



Asia Pacific Laboratory Accreditation Cooperation

February 2005

APLAC News Notes

Issue no. 78

APLAC is an organisation of laboratory accreditation bodies in the Asia Pacific area that have expressed a desire to cooperate in fostering the development of competent laboratories in member economies.

Cooperation is to include:

- Exchange of information
- Joint training programs
- Proficiency Testing
- Harmonisation of requirements
- Mutual recognition of systems meeting harmonised requirements

APLAC NEWS NOTES is published six times a year to facilitate the exchange of information among members and interested parties. It is not copyrighted and may be reproduced in full. Excerpts should reference *APLAC News Notes* specifically. Wide copying and distribution are encouraged.

APLAC also maintains an Internet site at: www.aplac.org

Secretariat for APLAC:

National Association of Testing Authorities (NATA)
71-73 Flemington Road
North Melbourne VIC 3051
Australia
Telephone: +61 3 9329 1633
Fax: +61 3 9326 5148
Email: aplac@nata.asn.au

This issue is published by International Accreditation New Zealand (IANZ)

Level 1, 626 Great South Road
Greenlane
Auckland
New Zealand
Telephone: + 64 9 525 6655
Fax: + 64 9 525 2266
Email: info@ianz.govt.nz

The next issue will be published in :

At



ILAC/IAF CONFERENCE 2005

11 – 21 SEPTEMBER

**HOSTED BY INTERNATIONAL ACCREDITATION
NEW ZEALAND**

100% New Zealand Pure

Auckland city, where this year's ILAC/IAF Conference is being held, with a population of just over one million, is small in comparison with the cities most APLAC members reside in. However, Auckland is by far the largest of New Zealand's cities and, as such, has a rich mix of European, Maori, Pacific Island, and Asian cultures. This we call Pacifica, which will be experienced in the food and entertainment that will be provided throughout the week of the conference.

The meetings and accommodation are all at the same venue, making it easy for delegates to talk and socialise outside of the formal proceedings. The Langham Hotel is close to the city business centre and only a short trip to the waterfront where it becomes obvious why Auckland is dubbed the City of Sails. Super yachts and sailing yachts mix with recreational craft in what is Auckland's favourite pastime and venue for the last two America's Cup races.

www.ilaciaf2005.com

This is the website for the conference. It contains everything delegates and the partners will want to know, including the conference timetable, local tours, social events, and helpful information about what to expect in New Zealand.

The registration pack will be sent to every APLAC and ILAC member organisation in March. This will contain registration forms for the conference, the accommodation, and the accompanying persons' programme. Savings will be made by registering early for the conference!

Five Star accommodation

At the Langham Hotel (previously the Sheraton Auckland Hotel), "Superior" and "Executive" rooms have been reserved for delegates to the conference at discounted rates. Delegates can choose between formal and informal dining at the hotel's two restaurants; or can choose to eat almost any

style of international cuisine at restaurants and cafes within easy reach of the conference venue.

Social functions

The conference will be kicked-off with a welcome reception on Monday evening.

A harbour cruise with full buffet dinner is scheduled for Wednesday evening, but delegates and partners are strongly advised to book early as places on the boat are restricted to 270.

The Banquet and Signing Ceremony will be held on the evening of Saturday 17th, with music for dancing provided by a string quartet from the Auckland Philharmonic Orchestra.

A farewell function is proposed for the evening of Monday 19th at a venue by the harbour.

Arrive early/stay late

Delegates travelling long distances to reach Auckland are encouraged to arrive in the weekend prior to the technical meetings starting on the Tuesday. They will find any number of things to amuse themselves while recovering from jet lag within and around Auckland. The registration desk will be operating 8.00am to 7.00pm daily from Sunday onwards.

On hand most days will be a local tour operator who can arrange a wide variety of tours both locally and around New Zealand. Their contact details and those of other great New Zealand destinations can be found on the conference website.

The role of International Accreditation New Zealand to the New Zealand economy

Domestic regulations

Independent assurances of competence and accuracy in testing, measurement and inspection and of management systems meeting regulatory requirements are important components of New Zealand's domestic commerce and external trade.

