

CANADIAN GAS ASSOCIATION

Guidance for Navigating the Measurement
Canada Gas Type Approval Process



CANADIAN GAS ASSOCIATION
ASSOCIATION CANADIENNE DU GAZ

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EXECUTIVE SUMMARY

The Canadian Gas Association (CGA), on behalf of its operator and manufacturer member companies and in co-operation with Measurement Canada, has undertaken a review of the process of acquiring the authorization to use a measuring instrument in trade. The aim of this review was to identify opportunities for the applicant to streamline the process as much as possible.

These guidelines provide a road map through the gas type approval process and highlight areas where the applicant can realize efficiencies. No suggestions are made relative to improvements on the part of Measurement Canada and it should be noted that the type approval process through other labs such as the electricity lab may follow a slightly different trajectory.

These guidelines are designed to support the applicant along the full lifecycle of the application process, from determining whether a type approval is required, to submitting the application, navigating the process, and finally reviewing the draft Notice of Approval and ensuring all logistics are taken care of post-evaluation. The four stages identified in these guidelines are:

1. Before submitting an application
2. Submitting the application
3. After submitting an application
4. Post evaluation

A flow-chart is included which provides a visual of the gas type approval process. This flow-chart, as with the entire document, was developed in consultation with Measurement Canada and will be updated from time-to-time.

ABOUT THE CANADIAN GAS ASSOCIATION

CGA is the voice of Canada's natural gas delivery industry and its members are distribution companies, transmission companies, equipment manufacturers and other service providers. Natural gas has a central place in Canada's energy mix meeting 34 per cent of the country's energy needs. Today 7 million customers representing well over 20 million Canadians rely on affordable, clean natural gas for heat and power in homes, businesses, hospitals and schools.

For more information on natural gas or the natural gas delivery industry in Canada, please visit www.cga.ca.

Project Support

This project has been supported by the CGA Standing Committee on Operations and Safety (SCOS) and the CGA Operations Suppliers Executive Committee (OSEC). The SCOS consists of Canadian natural gas distribution and transmission companies across Canada, and OSEC consists of suppliers, manufacturers and contractors to the Canadian natural gas industry.

CGA Suppliers and Manufacturers

For further information regarding CGA's supplier and manufacturer base, please visit us at www.cga.ca/suppliers-manufacturers.

Membership

To learn more about membership benefits or to become a member, please contact us at info@cga.ca or at (613) 748-0057.

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INTRODUCTION

In Canada, the legal authorization needed to use a measuring device for trade measurement is the responsibility of the Federal Government. To do so, one must submit a sample for scrutiny by Measurement Canada's Approvals Laboratory. With an understanding of the statutes and laws, knowledge of the process and an appreciation for its intricacies, the applicant can minimize the time and expense needed to complete the process. The process can differ significantly depending on the type of measuring instrument being submitted. These guidelines therefore do not attempt to address every case in detail but provide a general overview.

Note that the approval process and its supporting documentation occasionally undergoes review by Measurement Canada (MC) and is therefore subject to change.

Notice of Approval

In order for a measuring device to be permitted for use in measurement-based trade in Canada, a **Notice of Approval** must be issued from MC. Notices of Approval (NOA) are issued for devices that measure electricity, natural gas, mass and volume. A device goes through a type approval process, which if successful, will result in the issuance of an NOA. The process requires the submission of an application and the submission of the device through a test scenario designed to ensure compliance with all applicable legal requirements. This type approval process can be complex and can present a number of challenges.

Improving Queue Times

Over the past number of years, there has been a lot of discussion about the amount of time required for a device to make it through the type approval process from beginning to end. MC is pursuing various avenues for improving the situation, including adding laboratory staff and developing performance metrics and methodologies for tracking and improving the process from their point of view.

The applicant also influences the overall type approval process timing for better or for worse, knowingly or unknowingly. There is a degree of homework required before submitting an application. The completeness of the application also has an impact, and once the application has been submitted, there are a number of factors that can influence the overall timing.

