more accurate optical frequency references such as NIST’s mercury ion clock or JILA’s strontium clock with a cw laser and disseminate signals to both optical and microwave users using an optical frequency comb. As a third option, microwave and optical frequency references can be transmitted simultaneously using a frequency comb.

Noting that gravitational effects may eventually limit ground-based atomic clocks, the paper suggests someday creating a network of optical atomic clocks in space, which might be used to make flawless distance measurements, transfer clock signals to different locations, and accurately map the Earth’s gravity distribution.

This work was supported by the Office of Naval Research, National Aeronautics and Space Administration, NIST and the National Science Foundation.


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NEW ACCREDITATION PROGRAM FOR RADIATION DETECTOR LABS

The NIST has established a new voluntary accreditation program for the laboratories that test radiation detection equipment used by first responders. The new program will help ensure that laboratories testing a wide variety of new radiation detection instruments produce comparable results, allowing homeland security personnel to better assess the best products for each application.

From personal radiation detectors to units large enough to scan trucks and trains, emergency responders can choose from a wide variety of radiation detection equipment for homeland security applications. To make informed decisions when buying equipment, they must have confidence that instrument test results from different laboratories are comparable. The new NIST program, developed with support from the Department of Homeland Security (DHS), offers laboratories the opportunity to be accredited for their ability to test radiation detection equipment in conformance with recognized industry standards. The new service is part of NIST’s National Voluntary Laboratory Accreditation Program (NVLAP).

Laboratories seeking accreditation under the new program will have to demonstrate their conformity with ISO/IEC 17025, “General requirements for the competence of testing and calibration laboratories;” NIST Handbook 150, NVLAP Procedures and General Requirements; and NIST Handbook 150-23, Homeland Security Applications-Radiation Detection Instruments.

Testing laboratories interested in the new NVLAP program for radiation detection instruments should contact Betty Ann Sandoval at <betty.sandoval@nist.gov> or (301) 975-8446.

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NIST ANTENNA CALIBRATIONS EXTENDED TO 60-110 GHZ

The NIST has developed a new "tabletop" sized facility to improve characterization of antennas operating in the 60 to 110 gigahertz (GHz) frequency range. This extended frequency capability serves needs for advanced civilian and military communication and radar systems.

Many electronic systems are moving to higher frequencies to attain higher channel capacity, better spatial resolution and other advantages. The new measurement facility will help accelerate development of technologies such as automobile collision-prevention radars, which operate at 94 GHz and require antennas small enough to be integrated into car bumpers. Improved NIST antenna calibration capability also helps to assure the accuracy of many systems. "NIST is the start of the measurement traceability chain," says Perry Wilson, leader of the Radio Frequency Fields Group. "For instance, we calibrate the probes used by aerospace companies to calibrate instruments launched on satellites and other critical systems. Weather satellites are an example; improvements in antenna accuracy mean better data for weather models, resulting in better weather predictions."

The new facility continues NIST's history of innovation in antenna measurements, building on the "extrapolated gain" technique developed several decades ago. The original extrapolation range and techniques made it practical for researchers to accurately compute an antenna's far-field characteristics based on near-field measurements. By making the range compact, costs are significantly reduced. In addition, the extrapolation technique uses over-sampling and averaging techniques to minimize the effects of scattering and range imperfections.

For more details on NIST antenna calibration services, located at the institute's Boulder, Colo., campus, see <www.boulder.nist.gov/div818/81802/AntennaNearFieldMeas/index.html>.

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QUICK LINKS

New Pubs Help Secure Email, WLAN, Prevent Intrusions. The National Institute of Standards and Technology (NIST) recently issued three new publications to help secure electronic mail and wireless local area networks (WLAN) and detect and prevent computer system or network intrusions.

Guidelines on Electronic Mail Security (Special Publication 800-45 Version 2) provides recommendations for securing mail servers that deliver, forward and store e-mail and mail clients that allow users to read, compose, send, receive and store e-mail. It also provides guidance on protecting individual e-mail messages and securing traditional and Web-based access to mailboxes.

Establishing Wireless Robust Security Networks: A Guide to IEEE 802.11i (Special Publication 800-97) provides detailed information on the Institute of Electrical and Electronics Engineers 802.11i standard for WLAN security and recommends ways to ensure the security of the WLAN operating environment. It also provides guidance on protecting the confidentiality and integrity of WLAN communications and authenticating users and devices.

