

**POLICY ON THE ACCEPTABILITY OF CALIBRATION SOURCES USED BY  
ACCREDITED TESTING LABORATORIES**

**1. Objectives**

- 1.1 To identify and provide means to identify acceptable calibration sources for Accredited, Applicant and Potential applicant *testing* laboratories maintaining or seeking accreditation in accordance with CAN-P-4C (ISO/IEC Guide 25) or CAN-P-4D (ISO/IEC 17025).
- 1.2 To provide PALCAN (SCC and Partner) assessors with the same information regarding the acceptability of calibration sources. These partners include:
  - a. The Canadian Association for Environmental Analytical Laboratories (CAEAL),
  - b. The National Research Council / Calibration Laboratory Assessment Service (NRC/CLAS)
  - c. Bureau de normalisation du Québec – Évaluation des laboratoires (BNQ-EL),
  - d. The Canadian Food Inspection Agency (CFIA),
  - e. The Canadian Pari-Mutual Agency (CPMA),
  - f. The Pest Management Regulatory Agency (PMRA), and
  - g. The Communications Security Establishment (CSE).

Note: (NRC/CLAS) has a listing of acceptable calibration sources for *calibration* laboratories.

1.3 To update the policy in order to:

- a. benefit from the various developments and mutual recognition arrangements now in place, and
- b. enable PALCAN and its partners to operate in accordance with an expanded geographical mandate.

**2. Scope and Application**

2.1 This program document establishes acceptable sources. It does not address the interpretation of CAN-P-4C (ISO/IEC Guide 25) or CAN-P-4D (ISO/IEC 17025).

2.2 When assessors evaluate applicant and accredited laboratories to determine the conformity of testing laboratories, the calibration services that are used by that laboratory will be examined with respect to their acceptability in

accordance with this policy. Evaluation of the laboratory under CAN-P-4C shall be against clause 9, and evaluation of the laboratory under CAN-P-4D shall be against clause 5.6.

### **3. Physical Measurement and Traceability**

3.1 Calibration services provided by the following sources are acceptable:

- a. The National Research Council of Canada (NRC);
- b. National metrology institutes (national measurement laboratories) with which the NRC has an Agreement of Equivalence (currently Australia, United Kingdom, and the United States of America);
- c. Calibration laboratories accredited under the SCC PALCAN program in cooperation with NRC/CLAS for accredited measurement capabilities. These laboratories are part of the Canadian Calibration Network (CCN).
- d. National metrology institutes signatory to the North American Metrology Cooperation (NORAMET) Memorandum of Arrangement, as listed in the CENAM and NIST calibration services listings;
- e. National metrology institutes signatory to the Comité international des poids et mesures (CIPM) Mutual Recognition Arrangement with calibration services listed in Appendix C of the MRA;
- f. Calibration laboratories accredited by accreditation systems signatory to regional Mutual/Multilateral Recognition Arrangements to which SCC is signatory (e.g., laboratories accredited by APLAC signatories or ILAC agreement signatories);
- g. Accredited Legal metrology laboratories in economies/countries where Accreditation Bodies (ABs) are signatories to regional Mutual/Multilateral Recognition Arrangements recognized by SCC and NRC.

3.2 Information access points for the foregoing are as follows:

- a. Institute for National Measurement Standards / National Research Council of Canada <http://www.nrc.ca/inms>
- b. Australia - CSIRO/National Metrology Laboratory <http://www.csiro.au>
- c. United States of America - National Institute for Standards and Technology [http://www.nist.gov/public\\_affairs/labs2.htm](http://www.nist.gov/public_affairs/labs2.htm)
- d. United Kingdom - National Physical Laboratory <http://www.npl.co.uk>

- e. Calibration Laboratory Assessment Service / National Research Council of Canada <http://www.nrc.ca/inms/clas/clase.html>
- f. Centro Nacional de Metrología (CENAM) <http://www.cenam.mx>
- g. Comité international des poids et mesures (CIPM) [Soon to be available through the BIPM <http://www.bipm.fr>]
- h. Other Bodies:
  - (i) North American Calibration Cooperation Accreditation Bodies - Accredited laboratories <http://www.scc.ca>
  - (ii) Asia Pacific Laboratory Accreditation Cooperation Accreditation Bodies - Accredited Laboratories with required capabilities <http://www.ianz.govt.nz/aplac/>
  - (iii) International Laboratory Accreditation Cooperation Directory- <http://www.ilac.org/>