Scope

This document provides help exclusively from the point of view of the applicant. There is no suggestion/guidance contained in this document directed towards Measurement Canada.

These guidelines have been written to provide support to applicants to the gas type approval process. While other labs (electricity, mass and volume, etc.) may have a similar type approval process, there are differences which, if applied to another lab, may render guidelines in this document misleading. Therefore, these guidelines should only be used in relating to the Gas Approvals Lab.

Role of the Applicant

Both MC and the applicant have specific roles to play throughout the type approval process. They both influence the overall timing in a positive or negative way. This document will focus only on the role of the applicant, no suggestions or recommendations will be made with regard to how MC might improve type approval process timelines.

There is much that an applicant can do to set their application up for success. In fact, although there are many complaints that have been made regarding the type approval turnaround time, not all applicants experience the same degree of challenges. The implication is that there is a certain, potentially significant degree of control the applicant has over the application turnaround time.

Structure of the Guidelines

These guidelines highlight the typical stages in the process in an approval of type application and provide suggestions and “Tips” for the applicant to consider at each stage in the process.

The stages are:

1. Before submitting an application
2. Submitting the application
3. After submitting an application
4. Post evaluation

In each stage we propose guidelines based on the type of device being submitted for type approval.

Review Cycle for the Guidelines

These guidelines have been designed to align with Measurement Canada’s existing type approval process. If and when the MC process changes, these guidelines will be updated accordingly. We emphasize therefore that MC will always remain as the authority on the process applicants are to follow.

BEFORE SUBMITTING AN APPLICATION

Consider Whether a Type Approval is Required

MC provides approval services for specific devices intended to be used in trade measurement and in the Canadian marketplace. Devices not intended to be used in trade measurement as described by the [Electricity and Gas Inspection Act](#) or devices not intended for trade use in Canada, do not require approval.

It is understood that a Canadian NOA does hold value outside its jurisdiction, however such applications reduce the available resources for the approval of devices which are intended to be used within its boundaries and are therefore discouraged.

***Tip:** If you are considering submitting a new type of technology, a pre-site visit to MC is helpful. MC also encourages this at the pre-design stage of your project. A clear understanding of the requirements early in the development process can save considerable design time and contribute to a much smoother approval process.*

***Tip:** If the design has already been completed, a pre-site visit would be advantageous to better understand Canadian measurement regulatory requirements before manufacturing commences.*

Approval paths

Although MC will dictate the path the type approval process will follow prior to preparing a submission, the applicant should consider which of the following paths the application is likely to take:

1. A modification to an approval of type and the issuance of a Modification Acceptance Letter (MAL)
2. A change to an existing approval
3. A request for approval for a measuring or auxiliary device that is covered under existing specifications and regulations
4. A request for approval for a measuring or auxiliary device that is not covered under existing specifications and regulations
5. A request for approval of a device type that MC is not equipped to test.

An explanation of each of the first three paths can be found in the document, [Apply for type approval of gas meters or auxiliary devices](#) and for the most part will be self-evident.

Selecting the path correctly is of importance as the time required by MC to conduct the approval varies considerably depending on the path. The choice also impacts significantly on the number of devices and on the amount of material that will be needed to support the application.

Don't Under-Classify

Some applicants may try to “under-classify” the application in the hopes of choosing an approval path that would minimize the time and energy dedicated to the approval process. However, failure to select the correct path may result in unnecessary delays as the application may need to be re-submitted with the required information.

During the initial steps of your application the [Approval specifications for gas meters or auxiliary devices](#) should be reviewed to determine if your device or the changes to it are currently covered under the existing regulations and specifications. If this is not apparent, it is recommended that guidance be sought by consulting with MC's Gas Approvals Laboratory.

Where it is determined that a device or function is not adequately covered by current legislation, the specification development process can follow different paths.