Government actions to improve public and occupational health and safety in New Zealand are increasingly incorporating international standards and third-party verification as a significant tool for managing the process. Recent examples include food and water safety, workplace health and safety, health and disability services, and building safety. Government funding of medical testing laboratories is conditional on accreditation.

IANZ advises government and industry regulators on the suitability of incorporating international standards and third-party verification to ensure the high level of assurance they require. In particular, IANZ is in regular dialogue with and provides assistance to the following ministries:

Ministry of Economic Development with regard to the:

- NZ-European Community Mutual Recognition Agreement on Conformity Assessment, and the NZ-Singapore CEP. IANZ is the New Zealand Designating Body for both these Agreements.
- APEC Telecommunications MRA and APEC Electrical MRA.

Ministry of Foreign Affairs and Trade with technical support in trade negotiations with other governments.

Ministry of Health with regard to:

- Drinking water testing and drinking water supplies inspection
- Medical testing, cervical screening, and health and disability sector requirements.

Accident Compensation Commission with regard to contractual requirements for specialist medical imaging.

New Zealand Food Safety Authority with regard to food safety inspection (domestic and export); and meat, shellfish, dairy, and wine testing programmes.

Department of Labour / OSH with regard to pressure equipment, gas cylinder testing and pipeline inspection activities.

Department of Building and Housing with regard to Building Consent Authority accreditation as inspection bodies.

Through its participation at international accreditation fora, IANZ is well qualified to keep regulators and industry in general abreast with international accreditation standards and requirements.

Commerce

Businesses, in many instances, are reluctant to go through an accreditation process unless required to by regulation or by customers. Those that do become accredited realise the improvements that the process can make on their organisation's performance and the competitive advantage they can gain in the market place.

World trade

New Zealand exporters are required to meet technical requirements for entry into overseas markets. The World Trade Organisation's Agreements on Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary Measures (SPS) set rules for the management of technical requirements and encourage the use of international standards and systems for assessing conformity to standards.

Most of New Zealand's trade is in areas that are regulated, such as dairy products, meat, timber and electrical products. Some regulators around the world now recognise acceptance when such products are tested in laboratories that are accredited by an internationally recognised accreditation authority as an essential requirement for market access. In the non-regulated sector, international markets for products such as wool, steel and aluminium increasingly require testing to be carried out in an accredited laboratory before acceptance by the market.

Regulators in some overseas countries recognise their national accreditation body as a means of assuring the competence of independent inspection and testing reports to meet their own (regulatory) requirements. Increasingly, these authorities accept New Zealand test and inspection reports endorsed by IANZ as being equivalent to those provided locally.

CNAL/TAF UPDATE



CNLA/TAF Update

New Name for CNLA

Since 1 January 2004, under supervision of the Ministry of Economic Affairs, CNLA was merged with CNAB into a new non-profit incorporation "Taiwan Accreditation Foundation (TAF)". The operations of CNLA remain unchanged. Our listed name in ILAC and APLAC, also in IAF and PAC, has been changed to TAF accordingly. The TAF pattern is adopted as the new look of the accreditation body logo, while the CNLA pattern carries on being used as the accreditation symbol during the transformation period until 2006.

2005 APLAC Proficiency Testing Training Course, Taipei, Taiwan

The second APLAC Proficiency Testing Training Course, hosted by CNLA/TAF with pleasure and honour, was conducted in the Grand Hotel, Taipei, Taiwan from 17 – 21 January 2005. In addition to continuous contributions to conducting Proficiency Testing projects, it was also great for CNLA/TAF to have the chance to actively communicate with delegates from other ABs.

The training course, directed by APLAC and sponsored by APLAC and APEC, provided a great opportunity for accreditation body delegates to dig into the spirits as well as real practices of Proficiency Testing. Two professional lecturers, Mr. Philip Briggs, the Proficiency Testing Committee Chair of APLAC and the Proficiency Testing Manager of NATA, and Mr. David Hayles, an experienced Proficiency Testing expert of NATA, delivered the 5-day courses. There were 30 participants from 12 economies around the Asia Pacific area joining in this event Australia, Canada, Hong Kong, Japan, Korea, Malaysia, Philippines, Papua New Guinea, Taiwan, Thailand, USA and Vietnam.



