



Bulletin

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 1 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Recognition of Test Data From Gas Meter Test Facilities

1.0 Purpose

The purpose of this bulletin is to describe the requirements and conditions that apply to organizations seeking to be recognized by Measurement Canada to provide test data for natural gas meters. Test data from recognized test facilities may be used either by Measurement Canada, for the purposes of meter calibration, pattern approval, and measurement dispute investigation, or used by an organization, within their specific scope of its Measurement Canada accreditation, for the purposes of verification, reverification and sealing of meters.

2.0 Scope

Any organization willing to comply with the requirements and conditions established in this bulletin may apply to have its test data recognized by Measurement Canada, for the purposes described above.

Organizations complying with additional specific requirements may also have data accepted by Measurement Canada's Engineering and Laboratory Services specifically for the purpose of generation of certificates of calibration for reference meters.

3.0 Limitations

This recognition does not delegate or confer any legal authority upon the operator of the test facility to certify measuring apparatus or to verify meters pursuant to the *Electricity and Gas Inspection Act* (EGIA).

For the purposes of satisfying the requirements of the EGIA, the use of data generated by recognized test facilities is limited to Measurement Canada and Accredited Meter Verifiers.

Recognition of test data from a particular institution is limited to the capacities listed for that particular institution.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 2 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

4.0 Conditions and Requirements

4.1 Capacities and Ranges to be Evaluated

Organizations seeking to be recognized to provide test data shall supply the information listed in Table 1: Summary of Required Information, of this bulletin.

Table 1 - Summary of Required Information

Item	Explanation and/or Example of the Requirement or Item
Name of Organization	Name, address, contact person, telephone number, and email address
Scope	Pipeline meters used for the trade of natural gas and/or Calibration of reference meters for measuring apparatus
Type of meter(s) under test (MUT)	Rotary, turbine, ultrasonic, vortex, coriolis (mass flow), and differential pressure producers
Flow Range(s)	Minimum to maximum – Natural Gas or an alternative medium
Pressure	Pressure range – Natural gas Atmospheric – Air
Temperature (test medium)	-5 °C to +25 °C (seasonal ambient) – Natural gas 20 °C ±5 °C (controlled) – Air
Size of Meters	Pipe size (diameter): NPS (or DN) Flange class: ANSI rating
Relative expanded uncertainty (k = 2, 95% level of confidence)	Include ranges of flow and run designation if applicable. Indicate medium and application. Example: Natural Gas – Pipeline meters Air – Reference meters
Medium for test	Pipeline meters – Natural Gas Reference meters – Air or alternative medium
Existing accreditations and reference numbers	ISO/IEC 17025, ISO 9001, CLAS Certificate number 12345678
Reference agency or NMI	Example: National Research Council (Canada) and/or Measurement Canada
List of documents and publications	List of documents and publications included with the submission supporting the application for Measurement Canada recognition.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 3 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

4.2 Processes and Limitations

Measurement Canada Engineering and Laboratory Services will perform a technical evaluation in order to assess the organization's ability to provide the test data to the values stated in Table 1.

The method employed is dependent on the location of the institute on the International Traceability Chain and current certifications or accreditations. Successful institutions will be listed in one of the four appendixes found in this bulletin.

Appendix A of this bulletin lists recognized National Measurement Institutes (NMIs) which are signatory to the Bureau International des Poids et Mesures (BIPM) Mutual recognition of national measurement standards and of calibration and measurement certificates issued by national metrology institutes in Paris, 14 October 1999 and have their Calibration and Measurement Capabilities (CMC) listed in Appendix C of that agreement and evaluated by participating in an International Key Comparison (KC). As the National Research Council of Canada (NRC) is signatory to that document and actively participates in the comparisons, no additional review outside of that done during the KC is conducted. By way of inclusion into the BIPM recognition document, these institutions are deemed to meet the requirements of this bulletin.