Guide to Intrusion Detection and Prevention Systems (IDPS) (Special Publication 800-94) helps organizations design, implement, configure, secure, monitor and maintain intrusion detection and prevention systems. It provides information on four classes of IDPS products: network- and host-based, wireless, and network behavior analysis software.


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Northwest US Region (continued from page 34)

Keith Cable Davis Inotek
Scott Schafer DoN - NSWC Corona
Patrick Fischer DoN - Patuxent River NAS
Michael O'Brien DoN - Patuxent River NAS
Tamara Branch DoN - SWFPAC
Rob Caldwell DoN - SWFPAC
John Pangis DoN - SWFPAC
Bryan Stone DoN - SWFPAC
Dilip Shah E=MC3
Jim Emery Energy Northwest
Jim Gaukroger Energy Northwest
Don Hayes Flow International Corp
Dave Agy Fluke
David Deaver Fluke
Jorge Martin Fluke
Jesse Morse Fluke
Glenn Orbaugh Fluke
Jack Sonn Fluke
Marci Conway GE Sensing
Dave White GE Sensing
Steve Chamberlain Honeywell
Jim Allred Idaho National Lab
Dan Martin Keithley Instruments
Joe Rodrigues Korry Electronics
Armina Sarkisian Korry Electronics
James Cooper Lockheed Martin
Erik Keeney Lockheed Martin
William Mackley Lockheed Martin
Richard Nixon Lockheed Martin
Michael O'Shaughnessy Lockheed Martin
Ray Rogers Lockheed Martin
David Sayers Lockheed Martin
David Wallace Lockheed Martin
Mark Lovell Micro Precision
Kenny Bennett Sno-Isle Tech
R. Mar Burdick Sno-Isle Tech
Karen Coulombe Sno-Isle Tech
R. J. Jamero Sno-Isle Tech
Jameis Jensen Sno-Isle Tech
Kory Kezer Sno-Isle Tech
THE BEST LITTLE CAL LAB IN TEXAS!

John Minck

In my April editorial, I spent some time talking about how we all need to help promote metrology and its importance. Here is an interesting story of how it sometimes works.

In your lives, have you ever noticed that some people's names seem to appear more often than others in the same business? You may have figured out by now that such results don't JUST HAPPEN. Our case study is Chris Grachanen, our peripatetic South Central Region Coordinator and Occupational Standards Working Group committee chair.

Chris is the Cal Lab Operations Manager at Hewlett-Packard (Compaq) in Houston, TX. Chris and I are friends because our Agilent Test and Measurement business was cut loose from Hewlett-Packard back in 2000. After HP acquired Compaq Computers, in a contentious stockholder vote-count battle, Chris became an employee of HP. Although this happened some time after I had retired from HP in 1995, we both had an immediate connection to HP. We lived through the era of Carly Fiorina, who retired from HP in 2004. We watched as the replacement HP CEO, Mark Hurd, took command.

Recently Chris discovered that CEO Hurd was headed down to his facility in Houston for a routine corporate visitation, usually financial and strategic. So upstart Chris took to his email and invited this CEO of a $100 BILLION dollar corporation, when in town, to come and see "The Best Little Cal Lab in Texas."

Imagine Chris's surprise when one day, this internationally-known manager shows up in his lab. Chris said that Hurd was technically very savvy on calibration and standards, probably from his 25-year career at NCR Corp. (Mark is a member of the Technology CEO Council, a coalition of chairmen and chief executive officers of IT companies, which develop and advocate public policy positions on technology and trade issues).

I think we can all appreciate that such imagination bears dividends. Just imagine a report to your boss about such a CEO visit. Maybe you post this picture on your lab wall. Then imagine the next equipment and expense budget period, when you refer to your visit by the big boss. So the upshot may be that he is no longer a little cal lab in Texas?

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COOPERATIVE MEASUREMENT PROJECT FOR NIST AND EGYPT NIS

Mamdouh Halawa

During the period from July, 2004 to December, 2006, the US NIST and Egyptian National Institute for Standards collaborated on a project to "Improve NIS Calibration Capabilities through Analysis and Measurement of Thermal Voltage Converters and Transfer Shunts."