CNLA/TAF Group Photo

.....

Safety First When Children Play

NATA Accreditation for Playground

Inspection

Greater awareness of risks to children using playgrounds, combined with increased responsibility on local councils and other organisations, to ensure such equipment is safe, have lead to the first accreditation in Australia of a company providing inspection of playground equipment.

Kico Australia addresses equipment safety from multiple angles, not only checking existing playground facilities but also checking on the installation and commissioning of new equipment. Their recent accreditation NATA provides an independent evaluation and recognition of the inspection services provided by Kico.

Director and founder of Kico Australia, Susie Kearnes explains, "The company has been built upon the recognition that comprehensive inspections, maintenance inspections and pre-service checks for newly installed equipment, could assist in reducing the incidence of these types of injuries among children. Safe play areas for children can be created with quality installations and careful repairs of equipment to ensure hazards are removed, Australian standards are met, and sound maintenance is sustained."

The company's 15 year involvement in the playground industry includes playground design, site location, consultancy, installation, under surfacing, equipment repairs, maintenance and safety inspections, to Australian Standards. "We have seen the need for regular inspections and maintenance on fixed playground equipment and under surfacing if the risk of personal injury to the children and the liability to the owners of the equipment are both to be reduced", Mrs Kearnes said.

Kico is the first playground industry participant to be NATA-accredited for inspection of playground equipment. Kico's clients, which include local councils, government and non-government schools, child care centres and food outlets, will improve design and installation standards in their playgrounds and most importantly, be confident that children's safety will improve.

Mrs Kearnes believes more NATA accreditations are needed to improve the level of inspection services to owners/operators of play equipment. "At Kico, we were more than willing to meet the challenge of the NATA accreditation requirements as an indication of our commitment to excellence and safety within our industry."

Tony Russell, Chief Executive of NATA, welcomes the playground industry's interest in the importance of inspection accreditation and added, "The number of NATA-accredited inspection bodies increased 40 per cent over the past year. A broad range of inspection bodies now seek accreditation under the International Standard ISO/IEC 17020 and we can now add playground equipment services to the growing family of activities covered by competent inspection bodies. The standard for this accreditation sets out criteria necessary to examine products, installations, plant, processes, work procedures or services. NATA accreditation considers not only the technical competence of staff to perform an inspection but also the professional judgement to report accurate and meaningful results, suitability of inspectors, and work management systems."

NATA offers an independent assessment of an organisation's inspection capabilities to ensure conformity with international standards that define criteria for competent examination of product design and services. NATA began its inspection accreditation services over a decade ago to enhance confidence in the quality of inspection results in the Australian community.

For further information contact Julian Wilson at NATA, Sydney. Tel: 02 9736 8222 or by email: jwilson@nata.asn.au

From APLAC Secretariat:

FROM THE SECRETARIAT

Congratulations and thanks to BoA/STAMEQ for their excellent arrangements and organisation for the APLAC 2004 meetings in Hanoi last December. Dr Ho Tat Thang should be proud of his staff of friendly and enthusiastic helpers in the secretariat office.

Inspection MRA

It is pleasing to note that the number of signatories to the APLAC MRA for inspection continues to grow.

With signatory recognition for CNAL, KAN and BoA being extended to include inspection there are now 8 inspection signatories.

Revised APLAC MRA Text

There will be a re-signing ceremony by all current APLAC MRA signatories for the new APLAC MRA text during the APLAC MRA Council in Narita, Japan in April. The Secretariat will soon be contacting all signatories to ask who will be signing the MRA on behalf of their organisations. We need this information so that we can prepare the individual signatory sheets.

APLAC Web Site

There is now a button for the "members only" section of the APLAC web site on the home page, at the bottom right hand corner. If you have forgotten the log-on and password please contact the Secretariat.

APLAC PR 008

MRA signatories are asked, as requested in an email in December, to advise the secretariat as soon as possible as to whether or not PR 008 shows the correct accreditation mark(s) for their organisation. We are anxious to complete the updating of this useful information document.