Appendix B of this bulletin includes Laboratories and Test Facilities which have been designated by a country whose National Measurement Institute is signatory to the BIPM Mutual recognition of national measurement Standards and of calibration and measurement certificates issued by national metrology institutes and have their Calibration and Measurement Capabilities (CMC) listed in Appendix C of that agreement. These test facilities are supported, but not owned by the designating country. As stated above, the NRC is signatory to the agreement, so no additional in-depth scrutiny is conducted. By way of inclusion into the BIPM recognition document, these institutions are deemed to meet the requirements of this bulletin.

Appendix C of this bulletin lists Laboratories and Test Facilities which have been accredited to ISO 17025 by an institution which is recognized by the International Laboratory Accreditation Cooperation (ILAC) to which the Standards Council of Canada (SCC) is a signatory member. These also include laboratories which are accredited under the Calibration Laboratory Assessment Service (CLAS) program in Canada and National Voluntary Laboratory Accreditation (NVLAP) in the United States of America. A documentation review and on-site technical review is conducted by Measurement Canada to ensure compliance with this bulletin.

Appendix D of this bulletin lists laboratories or test facilities which have been accredited or recognized under some other existing accreditation program. In these instances, in-depth technical scrutiny is conducted by Measurement Canada to ensure compliance with this bulletin.

Appendix E of this bulletin lists the laboratories and test facilities which are currently under evaluation by Measurement Canada for initial recognition, or which are currently under evaluation for renewal of their existing recognition. Unless otherwise indicated, Measurement Canada will continue to accept data from facilities listed in Appendix E.

4.3 Evaluation Criteria

Measurement Canada's evaluation process will focus on the major items listed in subsections 4.3.1 to 4.3.7 of this bulletin. It is therefore recommended that the documentation in the submission be organized around these items. Any technical documentation relating to sections 5.3 to 5.10 of ISO/IEC 17025:1999 General Requirements for the Competence of Testing and Calibration Laboratories, with reference to the related section of that standard, shall be provided.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 4 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

4.3.1 Traceability

The organization shall submit sufficient information to demonstrate traceability to a relevant national standard.

A certificate of accreditation to ISO/IEC 17025 by an accrediting body recognized by the National Research Council (NRC) or the Canadian Standards Council (SCC) will be deemed as proof of compliance.

4.3.2 Measurement Uncertainty

The organization shall state its overall measurement uncertainty and the methods used in its determination. The method used shall be as prescribed in the ISO Guide for the Expression of Uncertainty (GUM).

For the purposes of trade meter calibration, the expanded uncertainty (U) shall be less than 0.33% of the applicable device tolerance at the 95% confidence interval in order for the facility to be recognized by Measurement Canada. If recognition is desired for the calibration of reference meters as well, then a further reduced uncertainty value will be expected. Note that no indication of the value of uncertainty claimed by any organization will be provided in the Appendices of this bulletin.

4.3.3 Proficiency Testing and Monitoring of Results

In order to assess the proficiency of the organization and to ensure continued compliance with the requirements of this bulletin, the organization shall utilize methods such as:

- (a) participation in intercomparisons of meter calibrations with one or more of the other Laboratories or Test Facilities which have been recognized by Measurement Canada;
- (b) monitoring the performance of reference standards;
- (c) use of check or monitoring standards.

The results of these monitoring processes shall be provided to Measurement Canada upon request.

Measurement Canada may require Proficiency Testing to assess Laboratories/Test Facilities.

4.3.4 Status Indicators

A recognized organization shall affix a status indicator to meters which have been calibrated and are to be presented to Measurement Canada for verification or reverification or which are the subject of a dispute. In instances where the meter can be sealed, the organization shall affix a seal in order to prevent unauthorized access to the meter's adjustments. The seal shall identify the organization which applied it.