Devices Not Covered Under Existing Specifications and Regulations

In the case of individual applications, the approval process may result in the issuance of an NOA with some conditions. These conditions are seen as a temporary measure until the need for more formal changes in regulations or development of specifications is identified. Specifications will usually commence once a second application is received for similar technology. For more information, please see [GEN-04—Notices of conditional approval—naming convention, terms and conditions, disclosure, notification, initial inspection, and inspection certificates](#).

Guidance is available in the MC document [GEN-06—Application of new specifications and approval of trade measurement devices that incorporate technologies not covered by the existing specifications](#).

MC and the natural gas industry have a joint regulatory impact committee called the Gas Process Advisory Committee (GPAC) which uses an “impact filter template” to determine the method that will be used to create a new specification. This process has a proven track record, and the applicant is encouraged to fill out the available template and submit it to GPAC for review where it will be discussed at an upcoming meeting. More information including contact details for GPAC is available at [this link](#).

Device Types That MC is Not Equipped to Test

Where MC is not currently equipped to completely evaluate or test a device or an ancillary device, third party test results will be accepted. Examples of such devices are: larger meters, pressure regulators and compressed natural gas dispensers. MC has published a list of prequalified institutions from which it accepts this test data in Bulletin [G-16—Recognition of test data from gas meter test facilities](#).

Tip: *There can be a waiting period at some of these facilities, so it is recommended that a testing time be arranged at the time of the initial application. It is highly recommended that the applicant receive a MC approved test plan prior to commencing the test program. This should minimize the need for retests.*

The device being tested at the facility should be identical in type and software to that being submitted for approval. In the rare cases where this is not possible, it is recommended that deviation be brought to the attention of MC prior to testing.

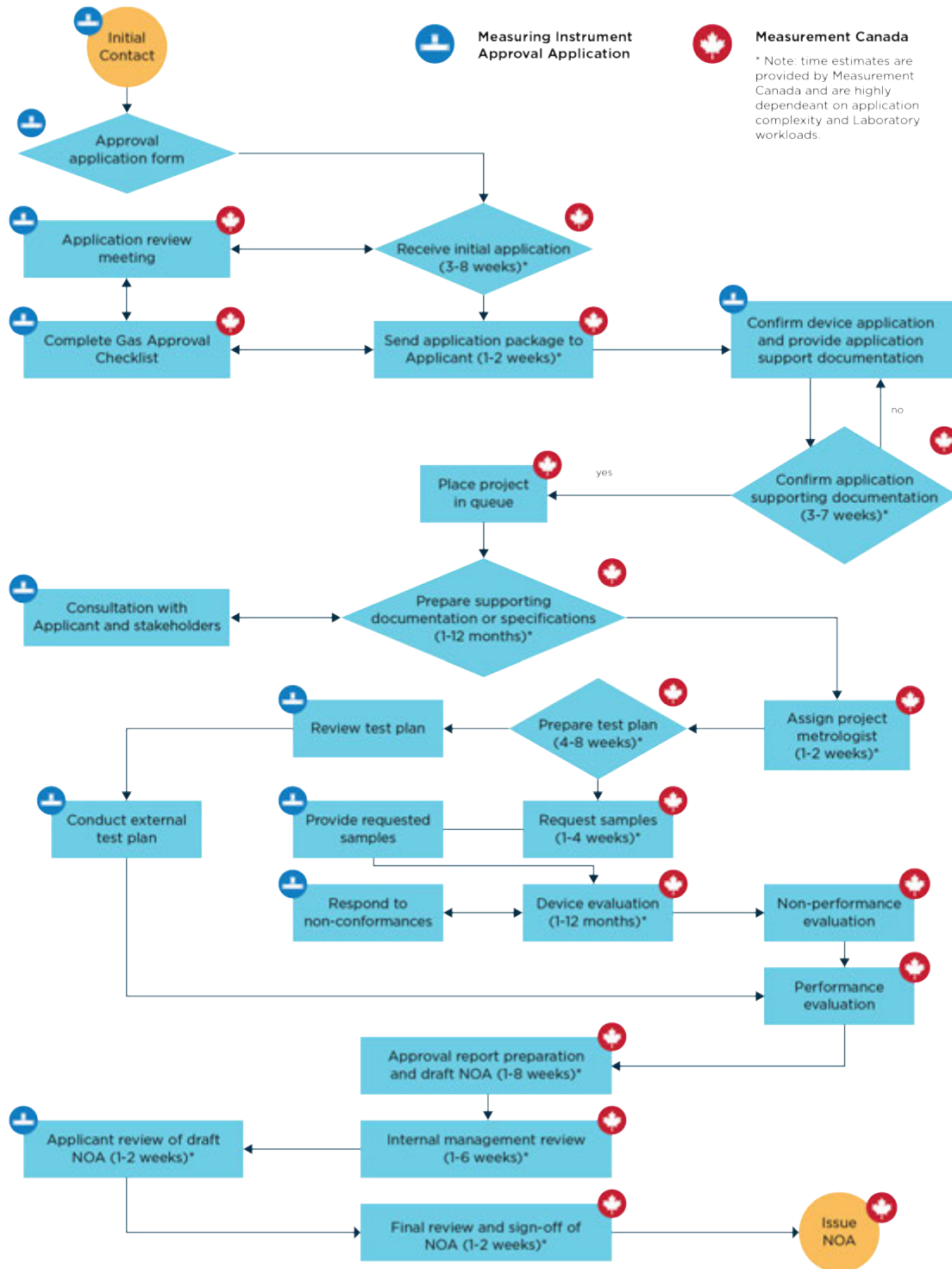
It is also recommended that the test results be presented to MC as a formal document generated by the test facility, complete with raw data, graphed results and a statement of measurement uncertainty.