#### **4 Chemical Measurement Traceability**

4.1 Chemical measurement traceability is a complex process that is developing fairly rapidly. Chemical laboratories offering services appropriate for traceability purposes are becoming accredited. When evaluating the traceability of analytical chemical measurements, assessors should include the following as acceptable elements in the chemical measurement traceability system:

- a. use of accredited chemical laboratories offering traceable services;
- b. use of certified reference materials supplied by a competent or recognised body;**
- c. use of primary or definitive measurement or test methods;
- d. use of fully documented and validated in-house test methods (including repeat testing by more than one laboratory, where applicable), adequate for the purpose

Note: Chemical measurement traceability is a developing area and SCC will issue a more definitive policy, when conditions permit.

## **5. Traceability from Other Calibration Sources**

5.1 When acceptable measurement traceability cannot be achieved in accordance with the **Physical** and **Chemical Traceability** requirements, laboratories must have a procedure(s) to ensure the competence of external calibration facilities to perform the work. In so doing they comply with the same criteria of competence required by SCC CAN-P-4D, clause 5.6

- a. The laboratory shall record and retain details of its investigation of the competence and compliance with CAN-P-4 of external calibration service providers and maintain a registry of external calibration sources.
- b. PALCAN will require that a documented evaluation of calibration sources be carried out to ensure that satisfactory answers are provided to the following questions:
  - (i) Were the persons carrying out calibration work at each link in the calibration chain appropriately trained, qualified and experienced?
  - (ii) Did they use appropriate calibration procedures?
  - (iii) Did they use appropriate reference standards and instruments that had been traceably calibrated by a competent agency within a reasonable time frame?
  - (iv) Did they properly evaluate all recognized systematic effects in the calibration process and all significant sources of measurement uncertainty to allow the laboratory to present an accurate statement of the total uncertainty in their measurement results or a statement of compliance with an identified metrological specification?
  - (v) Did they maintain satisfactory records of their own calibration work and, based on these records, did they produce an appropriate calibration report?
  - (vi) Do they implement an effective documented quality management system?
  - (vii) Were the documented environmental conditions of the laboratory or area in which calibration was performed adequate to support the calibration?
  - (viii) Does the calibration certificate provided indicate the traceability to national standards of measurement, and record the

measurement results and associated uncertainty of measurement, and/or a statement of compliance with an identified metrological specification?

## 6. Measurement Traceability by Other Means

- 6.1 Where measurement traceability in accordance with **3**, **4** or **5** is not possible and/or not relevant, other means for providing confidence in the results shall be applied, such as the following.
- a) Participation in a suitable program of interlaboratory comparisons or proficiency testing.
  - b) Use of certified reference materials provided by a competent supplier to give a reliable physical or chemical characterisation of a material.
  - c) Use of ratio or reciprocity-type measurements.
  - d) Use of mutual consent standards or methods that are clearly specified and mutually agreed upon by all parties concerned.
  - e) Use of internationally accepted standards in the field concerned.
  - f) Use of intrinsic or derived standards.

## 7. Definitions

Physical Measurement Traceability (VIM - Vocabulaire internationale de métrologie): Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons, all having stated uncertainties.

Chemical Measurement Traceability (For PALCAN and Partner assessments, this NORAMET definition applies): Property of the result of a measurement, either physical or chemical, or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons. Traceability only exists when metrological evidence, appropriate for the application, is collected on a continuing basis to document the traceability chain and quantify its associated measurement uncertainties.

Certified Reference Material (VIM): A reference material, accompanied by a certificate, one or more of whose property values are certified by a procedure which establishes traceability to an accurate realisation of the unit in which the property values are expressed, and for which each certified value is accompanied by an uncertainty at a stated level of confidence.