Meters tested or calibrated at a recognized test facility must be verified and sealed by Measurement Canada, or by an Accredited Meter Verifier, prior to being placed into service.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 5 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

4.3.5 Test Reports

Effective upon issuance of this bulletin, a recognized organization shall utilize a test report format that includes the following information:

- (a) a title (e.g. "Test Report");
- (b) name and address of the test facility and location where the tests were carried out, if different from the address of the laboratory or recognized organization;
- (c) unique identification of the test report (such as a serial number), and on each page an identification in order to ensure that the page is recognized as part of the test report;
- (d) the name and address of the organization that owns the meter and that has requested the testing;
- (e) a description and identification of the meter that was tested, including the serial numbers of all controlled components, where required;
- (f) the date(s) that the testing took place;
- (g) test or calibration results with the units of measurement, including all details necessary to demonstrate that Measurement Canada's metrological performance requirements have been assessed;
- (h) identification of the test procedure(s) followed and any installed meter accessories or influencing components, as may be applicable;
- (i) the stated uncertainty (at the 95% confidence interval) associated with the test results. Indication of any factors not included in the estimate of uncertainty.

4.3.6 Design and Construction of Test Equipment

The organization shall submit information related to the design and construction of the test equipment, process and instrumentation drawings, and instrumentation specifications for all the equipment used to obtain meter test results.

4.3.7 Technical Procedures

The organization shall submit copies of the test procedures used to calibrate meters. Note that a certificate of accreditation to ISO/IEC 17025 by an accrediting body recognized by the National Research Council or Canadian Standards Council will be deemed as proof of compliance.

5.0 Recognition

Measurement Canada will monitor the recognized organization's performance and will determine whether or not to continue recognizing the test facility based upon the results of the review. Recognized organizations will be re-evaluated every four (4) years. Measurement Canada may perform on-site audits as part of the evaluation and monitoring of recognized test facilities.

The suitability of Measurement Canada's recognition process and requirements will be periodically evaluated for effectiveness and may be modified or discontinued as necessary. Recognized organizations must be prepared to update processes and procedures to meet any changes in Measurement Canada requirements.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 6 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Requirements may be technical or administrative. Organizations may, in future, be required to fulfill some quality system requirements as Measurement Canada adjusts its recognition program.

5.1 Recognized Organizations

A detailed listing of the organizations that have been recognized by Measurement Canada is provided in the appendices of this bulletin.

6.0 Revisions

The effective date of the original version of this bulletin was 1999-12-15.

6.1 The purpose of Revision 1 (2000-07-14) was to add recognition of the TransCanada Calibrations Ltd. (TCC) test facility.

6.2 The purpose of Revision 2 (2001-12-07) was to add recognition of the TransCanada Pipelines Ltd. (TCPL) test facility, and to change "Equimeter Inc." to "Invensys Energy Metering".

6.3 The purpose of Revision 3 (2006-08-03) was to reformat the bulletin, add information relating to the assessment process, update and expand the information concerning previously recognized test facilities, lapse the recognition of the TransCanada Pipelines Ltd. (TCPL) test facility, and add recognition of the Physikalisch-Technische Bundesanstalt (PTB) test facility, Terasen Gas Inc., test facility and the Dresser, Inc. test facility.

6.4 The purpose of Revision 4 is to remove the former restriction on the use of test data (from recognized test facilities) by organizations accredited by Measurement Canada, and to correct typographical errors in the rated maximum flowrate shown for various test facilities.

6.5 The purpose of Revision 5 (2011-07-10) is to recognize name changes for the NMI and Terasen Gas, to make minor editorials in claimed laboratory capabilities and to clarify the purpose of the bulletin as it relates to accredited meter verifiers.

7.0 Additional Information

For additional information or related policy inquiries, please contact the Senior Program Officer responsible for gas measurement. For technical inquiries, please contact the undersigned. For more information regarding Measurement Canada and its programs, visit our Web site located at <http://mc.ic.gc.ca>.