In all cases, it is the applicant's responsibility to ensure that the measuring or auxiliary device meets all applicable requirements before an application for type approval is made. MC will reject an application if the requirements are not met according to its [non-compliance policy](#).

The Process

MC defines the path, internal and external, it follows in the processing of an approval application in a document titled "*Gas Approval Process and Responsibilities*". The following flow chart is derived from the information contained in this document.

Figure: Gas Type Approval Flow-Chart



SUBMITTING THE APPLICATION

Initial Contact

The first contact with MC's Approval and Calibration Services Laboratory (ACSL) usually occurs through their website or by e-mail to the Manager of Gas Approvals Laboratory. Typically, the Manager responds with a standard e-mail listing information required depending on the device type and directing the applicant to the website for the approval application form(s). Also included in the email will be software and approvals checklists. These lists are not currently available on their website. If a standard test plan is available from MC, it also may be provided.

Application Review Meeting

A recent addition to the Approval process is the introduction of an application review meeting. This meeting can occur at various stages of the application process and can vary in length and complexity depending on the device.

***Tip:** These meetings provide an opportunity to jointly review the application form for correctness and discuss the Gas Approval Checklist. Device specifications and features can be reviewed. Also, it may be helpful to discuss the most appropriate approval path, including whether external testing may be appropriate/required – understanding MC has the ultimate say with regard to this.*

Gas Approval Checklist

MC has developed a *Gas Approval Checklist*. This Microsoft Excel spreadsheet, available from MC, uses the characteristics of the device to generate a subset of the regulations and requirements particular to the applicant's device. One of its primary purposes is to aid in defining the features of the device to be evaluated for inclusion in the final NOA. Time spent to accurately fill this form is time well spent.

Generally, this tool sources from the following documents:

- [S-G-03–Specifications for the approval of type of gas meters, ancillary devices and associated measuring instruments](#)
- [S-EG-06 -Specifications Relating to Event Loggers for Electricity and Gas Metering Devices](#)
- [S-EG-05-Specifications for the Approval of Software Controlled Electricity and Gas Metering Devices](#)
- [PS-G-06-Provisional specifications for the approval, verification, reverification, installation and use of ultrasonic meters](#)
- [Gas laws and requirements](#)

MC advises that completing the “introduction” tab of the *Gas Approval Checklist* as well as the “specification” tab provides the information which configures the checklist for the applicant. The

approved input/output define what approved equipment can be connected and what signal/information can be passed over the connection.

