Bulletin

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Measurement Canada policy for the reporting of meter defects and nonconformities by organizations accredited under the *Electricity and Gas Inspection Act*

1.0 Purpose

The purpose of this bulletin is to establish the criteria for identifying reportable defects and nonconformities, as well as to establish the process for reporting identified defect issues to Measurement Canada.

2.0 Scope

This policy is applicable to all organizations that are accredited to verify electricity and/or gas meters, including installations, which form part of their accreditation program pursuant to the *Electricity and Gas Inspection Act*.

3.0 References

S-A-01:2002, *Criteria for the Accreditation of Organizations to Perform Inspections pursuant to the Electricity and Gas Inspection Act and the Weights and Measures Act*.

Electricity and Gas Inspection Act (R.S. 1985, c. E-4).

4.0 Background

Measurement Canada inspectors are responsible for reporting nonconforming meters discovered during their regular inspection activities such as initial verification/reverification testing, on-site installation inspections and dispute investigations. Typically, Measurement Canada reviews these reports to monitor and address problems related to measurement accuracy outside legal tolerance, meter functionality and conformance of the meter to its original pattern approval.

Today, almost all meter verifications are being performed by accredited organizations. Accredited organizations are required to investigate and document nonconforming meters according to their Measurement Canada accredited quality system, and have their investigation available for review, however there was no requirement to report those findings to Measurement Canada. Due to the potential time delay in receiving and evaluating information on nonconforming meters there is concern that Measurement Canada's ability to effectively monitor the performance and compliance of a meter to its original pattern approval is seriously compromised. The absence of a strategy to inform Measurement Canada of cases where specific problems are detected by an organization may result in perpetuating the existence of the same problems in meters owned or used by other organizations. This could have a significant impact on the accuracy of measurement and equity in trade.

5.0 Terminology

For the purposes of this bulletin the following terminology shall apply:

Defect
A departure of a quality characteristic from its intended level or state that occurs with a severity sufficient to cause a meter not to satisfy normal usage requirements.

Nonconformity
A departure of a quality characteristic from its intended level or state that occurs with a severity sufficient to cause a meter not to meet a specification requirement.

6.0 Policy

Meter verifiers accredited pursuant to S-A-01 shall record and report to Measurement Canada, certain meter nonconformities identified or discovered during the course of inspection activities. Criteria for determining the types of nonconformities to be reported are established in this bulletin.

7.0 Accredited meter verifier responsibilities

7.1 Investigate, evaluate and document all detected nonconformities and defects as required pursuant to S-A-01.

7.2 Visually examine all meters which are inspected for the purposes of verification or reverification to ascertain conformance with the pattern approval granted for the meter type/make/model.

8.0 Nonconformity reporting criteria

8.1 General

The types of nonconformities targeted are those whose root cause is suspected or determined to be a trade measurement problem or possible trade measurement problem related to **design or production defects**, or to failure of mechanical or electronic components (including programming) of the meter. Measurement Canada is primarily concerned about trade measurement problems or potential trade measurement problems which may have an adverse impact on the populations of those same or similar meter models within Canada. The goal of defect reporting is to identify such problems in order to determine and implement the most appropriate level of corrective action as soon as possible to minimize the impact on trade measurement. For the purposes of reporting, any defect is by virtue of definition also a nonconformity. If a device cannot meet normal intended usage requirements then it automatically does not meet specified requirements.

8.2 Report the particulars of the investigation and evaluation to Measurement Canada when:

1) It is established that the nonconformity or defect does compromise, or may potentially compromise measurement accuracy, meter integrity, or appropriate usage of the meter; and
2) It is determined that the cause of the nonconformity or defect may potentially impact additional meters of the same (or similar), makes, types, or models; or may potentially impact additional installations of the same (or similar) types.

8.3 Reporting is not required for nonconformities or defects when:

1) The cause of the defect is determined to have occurred as a result of an isolated incident such as mishandling, extreme environmental occurrences, or catastrophic damage.
2) The nonconformity is the result of calibration errors not caused by a malfunction or defect.
3) The nonconformity is the result of errors due to the programming of incorrect data in user-programmable parameters or calibration.
4) The nonconformity pertaining to an electricity or gas metering installation is determined to be an isolated occurrence due to human error, and not as a result of a wider systemic problem.

8.4 Document and report to Measurement Canada any unauthorized deviations from what is established in the Notice of Approval (NOA) or Modification Acceptance Letter (MAL). Such changes could include, but are not limited to the following:

1) Modification of design or construction
2) Use of construction materials which differ from those identified in the NOA or MAL.
3) Addition, omission or modification of internal components identified in the NOA or MAL.