Patrick (Pat) J. Hardock, P.Eng.
Senior Engineer - Gas Measurement

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 7 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Appendix A - Recognized National Measurement Institutes

Name	VSL Dutch Metrology Institute, Nederlands Meetinstituut (NMI) Delft, the Netherlands
Scope	Calibration of reference meters for measuring apparatus
Type of MUT(s)	Rotary, turbine, ultrasonic, vortex, and coriolis
Flow Range(s)	15(x10 ⁻³) to 65 m ³ /h – Bell Prover 1 0.1 to 40.0 m ³ /h – Bell Prover 3 20 to 1200.0 m ³ /h – Large Test Bench
Pressure	100 kPa
Temperature	20 °C ±5 °C (controlled)
Size of Meters	Pipe size: NPS 3/8" to 2" (DN 10 to 50) NPS 3/8" to 4" (DN 10 to 100) NPS 3" to 24" (DN 80 to 600)
Medium for Tests	Air and Natural Gas
Existing Accreditations	ISO/IEC 17025:1999
Reference Agency or NMI	VSL Dutch Metrology Institute, (formally the Nederlands Meetinstituut (NMI)). NMI Service Identifier NE03. BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Name	Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany
Scope	Calibration of reference meters for measuring apparatus
Type of MUT (s)	Rotary, turbine, ultrasonic, vortex, coriolis, LFE, and critical nozzles
Flow Range(s)	1 to 560.0 m ³ /h (0.6 to 560.0 cfm)
Pressure	Atmospheric
Temperature	20 °C ±5 °C (ambient)
Size of Meters	Pipe size: NPS 1/2" to 4" (DN 10 to 100)
Medium for Tests	Air
Existing Accreditations	PTB code DE34 and DE35
Reference agency or NMI	Physikalisch-Technische Bundesanstalt (PTB), Germany. BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 8 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Appendix B - BIPM Recognized Laboratories/Test Facilities

Name	TransCanada Calibrations (TCC), Île-des-Chênes, Manitoba, Canada
Scope	Meters used for the trade of natural gas
Type of MUT (s)	Rotary, turbine, ultrasonic, vortex, and coriolis
Flow Range(s)	40 to 55000 m ³ /h (68 to 32370 cfm)
Pressure	6.3 ±0.4 MPa
Temperature	Partly controlled
Size of Meters	Pipe size: NPS 3" to NPS 30" Flange class: ANSI 600
Medium for Tests	Natural Gas
Existing Accreditations	ISO/IEC 17025:1999, NRC CLAS certificate number 2005-04, ISO 9001
Reference Agency or NMI	National Research Council of Canada (NRC). Measurements traceable to VSL Dutch Metrology Institute, (formally the Nederlands Meetinstituut (NMI)) BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Name	Gasunie Research, Groningen, the Netherlands
Scope	Meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Turbine, ultrasonic, vortex, and coriolis
Flow Range(s)	45 to 3600.0 m ³ /h (25 to 2100.0 cfm)
Pressure	0.9 to 1.5 MPa
Temperature	Ambient
Size of Meters	Pipe size: NPS 2" to 24" (DN 50 to 600) Flange class: ANSI 150, 300, 600
Medium for Tests	Natural Gas
Existing Accreditations	ISO/IEC 17025
Reference Agency or NMI	VSL Dutch Metrology Institute, (formally the Nederlands Meetinstituut (NMI)) NMI Service Identifier NE06. BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 9 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Name	Gasunie Research, Utrecht, the Netherlands
Scope	Meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Rotary, turbine, ultrasonic, vortex, and coriolis
Flow Range(s)	45 to 8000.0 m ³ /h (25 to 4700.0 cfm)
Pressure	0.9 MPa
Temperature	Ambient
Size of Meters	Pipe size: NPS 2" to 24" (DN 50 to 600) Flange class: ANSI 150, 300, 600
Medium for Tests	High Pressure Natural Gas
Existing Accreditations	ISO/IEC 17025:1999
Reference Agency or NMI	VSL Dutch Metrology Institute, (formally the Nederlands Meetinstituut (NMI)) NMI Service Identifier NE07. BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Name	Gasunie Research, Bergum, the Netherlands
Scope	Meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Rotary, turbine, ultrasonic, vortex, and coriolis
Flow Range(s)	45 to 13000.0 m ³ /h (26 to 7700.0 cfm)
Pressure	0.9 to 51 MPa
Temperature	Ambient
Size of Meters	Pipe size: NPS 2" to 24" (DN 50 to 600) Flange class: ANSI 150, 300, 600
Medium for Tests	High Pressure Natural Gas
Existing Accreditations	ISO/IEC 17025:1999
Reference Agency or NMI	VSL Dutch Metrology Institute, (formally the Nederlands Meetinstituut (NMI)) NMI Service Identifier NE08. BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 10 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Name	Gasunie Research, Westerbork, the Netherlands
Scope	Meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Turbine, ultrasonic, vortex, and coriolis
Flow Range(s)	600.0 to 24000.0 m ³ /h (350.0 to 14100.0 cfm)
Pressure	6 MPa
Temperature	Ambient
Size of Meters	Pipe size: NPS 8" to NPS 36" (DN 200 to 900) Flange class: ANSI 600
Medium for Tests	High Pressure Natural Gas
Existing Accreditations	ISO/IEC 17025:1999
Reference Agency or NMI	Nederlands Meetinstituut (NMI). NMI Service Identifier NE09. BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Name	PIGSAR facility (Ruhrgas), Dorsten, Germany
Scope	Meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Turbine, ultrasonic, vortex, and coriolis
Flow Range(s)	8 to 6500.0 m ³ /h (5 to 3800.0 cfm)
Pressure	1.5 to 5.0 MPa
Temperature	Partly controlled ambient
Size of Meters	Pipe size: NPS 3" to 16" (DN 80 to 400) Flange class: ANSI 600
Medium for Tests	Natural Gas
Existing Accreditations	ISO/IEC 17025, PTB code DE38
Reference Agency or NMI	Physikalisch-Technische Bundesanstalt (PTB), Germany. BIPM Key Comparison Database, Appendix C – Calibration and Measurement Capabilities, Mass and Related Quantities.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 11 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Appendix C - Other Recognized Laboratories/Test Facilities