Tip: *Completing the first two sections of the Gas Approval Checklist for meter functionality and input/output identifies which meter functions and features are to be approved and those which are not. Additionally, it identifies to MC which input(s) and output(s) are requested to be approved. In theory this is done via the application form, but MC has found that a lot of information can be missed in this form.*

Tip: *In the Gas Approval Checklist, each item has a corresponding section where a reference or note can be entered by the applicant. Take advantage of this to make detailed references to where in your documentation the evidence of compliance can be found. This will minimize the time the metrologist requires to search through your documentation when performing the non-performance part of the assessment.*

Decide What Needs Approval

After the initial discussions, the applicant completes the prescribed forms and checklists and forwards them to the Manager of the Gas Approvals Laboratory. The process of completing the approval application, available from MC's website [here](#) will be instructive in the preparation of the required supporting information. If the applicant requires assistance in completing the forms, contact MC.

The purpose of these form(s) is to clearly define what hardware and functions the applicant would like approved. This may include identifying inputs and outputs, their formats and languages and methods of calculation, etc.

Tip: *MC also has available an Input/Output block diagram tool to simplify discussions. It is recommended that the applicant requests this tool. The tool is helpful for flow computers and software driven devices as it helps with the understanding of legal metrology language.*

It is not uncommon for an applicant to desire functions and calculations to be approved that are not governed by the *Electricity and Gas Act and Regulations*. Functions such as liquid flow, steam or non-hydrocarbon gases are not covered under this legislation and as such cannot be part of the approval process. Note that liquid flow is governed by the *Weights and Measures Act and Regulations* which is administered under the Volume Laboratory.

Tip: *The applicant will be required to clearly document the device, the functions desired to be approved and the functions the applicant does not wish to be approved. Depending on the method of sealing employed in the design, clear indications of the device security will also be key in the application.*

Tip: Ensure that the initial application gives rise to an NOA that will address everything required to market your device. Ensure the application covers all features that are desired in the final NOA. Consider inputs, outputs, and features in the middle.

Tip: MC has identified “scope creep” as a common source of time delay in the approval process. If the applicant changes their mind part-way through the process, the earlier steps will need to be repeated resulting in additional approval time.

Include Related Documents

The MC website lists a number of [documents](#) to be included with the submission. These include the ones listed below:

- Operators/user’s manual
- Installation manual
- Device specification sheets/engineering sheets
- Instructions for obtaining the software identification
- Promotional material
- Overview of system hardware
- Description of system using a functional block diagram
- Listing description of each software part
- List of configuration and other modifiable software parameter
- Assembly drawings
- Description of provisions for physical seal
- Marking plate drawing
- Other relevant documents

Type Approval Certificate from Other Countries

Any previous approvals from other jurisdictions should also be included in the application. As testing varies between institutions, it is important to include the test reports and the supporting test data. As MC Gas Measurement Engineering will attempt to match-up their test requirements to the test data supplied, the documents should clearly describe the make, model and software version, the test performed, the associated uncertainty and the tolerances applied in the evaluation.

External Test Plans - Applicant Generated Test Plans

In some cases, an applicant may take the initiative to propose an external test plan. This is typical in applications for larger meters. If applicable, an engineering review is conducted of the applicant’s external test plan. The applicant may receive confirmation or be requested to modify the external test plan. This can take up to a week depending on device complexity and staff availability.

Software Driven Devices with Traced Updates

For those devices which are software driven and in particular where the applicant desires to have the device approved to be updateable, special attention should be paid to the software portion of the *Approval Application Checklist* and the associated specifications S-EG-05 and S-EG-06.