The project was successful in improving the NIS calibration capability and reducing uncertainties for thermal voltage converters and transfer shunts for ac voltage and current metrology. It upgraded the capabilities of the electrical laboratory at NIS through purchasing of new standards for the ac voltage and current measurements.

It also provided project work leading to advanced scientific degrees for several lab personnel. It also led to the publication of three scientific papers at international conferences.

Dr. Halawa presents the Egyptian Cubit as a gift for NIST, through Dr. James Olthoff, the group leader of NIST’s Division 817 in Gaithersburg.

Dr. Joe Kinard of NIST rides out to visit the pyramids to check on whether the legendary Egyptian cubit of antiquity was used successfully. (Just kidding Dr. Kinard.)
CONFERENCE ANNOUNCEMENT
The First Arab Conference For Calibration & Measurement
Cairo, Egypt
6-8 November 2007

Contact and information or registration please visit:
<http://www.nis.sci.eg/acmc>

Objectives
• Establish awareness of Metrology within Arab communities
• Coordinate and integrate the capabilities of National Arab Metrological Institutions
• Support confidence and credibility of calibration and measurement results among the Arab world
• Envisage the establishment of Regional Metrology Organization for the Arab Countries
• Establish Mutual Recognition between Arab Metrological institutions for International recognition

Main Topics
• Measurement and Calibration Capabilities available within the Arab world
• Calibration Scope and Confidence in measurement results
• Role of Metrology for increasing of inter-Arab trade
• Economic impact of Quality Systems, Conformity Assessment mechanisms,
• Accreditation and International recognition
• Case Studies and gained experiences

However, I think there is also a general message here. Our business is standards and quality and accuracy, at least at some specified value of uncertainty. But the principle is that when any of us has been in our jobs for years, two things happen; we get better and better at what we do, but also, we probably have a tendency to become complacent at those very routine things. We see the repetitive lists of numbers and text as being something that SHOULDN’T have changed. We probably make mental assumptions, without realizing that perhaps this time, something HAS changed.

I’d be willing to guess that many of you readers might have skipped right by these logo number errors just like I did. Yet, the error and responsibility belongs to the editor, and I promise to be more observant. And not just in my proofreading, but in other things I do routinely. Reducing uncertainty, certainly a worthy and worthwhile life goal.

John L. Minck
Editor
INTERNATIONAL MEASUREMENT CONFEDERATION (IMEKO)
Chet Franklin, Liaison Delegate
IMEKO has 20 Technical Committees with many common interests with NCSLI committees. Check our their committees for possible collaboration at <www.imeko.org>.

If you have any suggestions for an organization to replace ISA as the U.S. member please forward them to Chet Franklin at <cfranklin@escoorco.com>, or to Mladen Borsic, IMEKO VP, External Relations, at <mladen.borsic@hmd.hinet.hr>.

Some of the upcoming IMEKO events for 2007:

• September 18-21: 14th Conference on Flow Measurement; Johannesburg, SOUTH AFRICA.
• September 19-21: 15th Symposium on Novelties in Electrical Measurements and Instrumentation, in parallel with the 12th Workshop on ADC Modeling and Testing and the 1st Symposium on Environmental Instrumentation and Measurements; Iasi, ROMANIA.
• November 19-21: HARDMEKO 2007: Symposium on Recent Advancements in the Theory and Practice of Hardness Measurement; Tsukuba, JAPAN.
• November 21-24: 9th Symposium on Measurement and Quality Control; Chennai/Madras, INDIA,
• November 26-30: 20th Conference on Measurement of Force, Mass and Torque / 3rd Conference on Pressure Measurement; Merida, MEXICO.
• The big one, the 19th IMEKO WORLD CONGRESS will be in Paris in 2009.

*********

MEASUREMENT SCIENCE CONFERENCE
Chet Franklin, Liaison Delegate
The Measurement Science Conference welcomes Miguel Cerezo, of Amgen, as the new 2008 President of MSC. The theme for 2008 is "Measuring Today's Products and Tomorrow's Technologies," with forty topics covered in technical papers, tutorials and workshops. Come to Anaheim, California and enjoy the conference, which will be held at the Disneyland Hotel during the week of March 10 to 14, 2008.