Name	Colorado Engineering Experiment Station Inc. (CEESI), Nunn, Colorado, USA
Scope	Meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Rotary, turbine, ultrasonic, vortex, coriolis, and differential pressure producers
Flow Range(s)	Up to 200 lbs/sec (primary, sonic nozzle)
Pressure	Atmospheric to 2200 psia (air)
Temperature	20 °C ±5 °C (controlled)
Size of Meters	Pipe size: NPS ½" to 24" Flange class: ANSI 150, 300, 600
Medium for Tests	Air and natural gas
Existing Accreditations	ISO/IEC 17025, NVLAP Code 200377-0 ISO 9001
Reference Agency or NMI	National Institute of Standards and Technology (NIST), USA. National Voluntary Laboratory Accreditation Program (NVLAP), USA.

Name	Colorado Engineering Experiment Station Inc. (CEESI), Ventura, Iowa, USA
Scope	Meters used for the trade of natural gas
Type of MUT(s)	Turbine, ultrasonic, coriolis, and V-cone
Flow Range(s)	230 to 25000 acfm (390 to 42000 m ³ /h)
Pressure	1050 psia
Temperature	-5 °C to +25 °C (seasonal ambient)
Size of Meters	Pipe size: NPS 4" to 36" Flange class: ANSI 150, 300, 600
Medium for Tests	Natural Gas
Existing Accreditations	ISO/IEC 17025, NVLAP Code 200377-0
Reference Agency or NMI	National Institute of Standards and Technology (NIST), USA. National Voluntary Laboratory Accreditation Program (NVLAP), USA.