APLAC Documents

The Secretariat has recently advised members and lead evaluators by email of the issue of the following new and revised APLAC documents that are available in PDF format from the "Documents" section of the APLAC website. These documents are:

APLAC MR 001	Issue 7	Procedures for Establishing and Maintaining MRA's
APLAC PR 001	Issue 2	APLAC Publications Numbering Policy
APLAC SEC 004	Issue 5	Rules of Procedure
APLAC SEC 037	Issue 2	Document Control and Document Format
APLAC SEC 043	Issue 2	Requirements for APLAC Funding Requests
APLAC SEC 051	Issue 1	Overview of APLAC Management System Documentation

APLAC Documents for Comment

The following APLAC documents have been sent out to members for comment. Please ensure you get your comments back to the Secretariat (in the "comments table" provided) by the due date.

Technical Committee draft document on food testing
Due: 6 March

Technical Committee draft information sheet on uncertainty for the layman.
Due: 6 March

Training Committee draft document on formulating training proposals, etc
Due: 10 April

New APLAC MRA Lead Evaluators

Congratulations to the following who were appointed as lead evaluators at the December 2004 APLAC MRA Council meeting.

Helen Liddy	NATA
Trace McInturff	A2LA
Katuo Seta	IAJapan
Jason Tan	SAC

Training Course on ISO/IEC 17011

A training course on ISO/IEC 17011 will be held in Narita, Japan on 22-24 April. APLAC lead evaluators will participate in all 3 days of the course, with representatives from APLAC Full members that do not have lead evaluators on staff attending on days 2 and 3.

APLAC is providing USD 1,000.00 funding for each lead evaluator and one representative from APLAC Full members that do not have lead evaluators on staff. As advised by the Secretariat, payment will be made after the course, on submission of the claim form and supporting information. The claim forms will be distributed at the course.

Members are reminded that they must register with Ms Oh Shin of IAJapan for the course and the MRA Council meeting by 28 February.

Other APLAC Meetings

The APLAC MRA Council will meet in Narita, Japan on 25 and 26 April. The Board of Management will meet in Narita on 21 and 27 April.

RM Producer Workshop

APLAC is holding a workshop on accreditation of RM producers in Hong Kong, China on 11 and 12 March. The workshop facilitators are Mr Alan Squirrell of NATA, Dr Ed de Leer of NMI, Netherlands and Dr Robert Watters of NIST, USA.

Members who wish to attend should register as soon as possible with W W Wong of HKAS.

Helen Liddy, Janet Clark, Jane King

APLAC Secretariat



Laboratory Accreditation, Traceability, and the Role of Mutual Recognition Arrangements

C. D. Faison, Senior Program Manager
NIST/NVLAP Calibrations Laboratories
Accreditation Program

The following is a brief description of the roles of laboratory accreditation, the mutual recognition arrangements amongst laboratory accreditation bodies, and the mutual recognition arrangement amongst national metrology institutes as they relate to issues of traceability of measurement results.

Laboratory accreditation is recognition by an authoritative body that a laboratory is capable and competent to provide scientifically sound and valid calibration or testing services as documented on its scope of accreditation and on the calibration certificates and/or test reports it issues. To promote the use of laboratory accreditation worldwide, the National Voluntary Laboratory Accreditation Program (NVLAP) has entered into Mutual Recognition Arrangements (MRAs) with the following three organizations:

1. The International Laboratory Accreditation Cooperation (ILAC), the world's principal international forum for the development of laboratory accreditation practices and procedures, the promotion of laboratory accreditation as a trade facilitation tool, the assistance of developing accreditation systems, and the recognition of competent calibration and test facilities around the globe (see <http://www.ilac.org>).

2. The Asia Pacific Laboratory Accreditation Cooperation (APLAC), whose principal objectives are to foster the development of competent laboratories and inspection

bodies in member economies, to harmonize accreditation practices in the region and with other regions, and to facilitate mutual recognition of accredited test, measurement and inspection results (see <http://www.aplac.org>).

3. The National Cooperation for Laboratory Accreditation (NACLA), whose primary mission is to evaluate laboratory accreditation bodies (ABs) in the U.S. and to grant recognition to those ABs found to be in compliance with NACLA procedures and the relevant international standards for competent ABs (see <http://www.nacla.net>).