Bring the family; enjoy winter at Disneyland and some of the Guest Program offerings while you are there. For more information, conference registration, exhibitor space reservations, and to check out the technical program, tutorials and workshops see the MSC website: <www.msc-conf.com>.

*********

JOINT TECHNICAL COORDINATING GROUP FOR CALIBRATION AND MEASUREMENT TECHNOLOGY (JTCG-CMT)
Arman Hovakemian, Liaison Delegate
The Joint Technical Coordinating Group for Calibration and Measurement Technology (JTCG-CMT) was established to improve interService coordination and cost reduction/avoidance of measurement technology and calibration operations throughout the Services. The improvements are to be accomplished through the necessary interService actions and coordination on specifications/standards, directives, calibration research and development, equipment development and acquisition, data systems, training, procedures/documentation, measurement reliability engineering, interService support, and other issues relating to measurement technology and calibration.

To accomplish the research and development of new calibration standards, the JTCG-CMT works closely with NIST through a Memorandum of Understanding (MOU) signed between the Department of Defense (DOD) and the Department of Commerce (DOC). The MOU establishes an agreement between the DOD, (the Assistant Secretary of Defense for Production and Logistics), and the DOC, (National Institute of Standards and Technology - NIST), to define interagency working relationships on matters of liaison and technical cooperation and support.

An update of the MOU is in process, being changed to reflect the new policy and procedural needs of the DOD and DOC. The MOU identifies the roles and responsibilities of each organization; and identifies the technical subgroups that provide NIST/DOD coordination and oversight for the development of new calibration standards needed to support military programs.

NIST continues to discuss with the JTCG-CMT the possible transfer of established calibration services to the Primary Standards Labs within the Joint Services. These calibration services are still required by the DOD, but have severely decreased usage by the remaining commercial sector. In conducting such a transfer of capability, NIST would retain its role as the national measurement institute for measurement traceability of the parameter of interest.

The JTCG-CMT chair rotates biannually amongst the Services, as does the chair of the JTCG-CMT subgroups. On 1 January 2007 the JTCG-CMT chair rotated from the Air Force to the Navy; and the subgroup chairs rotated from the Air Force to the Army.

*********

INSTRUMENT SOCIETY OF AMERICA (ISA)
Mike Suraci, Liaison Delegate
I have continued to forward ISA announcements to interested NCSLI Board members. Most of these are related to Education & Training. Georgia Harris has initiated contacts for training with ISA Headquarters.
Also, Jesse Morse has received promotional ideas I forwarded from an ISA mailing.

Further information can be provided upon request.

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ASIA PACIFIC LABORATORY ACCREDITATION COOPERATION (APLAC)
Roxanne Robinson, Liaison Delegate

The APLAC Board of Management (BOM) and the APLAC Mutual Recognition Arrangement (MRA) Council met in Shanghai, China during the week of April 16 through 20, 2007.

BOM. The BOM completed the APLAC management review and discussed the scheduling and content of the Awareness Seminar to be held at the APLAC Conference in December 2007. Direction was given to APLAC Committee chairmen to streamline the review of documents and work plan at each of their meetings.

The BOM also discussed strategic planning, formalized APLAC liaisons with other organizations and discussed possible improvements in evaluator training and the evaluation process. The ongoing issue being debated by the NMs and accreditation bodies concerning the possible migration to use the term "calibration measurement capability" (CMC) instead of best measurement capability, and scheduling evaluations in economies with posted adverse travel advisories were also discussed. (Also see the information on the BMC-CMC issue on page 6.)

MRA. The MRA signatory status of JAB-Japan was reaffirmed for testing and calibration. The MRA signatory status of SAC-Singapore and ema-Mexico were reaffirmed for testing, calibration and inspection.

Eight accreditation bodies (SAC-Singapore, ema-Mexico, JAB-Japan, HKAS-Hong Kong, SM-Malaysia, IANZ-New Zealand, TAF-Chinese Taipei and DMSc-Thailand) expanded their recognition under the APLAC MRA to include medical testing.

There was also a Council workshop to discuss use of a new evaluation report template and to suggest improvements in the rigor with which evaluation reports for recognition of APLAC signatory accreditation bodies are reviewed by the APLAC members.