Tip: *Be aware that some definitions used in the software specifications S-EG-05 and S-EG-06 and in the regulations may have alternative meanings in some industries. Differences in definitions can introduce unwanted confusion in the approval process.*

Tip: *Depending on the level of complexity of the device, the applicant should plan to support and/or respond to MC to a greater or lesser degree.*

Ironing Out the Application Details

Once the package is completed, the information is sent to the Gas Approvals Laboratory Manager. The package will be reviewed for completeness. Additional information may be required to initiate the process. Sometimes a “back & forth” (approximately 3 days) may be required to sort out the application.

Tip: *MC promotes the reviewing of the applicant’s submission by phone, WebEx or directly in a meeting. It is recommended that you make use of this opportunity for a “project meeting”, as it can save a number of weeks in “back and forth” discussions. The applicant can further introduce their product and the functions they wish to have approved. It is also recommended that the applicant’s technical personnel attend this meeting.*

Once the forms/application are reviewed for completeness, an approval project will be created by the Gas Laboratory Manager. At this point, an initial test plan will be generated by MC. The content of which will vary dramatically depending on the information supplied and the external plan provided.

Project Starting Date

The applicant will receive a confirmation email stating they are now in the queue along with a project number and the initial test plan. This becomes MC’s “project starting date”.

Provide a Contact List with Specific Roles (name, phone number, email, etc.)

- Primary project contact
- Salesperson
- Technical specialist
- Person responsible for legal requirements
- Software person
- Hardware person
- Shipping contact

AFTER SUBMITTING THE APPLICATION

Wait in the Queue

The approval project is now in the queue to await an available metrologist and test equipment. (up to 12 months depending on workload).

***Tip:** During this period, it is recommended that the applicant perform a pre-test of the device using the test plan provided. Any external third-party test data can be generated during this period.*

***Tip:** Once you have completed the approval application and checklists the resulting information may identify some non-conformances in the measuring device. During this period applicants are encouraged to take corrective actions to bring the product into compliance prior to a sample being submitted for testing.*

Once the device has been assigned to a metrologist, a testing schedule can be developed based on the availability of test equipment and facilities.

The metrologist performs a review of the supplied technical documentation and application content. The test plan will be reviewed, and any outside data considered. If more data is needed, the applicant will be contacted.

Send a Sample

Once the application is reviewed, the applicant will be requested to send a sample(s) and supporting equipment to ACSL for evaluation.

***Tip:** The submission of pre-production proto-types is strongly discouraged by MC. MC laboratories do not provide research and development services. Further, the device approved and described in the NOA is required to be identical (including software version) to that which will be used in trade.*

Providing Necessary Hardware

As a government entity, MC has various IT restrictions on the installation of software and connectivity to their computer systems. Installing software onto government systems requires a lengthy process which can often contribute to slowing down the overall type approval turnaround time. Applicants are required to send in configured laptops to communicate with their devices. The applicant should clearly label connections and provide any necessary cabling. Consider also providing USB dongle allowing internet connection with applicant's home network.

Tip: In some instances, MC is not able to free up or must purchase additional piping adapters and mechanical connectors for use in your approval. To avoid purchase process delays, consider supplying these also.

Configuration of Device

MC metrologists usually are not familiar with the intricacies of your particular device. Understandably, there will be a learning period to familiarize themselves. To minimize this period, it is recommended that the device be preconfigured for the Canadian marketplace and any configuration or setting preloaded.

Shipping Considerations

Ensure you abide by all MC and Canadian government and foreign government requirements relative to shipping across borders (e.g. duty, brokerages fees, import/export requirements, etc.). Considerable delays can be experienced at the boarder if attention is not paid to this. Refer to [Shipping Requirements](#) on MC's approval webpage for specific details on shipping and packaging.

Tip: Include the project number on the shipping containers and on the devices to expedite the delivery of the device inside MC.

Site Visit

Tip: For complex devices such as flow computers, a second on-site meeting is recommended once testing is scheduled to begin. Any assistance provided in setting up the device and connecting various IO and any supplied test equipment will streamline the process for ACSL metrologists.

Non-Performance Testing Begins

As a start, the metrologist will become familiar with the file and perform “non-performance testing”. These include marking requirements, sealing requirements, completeness of software application and documentation. Documentation is reviewed to determine compliance with the requirements.