By signing these MRAs, NVLAP accepts that the accreditations granted by our signatory partner ABs are accomplished through a process that is in conformance with internationally accepted standards and practices. As a result, NVLAP promotes the acceptance of calibration and/or test results within the respective scopes of accreditation for laboratories accredited by any of the MRA signatory ABs.

While laboratory accreditation does verify the capability of a laboratory to produce measurement results that are traceable to appropriate stated references (usually measurement standards maintained by the national metrology institute (NMI) of the laboratory's home country), it does not speak directly to the equivalence of traceability of measurement results to standards maintained by one NMI versus another. Traceability is, however, ultimately established to the SI (the International System of Units). Calibration and testing laboratories are required to disclose the path of traceability of their measurement results, where it is necessary and appropriate, in the calibration or test reports. It is through the dissemination of calibration services that the NMIs provide the necessary link to these SI units.

In response to the need for an open, transparent and comprehensive scheme to give users reliable quantitative information on the comparability of national metrology services and to provide the technical basis for wider agreements negotiated for international trade, commerce and regulatory affairs, the directors of the NMIs of a number of Member States of the Metre Convention and representatives of two international organizations have signed a Mutual Recognition Arrangement titled "Mutual recognition of national measurement standards and of calibration and measurement certificates issued by national metrology institutes," also referred to as the Comité International des Poids et Mesures (CIPM) MRA.

As the title states, this arrangement provides for the mutual recognition of national measurement standards and of calibration and measurement

certificates issued by NMIs, and is founded on the efforts of each individual NMI to base its measurements and measurement uncertainties on SI units. A complete list of signatory NMIs is included as Appendix A of the CIPM MRA.

The technical basis of this arrangement is the set of results obtained in the course of time through key comparisons carried out by the Consultative Committees of the CIPM, the Bureau International des Poids et Mesures (BIPM) and the regional metrology organizations (RMOs), and published by the BIPM and maintained in the key comparison database as Appendix B of the CIPM MRA.

It is the equivalence of the calibration services offered by NMIs that is verified, or tested, by the key and supplementary comparison activities. The NMIs that have signed the MRA agree that each NMI is capable of providing the services listed in Appendix C, Calibration and Measurement Capabilities (CMC), which lists the quantities for which calibration and measurement certificates are recognized. Appendices B and C can therefore be used as indicators of the equivalence of measurement results between NMIs. For more details on the CIPM MRA, the key comparison database, and the CMCs, please see <http://www.bipm.org/en/convention/mra/>.

In summary, laboratory accreditation is formal recognition of the capability and competence of a laboratory to provide measurement results within its Scope of Accreditation. The calibration and test reports issued provide measurement results that are traceable to stated references (the SI, usually through standards maintained by the NMI of the laboratory's home country). The quoted uncertainties are based on an established path of traceability through an NMI to the SI units. The CIPM MRA provides for the mutual recognition of national measurement standards and of calibration and measurement certificates issued by NMIs. It logically follows that, metrologically speaking, it is possible for users of calibration and test results provided by accredited laboratories (accredited by MRA signatory ABs) to determine for themselves the fitness for purpose of measurement results, such as for traceability to an NMI not of the laboratory's home country, based primarily on the reported uncertainties.

NVLAP strongly encourages all to visit the referenced web sites to see how the recognized accreditation bodies and the

signatory NMIs are working in concert, through their respective MRAs, to provide confidence in the results reported in the calibration and test reports issued by laboratories accredited by a signatory MRA accreditation body. Of particular interest are the following informational brochures, available on the ILAC web site under Publications, General Information:

1. Why Use an Accredited Laboratory?
2. Why Become an Accredited Laboratory?
3. How Does Using an Accredited Laboratory Benefit Government and Regulators?
4. The Advantage of Being an Accredited Laboratory.

Questions may be directed to NVLAP at (301) 975-4016 or via e-mail at NVLAP@nist.gov.

.....