The Council also agreed to improve the training requirements for provisional evaluators before they would be used as an evaluation team member, and agreed to more formal appointment of evaluation teams. Issues pertinent to APLAC cooperation with some of its liaisons, including International Laboratory Accreditation Cooperation, European Cooperation for Accreditation, Inter American Accreditation Cooperation, and Pacific Accreditation Cooperation were discussed.

The APLAC BOM and MRA Council will meet again during the annual APLAC Conference from December 1 through December 9, 2007 in Kuala Lumpur, Malaysia.

ACCREDITATION BODY LIAISON
Hershal Brewer, Liaison Delegate

IAS -- International Accreditation Service

1. The theme of this year's Measurement Science Conference Symposium and Workshop in Long Beach, California, was "Apply Metrology ... Rule the World." IAS Accreditation Officer Hershal Brewer, CCT certainly agrees with this premise. He hosted an all-day tutorial called "Accreditation: Challenges and Solutions," and helped attendees understand the common challenges for laboratories seeking accreditation, covering the nuts and bolts of accreditation from ISO/IEC 17025:2005, to computer systems and software, to general criteria for selecting an accreditation body, and marketing the accredited laboratory.

2. The Ingenieurburo Eligehausen und Asmus (IEA), a German-based inspection body, was recently accredited by IAS under ISO/IEC Standard 17020. IEA is accredited to perform inspections of mechanical and chemical anchors in concrete that are regulated under the International Building Code, ICC-ES Acceptance Criteria and Guidelines for European Technical Approvals. IEA is owned by Professor Dr.-engineer Rolf Eligehausen and Dr.-engineer Jörg Asmus, both of whom are recognized experts in this field.

VTT Technical Research Centre of Finland is the other newly accredited European inspection agency under ISO/IEC 17020. VTT specializes in the inspection (and testing) of wood products such as glued-laminated lumber, plywood, lumber grading and wood laminates. IAS warmly welcomes these outstanding organizations.

3. The new International Accreditation Service (IAS) Product Certification Agency program, which accredits certification programs under ISO/IEC Guide 65, "General Requirements for Bodies Operating Product Certification Systems," is well under way. IAS has received two applications for accreditation and several inquiries from organizations currently involved in product certification. Information is available on the IAS website.

5. IAS will present a half-day workshop at NCSLI on "Challenges and solutions for the laboratory seeking accreditation." The presenter will be Hershal C. Brewer, CCT, Staff Accreditation Officer. Sign-up is available through the NCSLI website.

ACLASS

ACLASS held a four-day course for the training of lab managers, lab technicians, new prospective assessors, consultants, and a refresher for long-time assessors of the ISO/IEC 17025 standard. The course was held at the Hyatt Downtown in Columbus, Ohio, June 19 - 22, 2007.

This training class helped assessors to hone skills, understand the rigors of the new ISO/IEC 17025:2005 standard and helped consultants transition their clients from other ISO standards to the requirements of ISO/IEC 17025. Additionally, this class allowed lab managers and technicians to gain a thorough understanding of this international standard that they themselves must become accredited to. For more information visit the ACLASS web site at <www.aclasscorp.com>.
NVLAP -- National Voluntary Laboratory Accreditation Program

NVLAP Radiation Detection Instruments Program

The United States Department of Homeland Security (DHS) requested that NIST establish a laboratory accreditation program for laboratories that test radiation detection instruments used in homeland security applications. In response to the request by DHS, and after consultation with interested parties through public workshops and other means, the National Voluntary Laboratory Accreditation Program (NVLAP) has agreed to establish the accreditation program.

NVLAP will accept applications from laboratories that perform testing of radiation detection instruments, such as handheld detectors, radionuclide identifiers, and portal monitors, using standards developed by the American National Standards Institute (ANSI), the Institute of Electrical and Electronics Engineers (IEEE), and the DHS.

If you would like more information on the Radiation Detection Instruments program, please contact Betty Ann Sandoval at <betty.sandoval@nist.gov> or (301) 975-8446.

Voluntary Control Council for Interference (VCCI)

The National Voluntary Laboratory Accreditation Program (NVLAP) and the American Association for Laboratory Accreditation (A2LA) entered into an MOU signed on December 13, 2006 in Tokyo, Japan with Voluntary Control Council for Interference (VCCI). VCCI is a Japanese organization which was started in the mid 1980s by four Japanese industry companies seeking to control electromagnetic interference (EMI) with the backing of the Japanese government.