**NOTES**

1. Under the terms of the SCC-NRC Agreement of Collaboration, applicant and accredited calibration laboratories are subject to the requirements of the NRC/CLAS, PALCAN. Applicant and accredited calibration laboratories must demonstrate that the calibration of critical equipment, relevant to their scopes of calibration, is traceable to national standards. This included traceability to SI units of measurement (where such traceability is possible and relevant) or by reference to a natural constant, the value of which is known in terms of SI units and is recommended by the General Conference of Weights and Measures.
2. The North American Calibration Cooperation (NACC) committee promotes close collaboration among the nationally recognised calibration laboratory accreditation and assessment bodies in Canada, Mexico and the United States of America. The SCC and NRC represent Canada, the National Voluntary Laboratory Accreditation Program (NVLAP) and the National Institute of Standards and Technology (NIST), the United States of America, and the entidad mexicana de acreditación (ema) and Centro Nacional de Metrología (CENAM), the Republic of Mexico. NACC is the regional infrastructure responsible for recognising the equivalence of the region's calibration laboratory accreditation service(s) and for promoting the international acceptance of accreditation certificates issued in North America.
3. **Much work remains to be done at all levels before a high degree of confidence can be assigned to the traceability of routine analytical chemical measurements. The Comité international des poids et mesures (CIPM) has established a Consultative Committee on Amount of Substance. This group is very active in the realisation and implementation of a structured international chemical measurement system. Canada is represented on this Committee by NRC, as is the case with the physical measurement Consultative Committees.**
4. **Prior to any on-site assessment, testing laboratories are required to provide SCC and partners with copies of all calibration certificates and explanatory information on critical equipment used to support accredited testing capabilities that do not conform to "Physical Measurement Traceability" or "Chemical Measurement Traceability" criteria. "Critical" equipment used by testing laboratories is considered by SCC to be those items that contribute significantly to the measurement uncertainty of a test result, and which require calibration.**
5. This policy applies to initial calibration and re-calibration activities.

6. This policy has been harmonised with
  - a. CAN-P-4D (ISO/IEC 17025)
  - b. the latest Asia Pacific Laboratory Accreditation Cooperation (APLAC) draft policy on Traceability
  - c. the latest European co-operation for Accreditation (EA) draft policy on the Traceability of Measurements and
  - d. the latest available version of the International Laboratory Accreditation Cooperation (ILAC) "Resolution on Traceability".
  
7. APLAC and EA have agreed that calibrations performed by laboratories that only hold quality system registrations to ISO 9001 or 9002 are not acceptable evidence of traceability because they do not provide sufficient evidence of specific technical competence. This SCC policy is consistent with the APLAC and EA policy.

**CONTACTS ON MEASUREMENT TRACEABILITY**

SCC Contact:

Initial contact on measurement traceability matters should be made with SCC Senior Program Officer responsible for the applicant or accredited laboratory's file

Standards Council of Canada

45 O'Connor Street

Suite 1200

OTTAWA ON K1P 6N7

Tel: (613) 238-3222

Fax: (613) 995-4564

e-mail : [info@scc.ca](mailto:info@scc.ca), or the Internet address of the Senior Program Officer responsible for the applicant or accredited lab file

NRC/CLAS

Laboratories may contact CLAS personnel for advice on measurement and traceability, as necessary, to seek specialised interpretive advice from:

National Research Council of Canada  
Institute for National Measurement Standards  
Calibration Laboratory Assessment Service  
Montreal Rd, Building M-36  
OTTAWA ON K1A 0R6

Michel Portugais - Mechanical, dimensional, mass, temperature parameters:

Tel: (613) 990-5968

Fax: (613) 952-1394

Internet: [mike.portugais@nrc.ca](mailto:mike.portugais@nrc.ca)

Michael Ouellette - Electrical, time & frequency, optical radiation parameters:

Tel: (613) 993-9619

Fax: (613) 952-1394

Internet: [mike.ouellette@nrc.ca](mailto:mike.ouellette@nrc.ca)

**MEASUREMENT CAPABILITIES OF  
SCC/CLAS ACCREDITED CALIBRATION LABORATORIES**

The detailed list of measurements (Scope of Accreditation) for which a laboratory is accredited, is available on request from the laboratory.

A current list of the accredited calibration laboratories can be found on the NRC Institute for National Measurement Standards (INMS) Web Site <http://www.nrc.ca/inms/clas/sccacle.html>

These laboratories are members of the *Canadian Calibration Network*.

Under the terms of the SCC-NRC Agreement of Collaboration, CLAS is responsible for all aspects of assessment and surveillance of calibration laboratories. The SCC is responsible for the granting and maintenance of accreditation.

Newly accredited and withdrawn laboratories are published regularly on the SCC World Wide Web site.