Methods of Proficiency Testing **NVLAP Accredited Calibration** **Laboratories**

C.D. Faison, Senior Program Manager
NIST/NVLAP Calibrations Laboratories Accreditation
Program

NVLAP uses a variety of methods to proficiency test its calibration laboratories. The goal is, of course, to provide additional assurance, and evidence, that the accredited laboratory is capable and competent to make measurements within its stated uncertainties. Proficiency testing is done in conjunction with a thorough on-site evaluation of the laboratory's equipment, facilities, personnel, methods, procedures, uncertainty analyses, etc., all those requirements contained in NIST Handbook 150 and ISO/IEC 17025. As a final snapshot, laboratories are required to participate in some form of proficiency testing activity, where such activity is available. Every effort is made to make sure the test is valid, while keeping the cost as low as possible (technical validity being the overriding factor).

NVLAP does not subcontract the proficiency testing of its laboratories, that is, we do not accept the results of proficiency testing done by others without fully evaluating the test to determine its technical validity and fitness for purpose. To do so would violate our documented quality system. The "accredited" providers of proficiency testing services are not included in any MRA of which NVLAP is a signatory so we are therefore not obligated to accept any results from these PT schemes. However, under certain conditions (to be described later) NVLAP may make appropriate use of the data generated by one of these schemes and may deem it acceptable as a proficiency test. The following is

a brief description of the various ways NVLAP proficiency tests its calibration laboratories, in no particular order.

One-on-one direct test: In this case NVLAP will acquire an artifact and have it characterized, or measured so as to determine the reference value and uncertainty, by either NIST or an appropriate NVLAP accredited laboratory. NVLAP then sends the artifact to the laboratory to be tested. The laboratory will measure the artifact and report the results, with the measurement uncertainty, to NVLAP. NVLAP will then compare the measured value and uncertainty with the reference value and uncertainty as follows:

Performance on the proficiency test is judged by calculating the error of the measurement, normalized with respect to the uncertainty of the measurement, using the following equation (from Annex A of Guide 43-1, clause A.2.1.4 e):

$$E_{\text{normal}} = \frac{\text{Value}_{\text{lab}} - \text{Value}_{\text{ref}}}{\sqrt{\text{Uncertainty}_{\text{ref}}^2 + \text{Uncertainty}_{\text{lab}}^2}}$$

where

E_{normal} = normalized error of the results of the test

$\text{Value}_{\text{lab}}$ = the laboratory's measured value

$\text{Value}_{\text{ref}}$ = the reference laboratory's assigned value

$\text{Uncertainty}_{\text{ref}}$ = the uncertainty of the reference laboratory's assigned value

$\text{Uncertainty}_{\text{lab}}$ = the uncertainty of the laboratory's measured result

Test results are considered satisfactory if $|E_{\text{normal}}| \leq 1$.

Under this scheme, laboratories are given complete instructions on how to make the measurement, if such instructions are required. In most cases however, the laboratory is instructed to measure the artifact and report the results as it would normally do for its customers. Laboratories are given time limits sufficient to allow for necessary stabilization time and measurement time plus a bit extra for preparation and shipping. This method is usually conducted in an informal fashion

meaning directions and instructions are usually handled by phone, fax, and/or emails and no formal report of pass/fail is published, although the laboratory is notified that it passed or failed the test.

Multiple participant sequential scheme: This method is used when more than one laboratory participates in a measurement of the same artifact(s). Much more planning is put into the design of the scheme by considering such factors as, the stability of the artifact and how that will be assured, the circulation pattern, the order of participation, criteria for participation, preparation and shipping, timing, instructions, reporting results, and how data will be analyzed. In general the conditions are the same as the direct test but with multiple participants. Satisfactory results are based on the normalized error equation described above, the possible difference being the determination of the reference value and uncertainty used for comparison purposes. Different methods are used to determine the reference value based on the results obtained and the stability of the artifact over the course of the test. In some cases a mean value between opening and closing measurements are used, in some cases individual reference values are assigned to each participant based on regression analyses, and in some cases other statistical tools are employed.

Each participant is required to submit results via email or fax upon completion of the measurements so that a quick comparison to preliminary reference values can be made before the artifact is shipped to the next location. If obvious problems are evident, corrective action is immediately implemented. As with the direct test, rarely are results formally published. All participants, however, do receive a report of pass/fail and full details of how that determination was made.