By signing this memorandum, NVLAP and A2LA intend to provide ISO/IEC 17025 accreditation of any electromagnetic compatibility testing laboratory to the Normative Annex 1 Technical Requirements of Regulations (VCCI V-3) for voluntary control measures of VCCI. Additionally, NVLAP and A2LA will be responsible for notifying VCCI directly of all pertinent information for those laboratories that are accredited to perform testing to VCCI V-3. A form has been developed to capture the necessary information requested by VCCI and will be completed during the course of a laboratory's on-site assessment.

To learn more about VCCI, visit the VCCI web site at: <http://www.vcci.or.jp/vcci_e/index.html>.

NVLAP Seminar at MSC Conference

NIST/NVLAP conducted a two-day seminar entitled “Preparing Your Laboratory for 17025 Accreditation: A Step-By-Step Approach,” at the Measurement Science Conference (MSC) in Long Beach, CA, on January 22 - 23, 2007.

The interactive seminar was aimed at quality managers, laboratory management and personnel thinking about seeking accreditation, and assessors. The two-day seminar included presentations and lectures, practical hands-on examples, group exercises, and panel discussions with opportunities for questions and answers.

Topics included: How should a laboratory prepare for an initial and renewal accreditation? What should you expect during an assessment? How does your laboratory respond to the accreditation body when the management system has nonconformities? What is traceability and why should anybody care? How is proficiency testing run and how is it used to validate claims of measurement uncertainty?

Instructors for the seminar included: Barbara Belzer, Calibration Program Manager from NVLAP, Sally Bruce, Chief of NVLAP, Elizabeth Gentry from the NIST Weights and Measures Division, Greg Strouse, Scientist from NIST, Ben Tsai, Scientist from NIST who works part-time in NVLAP, and Lisa Warfield, Management Program Assistant from NVLAP.

Twenty five representatives from industry and government agencies participated in this training. These laboratory personnel were from testing and calibration facilities located throughout North America. Based upon the overwhelmingly positive feedback, NVLAP is planning to offer this type of training again in the future.

A2LA - American Association for Laboratory Accreditation

2007 A2LA Assessor Conclave and Annual Meeting

The 2007 A2LA Assessor Conclave and Annual Meeting was held March 19 through 26 at the Sheraton Columbia Hotel in Columbia, Maryland. The A2LA Assessor Orientation Course began March 19th with 45 individuals participating in the course. The technical committee meetings kicked off on Saturday, March 24th on a variety of technical topics. A summary of the Conclave activities will be published in A2LA's upcoming May Newsletter and the meeting minutes from the technical meetings will be published in late April 2007.

A2LA Applications of ISO/IEC 17025

In an effort to assist our accredited laboratories in understanding the requirements found in ISO/IEC 17025, the A2LA web site, <www.a2la.org>, includes a listing of the various applications of ISO/IEC 17025. These applications outline A2LA’s interpretation of the standard and its application in our accredited laboratories. New applications are published quarterly in the A2LA Newsletter.

A2LA Receives recognition from NIST/NVCASE for Product Certification

On April 20, 2007, A2LA received recognition from NIST’s National Voluntary Conformity Assessment Evaluation (NVCASE) program as an accredits of certification bodies for telecommunications equipment. This recognition includes scopes of accreditation covering the Federal Communication Commission's (FCC) TCB program, Industry Canada's Certification program, and Info-communications Development Authority of Singapore requirements. For further information regarding this program, please contact Trace McInturff at 301 644 3223 or <tmcinturff@a2la.org>.
AMERICAN SOCIETY FOR QUALITY (ASQ)
MEASUREMENT QUALITY DIVISION (MQD)
Christopher L. Grachanen

Following are the latest statistics for the American Society for Quality (ASQ) Certified Calibration Technician (CCT) program. Heartfelt congratulations go out to new Dec 2006 graduates!