Communication Process

The applicant should expect communication during non-performance testing. Metrologists typically will have questions and request clarifications. They will also advise the applicant of any non-performance, non-conformances.

Tip: *The applicant must be diligent in responding to MC's requests. MC has identified the response time to questions clarifications on non-conformances as a major contributing factor to increased turn-around times for approvals.*

Additionally, it is important to review MC's non-conformance policy to appreciate that failure to respond in a timely manner may result in your project being delayed, side-tracked or completely closed.

Tip: *In rare cases, to address these non-conformities, product redesign may be needed. As a result, replies can take time, sometimes introducing months into the project timeline. This is where understanding the requirements and modifying your product prior to submission to the approval process is most valuable.*

Tip: *MC estimates that full scale approvals take a total of 2 – 4 months for non-performance testing.*

Performance Testing Begins

The device is then placed in an available test rig for performance/physical testing to be conducted. Once completed, the applicant will be advised of performance issues and resulting non-conformances. Here again the issues surrounding non-conformities and their resolution are critical to a timely approval.

Tip: *Failure to respond to MC's requests in a timely manner at this point in the process may result in the metrologist needing to re-familiarize himself with that project and re-learn the device to be able to run tests. In some cases, the device has been removed from the test bench to allow for other approvals to be completed during the waiting period, so your project must be installed for a second time when equipment becomes available.*

Tip: *An MC metrologist usually handles 4 - 7 projects at once with priority given to applicants that applied first. Failure to respond in a timely manner may impact where in the queue your device sits.*

POST EVALUATION

Review of Draft Notice of Approval (NOA)

In the final administrative step, the results are packaged. The Approvals Examiner and Manager create a report and NOA to be reviewed/signed by Engineering. MC breaks the process down as follows:

1. Notice of Approval (NOA) drafted (1 - 4 weeks)
2. First draft reviewed by Engineer (1 – 2 weeks - but can take longer if more testing is required)
3. Draft is sent to applicant (a few days to a few weeks)
4. Changes are made to NOA where applicable, then given to translation (few days to 4 weeks depending on translation workload)
5. File is reviewed for the last time by the gas laboratory manager and the metrologist (1 - 2 weeks)
6. Final review and sign-off by Engineer (1 - 2 weeks)
7. NOA issued (1-2 days)
8. NOA is posted online (3 to 5 days – 1 week)

Return of the Sample

MC provides on its website specific instructions and information for returning your device. Refer to [Shipping Requirements](#). In some instances, the applicant may not want to have the device returned, this will also need to be communicated to MC.

After the Process Has Been Completed

MC welcomes comments and constructive criticism to aid in the improvement of their approval process. Consider completing the MC Exit Survey which should be provided to you upon completion of the process. Also, as the Approval Check-list tool is in its developmental phase, comments to help simplify it or make it more user-friendly are encouraged.

Expected Approval Project Timelines

MC can provide estimates on the length of time necessary to process an approval. This estimate does not include time for waiting for responses, time in the queue or waiting for specification development.

APPENDIX

Contact Information for MC Staff:

Joel Guindon: Project Tracking, Administrative

Manager, Gas Measurement Laboratory, Engineering and Laboratory Services Directorate, Measurement Canada

Innovation, Science and Economic Development Canada / Government of Canada

Joel.Guindon@canada.ca / Tel: 613-952-0631 / TTY: 1-866-694-8389

Christian Lachance, P. Eng. - Technical Issues

Senior Engineer - Gas Measurement, Measurement Canada

Innovation, Science and Economic Development Canada / Government of Canada

christian.lachance@canada.ca / Tel: 613-952-3528 / TTY: 1-866-694-8389

Prepared by:

Patrick (Pat) J. Hardock, P.Eng.
President, P.J. Hardock and Associates Inc.
Consultants in Flow Metrology
Patrick.Hardock@outlook.com
613.883.2134