A good example of this kind of scheme would be a recent interlaboratory comparison of our mass laboratories. Working closely with the NIST Weights and Measures Division (WMD) a scheme was designed to test laboratories operating at the Echelon I level. The artifacts, and their opening reference values, were supplied by WMD. NVLAP, in consultation with WMD, designed the distribution scheme, prepared the instructions, and generally handled the logistics of the test. As data was returned it was reviewed by NVLAP and WMD and it became obvious that some of the smaller weights were unstable and, while still useful, the results were somewhat inconclusive. It also became obvious that two of the participants were not obtaining results consistent with other participants on weights that otherwise appeared very stable. For these laboratories, corrective action was implemented immediately.

Special tests: In some cases, especially where the laboratory's uncertainties are very near the level of

uncertainty offered by NIST, special tests may be required. For example, for accreditation in Resistance Thermometry for the calibration of ITS-90 Standard Platinum Resistance Thermometers (SPRT), depending on the level of uncertainty requested one of three different tests (or their equivalent) is required. For the highest (or smallest) level of uncertainty, the laboratory must participate in a full NIST SPRT Measurement Assurance Program (see Lab Bulletin LB-10-2004 for details at http://ts.nist.gov/ts/htdocs/210/214/docs/lb_10_04.pdf). This test is conducted solely by the NIST Process Measurements Division (PMD) and results are reported to both the participating laboratory and NVLAP. Another example of a special test is the currently running PT of laboratories accredited to calibrate thermocouples (TCs). The NIST PMD queried the laboratories to determine their specific capabilities (e.g., can they weld TC wire?) and designed a test accordingly. Sections of type K wire were prepared and shipped to each laboratory. Those with welding capability were asked to perform the weld and to measure the resulting TC. Those without welding capability were each sent a previously welded length of TC wire and were asked to measure the TC. Working with PMD, NVLAP provided the instructions and logistics. Upon completion of all measurements, PMD will analyze the data and report results to the participants and to NVLAP.

Other methods: In some cases NVLAP will accept the results obtained by a laboratory through participation in a proficiency test conducted by other than NVLAP. However, in order for NVLAP to consider these results, the laboratory must provide full disclosure of all aspects of the test. We require the laboratory to submit evidence of the artifact(s) used, the reference values and uncertainties, the path of traceability for these values, who conducted the test, how, how was data analyzed, and the results. We will then determine if the test was scientifically sound and acceptable, if it appropriately tested the laboratory, and generally if it was acceptable for use by NVLAP.

An example of this would be a laboratory's participation in state Weights and Measure Program regional ILCs. All data from these are filtered through and analyzed by WMD and results are made available to NVLAP.

NVLAP also accepts as a valid proficiency test certain measurement activities that take place between the NIST measurement services divisions and our accredited laboratories. For example, the method used to establish traceability for certain X-Ray beams and the like is for NIST to either send to the customer a chamber that has been irradiated by NIST to a predetermined level of radiation or to irradiate a customer owned chamber and then have the laboratory measure the dose and report their results to NIST. A comparison is made and results are reported. Since this process takes the form of the classic proficiency test, for NVLAP to conduct a separate (but equal) test would therefore be redundant. Similar situations can occur in other measurement disciplines. In all cases, the laboratory must grant permission to NIST to release data to NVLAP.

NVLAP generally accepts results from participation in a formal regional ILC such as those conducted by APLAC or EA. This assumes the ILC tested the laboratory appropriately. Again, this requires a full review before acceptance is considered.

The relevant requirements of ISO/IEC Guide 43-1:1997 are applied as appropriate to all NVLAP calibration laboratory proficiency testing schemes. All PTs are generally of one form or another of the measurement comparison schemes identified in clause 4.2 of Guide 43. PT schemes are planned and designed by appropriate experts and take into consideration the relevant requirements of section 5.1 as they apply to the particular test. All PTs are administered by NVLAP Calibration Laboratories Accreditation Program Managers, all of whom are metrologists, and all final decisions are made by this same management team. When necessary and appropriate, the guidance and assistance of relevant measurement experts, including additional expertise in statistics, is employed. Most of this additional expertise comes from the various NIST measurements services Divisions. More information regarding NVLAP's relationship with NIST experts may be found in NISTIR 6988, *NVLAP Partnerships with NIST Technical Units* (see <http://ts.nist.gov/ts/htdocs/210/214/docs/nistir6988.pdf>).