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<th>Sat for Exam</th>
<th>Passed Exam</th>
<th>% Passed</th>
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<td>69</td>
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<td>69</td>
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<td>15-May-05</td>
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<td>100.00%</td>
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<tr>
<td>4-Jun-05</td>
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<td>114</td>
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<tr>
<td>3-Dec-05</td>
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<tr>
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<td>Jun-06</td>
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<tr>
<td>Totals:</td>
<td>981</td>
<td>705</td>
<td>71.87%</td>
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</table>

Information on CCT program as well as future exam dates may be found on ASQ's Measurement Quality Division's (MQD) website at: <http://www.asq.org/measure/cct/index.html>.

While you're there, check out the latest issue of The Standard, MQD's quarterly newsletter at:

<http://www.asq.org/measure/index.html>

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AMERICAN PHYSICAL SOCIETY
Klaus Jaeger, Liaison Delegate

The annual APS March meeting was held March 5-9, 2007 in Denver, CO. There were over 6000 attendees. The complementary April meeting was held April 14-17, 2007 in Jacksonville, FL.

The APS announced another year of record membership. The total is now over 46,000. The main contribution to the growth is the increase in student membership, now standing at a 23.4%. The increase in the student count is being attributed to first-year free membership and then annual dues of just $28.

International membership is holding steady at 20.5% while the "retired" contingent continues to show modest increases over the last few years and is now standing at 12%.

AMERICAN NATIONAL STANDARDS INSTITUTE
Craig Gulka, Liaison Delegate

Dr. James Hill, a recognized leader in the building and fire industries, has been selected by the U.S. Celebration of World Standards Day Planning Committee as the 2007 recipient of the prestigious Ronald H. Brown Standards Leadership Award. He will be honored by members of the U.S. standardization community on Thursday evening, October 18, 2007, at the Ronald Reagan Building and International Trade Center in Washington, DC.

Dr. Hill was nominated by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). A former president of ASHRAE, Dr. Hill currently serves as the acting deputy director at the National Institute of Standards and Technology (NIST). In this position, he is responsible for overall operation of the Institute and the effectiveness of NIST's technical programs.

In a previous post as director of the NIST Building and Fire Research Laboratory, Dr. Hill led the investigation of World Trade Center building failures on September 11, and the performance evaluation of structures in the wake of hurricanes Katrina and Rita. Under his leadership, NIST researchers have recommended dozens of major safety enhancements for U.S. building codes and standards, and fire safety and emergency response practices.

Celebrated annually each October, World Standards Day pays tribute to the thousands of volunteers around the world who participate in standardization activities and helps to raise awareness of the role that standards play in addressing national and global priorities. Since the initial celebration in 1970, the event is now recognized in nations around the globe.

U.S. activities are organized annually by a planning committee consisting of representatives from across the standards and conformity assessment community. The event is co-chaired by the American National Standards Institute (ANSI) and the National Institute of Standards and Technology (NIST). The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) serves as the 2007 administering organization. More information about the U.S. Celebration of World Standards Day 2007, "Standards and the Global Village," is available at <www.wsd-us.org>.

Liaison News
NEW ENGLAND REGION
ProTEQ Solutions
Westford, MA 01886
Member Delegate:
Earl J. Almy
(888) 490-6624

NY/PA/NJ REGION
Energy Plus Scientific
Harrisburg, PA 17112
Member Delegate:
Matt Skoczynski
(717) 545-0751

Kaymont Consolidated
Hauppauge, NY 11788
Member Delegate:
Fred Fetkowitz
(631) 951-9100

Rotronic Instrument Corp.
Huntington, NY 11743
Member Delegate:
David P. Love
(631) 427-3898

Sanofi Pasteur
Swiftwater, PA 18370
Member Delegate:
Carl E. Slutter, Jr.
(570) 839-4637

MID-WESTERN US REGION
Marlin Manufacturing Corp.
Cleveland, OH 44130
Member Delegate:
Terry L. Halfacre
(216) 676-1383

SOUTHERN US REGION
Ametek
Largo, FL 33773
Member Delegate:
Scott Crone
(727) 536-7831

Calibration Validation & Research, Inc.
Gurabo, PR 00778
Member Delegate:
Jose R. Fonseca
(787) 850-4215

Mentor Technical Group Corp.
Caguas, PR 00726
Member Delegate:
Cesar Mirabal
(787) 743-0897