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 12 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Appendix D - Laboratories/Test Facilities which have been Accredited or Recognized under some other existing Accreditation Program

Name	Fortis BC Measurement, Penticton, B.C., Canada Triple Point Turbine Meter Calibration Facility
Scope	Pipeline meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Turbine meters
Flow Range(s)	4-inch, 8-inch, and 12-inch reference meters: 50 to 6500 m ³ /h (1,765 to 230,000 acfh) 2-inch or 3-inch reference meters: 20 to 280 m ³ /h (700 to 10,000 acfh) Reynolds numbers: 100,000 to 8,000,000
Pressure	2-inch to 8-inch: 0 to 1,655 kPa-gauge (0 to 240 psig) 12-inch: 0 to 965 kPa-gauge (0 to 140 psig)
Temperature	4.5 °C to 40 °C (40 °F to 104 °F) - controlled
Size of Meters	Pipe size: NPS 2" to 12" (DN 50 to 300) Flange class: ANSI 150, 300, 600
Medium for Tests	Carbon Dioxide Gas (CO ₂)
Existing Accreditations	Measurement Canada S-A-01, certificate number A-043
Reference Agency or NMI	VSL Dutch Metrology Institute, (formally the Nederlands Meetinstituut (NMI))

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 13 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Name	Dresser, Inc., Houston, Texas, USA
Scope	Calibration of reference meters for measuring apparatus
Type of MUT(s)	Rotary Reference meters used in Dresser Model 5 transfer provers
Flow Range(s)	Bell Provers: 35 to 6600 ft ³ /h Piston Prover: 2300 to 87,250 ft ³ /h Master Meter: 60 to 2300 ft ³ /h
Pressure	Atmospheric – Air (vacuum transfer proving lines)
Temperature	21°C ±1°C (laboratory ambient influence)
Size of Meters	Bell Provers: Pipe size: NPS 1.5" to 4" Flange Class: ANSI 150, 300 Piston Prover: Pipe size: 4" to 12" Flange Class: ANSI 150, 300
Medium for Tests	Air – Bell Prover (50 ft ³ , 20 ft ³ , and 10 ft ³) Air – Piston Prover (1200 ft ³)
Existing Accreditations	Nederlands Meetinstituut (NMI) traceable, project number 215038 (2003)
Reference Agency or NMI	Nederlands Meetinstituut (NMI) - Nmi Certin B.V. (27233418)

Category: GAS	Bulletin: G-16 (rev. 5)	Page: 14 of 14
Document(s):	Issue Date: 2011-09-20	Effective Date: 2011-09-20
	Supersedes: G-16 (rev. 4); CEG-92-03	

Appendix E - Laboratories/Test Facilities Pending Evaluation for Recognition by Measurement Canada

Name	Sensus Metering Systems Inc., DuBois, PA, USA
Scope	Pipeline meters used for the trade of natural gas, and, Calibration of reference meters for measuring apparatus
Type of MUT(s)	Turbine
Flow Range(s)	10 m ³ /h (or 0.02Q _{max} of reference meter) to 1700 m ³ /h – Air (recirculating loop) 28 to 107000 Nm ³ /h – Air (recirculating loop) 0.5 to 4000 Nm ³ /h – Air (charging into 500 ft ³ bell) (or discharging out of 500 ft ³ bell) 10 m ³ /h (or 0.02Q _{max} of reference meter) to 6500 m ³ /h – Air (vacuum lines)
Pressure	0.17 to 6.2 MPa – Air (recirculating loop) 0.07 to 1.0 MPa – Air (charging into 500 ft ³ bell) Atmospheric – Air (discharging out of 500 ft ³ bell) Atmospheric – Air (vacuum transfer proving lines)
Temperature	27 °C to 49 °C (seasonal ambient influence) – Air (recirculating loop) 22.5 °C ±1.5 °C (controlled) – Air (bell and vacuum lines)
Size of Meters	Pipe size: NPS 2" to 12" Flange class: ANSI 150, 300, 600
Medium for Test	Air
Existing Accreditations	ISO 9001:2000, certification number 62851-5 ANSI/NCSL Z540-1 calibration compliance
Reference Agency or NMI	NIST via certified PI tape used for bell strapping and comparison testing of 4" turbine meter "artifact"