9.0 Defect Characteristics

The following conditions exhibited by a meter characterize the meter as defective:

1) Components whose structural integrity has been compromised due to loose connection points, incorrect meshing of components, binding of components, or complete disconnection of an intended structural bond.
2) Components of a meter which are not functioning in their intended manner.
3) Moving components which have incurred premature wear that could affect the ability of the meter to comply with usage or specified requirements.
4) Premature deterioration of material used in the construction of a meter and/or its components.
5) Malfunctioning of software or electronic components.

10.0 Reporting Procedures

All defects and nonconformities which satisfy the reporting criteria established in section 8.0, shall be reported to Measurement Canada as described below:

1) The accredited meter verifier that discovers and evaluates any such defect or non-conformity is responsible to document, as per the organization's quality system, and report all pertinent aspects of the evaluation.
2) The accredited meter verifier shall contact the local Measurement Canada district office which is responsible for the area where they are located and provide the report in writing, (electronic or hard-copy). The report can be in the format of the internal nonconformance system of the accredited meter verifier.
3) The report must be submitted to Measurement Canada as soon as practicably possible, within a maximum of 20 working days.

Note: Appendix A provides a guideline for the type of information to be reported to Measurement Canada in order to evaluate the problem.

11.0 Evaluation

11.1 The local Measurement Canada district office shall acknowledge receipt of the report with the originator and review the report in consultation with the originator to ensure completeness of information provided. Once satisfied that all necessary information is documented, the district office shall forward the report to the regional specialist (electricity or gas) and the regional accreditation coordinator. The specialist shall evaluate the report (further consultation may be required) to determine if there is potential for impact outside the region.

11.2 If potential for impact outside the region exists, the specialist shall forward the report, as well as recommendations for corrective and preventive actions, to Program Development Directorate (PDD) with a copy to Innovative Services Directorate (ISD). PDD will review the report and recommendations, and will issue a Technical Alert (TA) for internal distribution within Measurement Canada as necessary. When a TA is issued the specialist will be responsible to notify the originator that a TA was issued internally to Measurement Canada staff.

11.3 PDD will evaluate the report to determine the potential extent and severity of the problem. The evaluation will include consultation with the regional office as well as the meter manufacturer when applicable. Evidence will be gathered on a case-by-case basis to demonstrate if the meter defect is in fact chronic and does affect the general population of the same (or similar) makes, types, or models.

11.4 Measurement Canada will inform the originator of the evaluation results.

Note: Appendix B provides a guideline for the type of information that may be requested by Measurement Canada in order to address and resolve the problem.

12.0 Corrective and Preventive Actions

12.1 If no potential for impact outside the region exists, the specialist will address the situation appropriately within the district/region, in consultation with the Accreditation Coordinator and the district office(s). The district office will follow up on any corrective and preventive actions established.

12.2 In cases where the situation is national in scope, PDD will consult with, and request an action plan and/or communication plan from the responsible party in order to identify the steps required to correct the extent and severity of the problem. ISD will also be consulted during this process as there is potential for impact on accredited meter verifiers.

12.3 The action/communication plan will be evaluated by PDD in consultation with the applicable region(s), to ensure it is effective in addressing the problem and complies with statutory requirements established pursuant to the *Electricity and Gas Inspection Act*.

12.4 Corrective and preventive actions may include changes to inspection procedures, suspension of accreditation, recall of meters from service, or revocation of approval.

12.5 Regional offices will co-ordinate any follow up on corrective and preventive actions established, through the appropriate district offices.

Appendix A

Problem severity evaluation guidelines for information to be reported to Measurement Canada

1) A written explanation of the root cause of the problem.
2) Identification of the resulting impact on meter accuracy, integrity or safety.
3) Extent of the problem as evidenced by the reporting organization and its potential to be evidenced in other meters or other meter models.
4) Identification of any corrective actions taken prior to submission of report to Measurement Canada.

Appendix B

Problem resolution guidelines for information required by Measurement Canada

1) A written explanation of the root cause of the problem.
2) Extent of the problem and its potential to be evidenced in other meter models.
3) Update on the corrective action(s) taken by the responsible party.
4) Update on the number of meters produced with the subject defect and the time period of their production, including the serial numbers if available.
5) Names of the contractors and meter owners who have purchased meters which may potentially exhibit the subject defect during the applicable time period or according to the serial numbers of the meters.
6) List of contractors and meter owners that have been notified of the potential defect by the responsible party.
7) A copy of correspondence sent to the affected contractors and meter owners.
8) Final reports or studies relating to the subject defect.