Regeneration Technologies, Inc.
Alachua, FL 32616
Member Delegate:
James Bergman
(386) 462-7972

Teledyne Continental Motors
Mobile, AL 36601-0090
Member Delegate:
Lori Jester
(251) 436-8498

NORTH CENTRAL US REGION
Burns Engineering, Inc.
Minnetonka, MN 55343
Member Delegate:
Patrick Rounds
(952) 935-4400

Champion Laboratories
Albion, IL 62806
Member Delegate:
Glenn Gee
(618) 445-5249

Kay and Associates, Inc.
Buffalo Grove, IL 60089
Member Delegate:
Bradley J. Kay
(847) 255-8444

UW Radiation Calibration Laboratory
Madison, WI 53706
Member Delegate:
Stephen Bazan
(608) 262-9513

SOUTH CENTRAL US REGION
Integrated Ocean Drilling Program
at Texas A&M University
College Station, TX 77845
Member Delegate:
S. Dean Ferrell
(979) 862-1961

CENTRAL CA/NV REGION
Crystal Engineering Corp.
San Luis Obispo, CA 93401
Member Delegate:
Miranda Battenburg
(805) 595-5097

GMW Associates
San Carlos, CA 94070
Member Delegate:
Daniel Walker
(650) 802-8292 x21

Test Equipment Solutions Today
Foster City, CA 94404
Member Delegate:
Diane H. Gelb
(650) 577-8877

NORTHWESTERN US REGION
Alyeska Pipeline Service Company
Fairbanks, AK 99701
Member Delegate:
Tim Baughman
(907) 450-4885

HydraMaster Corp.
Mukilteo, WA 98275
Member Delegate:
Eric Jacobson
(425) 775-7272 x1317

CANADA REGION
JEM Precision, Ltd.
Edmonton, AB T6N 1B6
Member Delegate:
Robert Korthuis
(780) 444-1933

ASIA/PACIFIC REGION
Korea Testing Laboratory
Seoul, 152-848 Korea
Member Delegate:
Kwang Jae Song
82-8-860-1292

Ohte Giken, Inc.
Tsukuba-Shi,Ibaraki Pref. 305-0047
Japan
Member Delegate:
Takayoshi Ote
81-29-855-8778
## ANSI and ISO Standards:

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<th>Standard</th>
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<td>(Calibration &amp; Measurement &amp; Test Equip. General Requirements)</td>
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## NCSLI Recommended Practices:

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<th>Practice</th>
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<td>RP-8 &quot;An Individual Equipment Evaluation Guide&quot;</td>
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<td>RP-9 &quot;Calibration Laboratory Capabilities Documentation Guidelines&quot;</td>
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<td>RP-14 &quot;Guide to Selecting Standards-Laboratory Environments&quot;</td>
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<td>RP-15 &quot;Guide for Interlaboratory Comparisons&quot;</td>
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## NCSLI Recommended Intrinsic/Derived Standards Practices:

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## Laboratory Management Publications:

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EDITOR’S NOTE:
This schedule is for guidance for anyone who needs to submit material for publication in the Newsletter.

FUTURE CONFERENCES

2007 NCSL International Workshop & Symposium
July 29-August 2, 2007
St. Paul, MN

2008 NCSL International Workshop & Symposium
August 3-7, 2008
Orlando, FL

2009 NCSL International Workshop & Symposium
July 26-30, 2009
San Antonio, TX

2010 NCSL International Workshop & Symposium
July 25-29, 2010
Providence, RI

2012 NCSL International Workshop & Symposium
July 29-August 2, 2012
Sacramento, CA

2014 NCSL International Workshop & Symposium
August 3-7, 2014
Orlando, FL
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Promote competitiveness and success of NCSL International members by improving the quality of products and services through excellence in calibration, testing, and metrology education and training.

The NCSLI Mission

NCSL International (NCSLI) is a continuing, nonprofit corporation, oriented toward organizations involved in Metrology and related activities.

The mission of NCSL International is to advance technical and managerial excellence in the field of Metrology, Measurement Standards, Conformity Assessment, Instrument Calibration, as well as Test and Measurement, through voluntary activities aimed at improving product and service quality, productivity, and the competitiveness of member Organizations in the international marketplace.

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For the 2007 NCSLI Annual Workshop and Symposium
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