TECHNICAL SAFETY BC

# Class MA

## Contractor Licence Guideline

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# Class MA contractor licence guideline

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## Safety notice

Disclaimer:

Please note that references to the legislation, codes, directives, safety orders, and web pages throughout this document may not reflect the most recent versions available.

Also, the references in this outline are by no means an exhaustive list of all the situations that may apply to a particular situation.

Therefore, the user should make sure that references are current and relevant to any situation that they are dealing with.

The latest version of this document is available in PDF format on the Technical Safety BC website: https://www.technicalsafetybc.ca/

**Contents**



The submission of a documented quality control program alongside the applicable application form is a required part of the application process for a Class MA contractor licence. Quality control programs must detail the organization's processes, procedures, and controls for maintaining compliance with the requirements applicable to the scope of work.

## 1. The guideline's scope

This guideline has been created to assist applicants in developing, updating, or revising quality control programs that are applicable to a Class MA contractor licence under the Power Engineers, Boiler, Pressure Vessel, and Refrigeration Safety Regulation (the "Regulation"). The guideline should be used in conjunction with our regulatory notice, Directive: Boiler, Pressure Vessel & Refrigeration Contractor Licencing Requirements (D-BP 2019-01).

## 2. Application for a Class MA contractor licence

To apply for a Class MA contractor licence, the applicant must submit a completed application form (FRM-811) and a current copy of their documented quality control program to Technical Safety BC.

Please find the licence application form, the schedule of applicable fees, and other information on our website.

## 3. Quality control program

The submission of a documented quality control program alongside the applicable application form is a required part of the application process for a Class MA contractor licence.

Quality control programs must detail the organization's processes, procedures, and controls for maintaining compliance with the requirements applicable to the scope of work described. Quality control programs must take into consideration all applicable regulatory requirements, including, but not limited to, the *Safety Standards Act* (the *Act*) and Regulations, adopted codes, directives, and safety orders.

The necessary scope and detail of the program will depend on the complexity of the work to be performed and on the size of the organization that will be performing the regulated work. Regulated work may be performed in a fixed location, for example, in a shop, at a field location(s), or at both, provided the quality control program describes the controls.

A quality control program is documented in a manual that provides a comprehensive, detailed, and regularly updated overview of the quality control program.

## 4. Quality control program manual guideline

Appendices A and B detail the kind of information to document in a quality control program manual. The information in the appendices provides guidance for the planning, development, implementation, and maintenance of an effective quality control program and may be used in conjunction with CSA B51: Boiler, pressure vessel, and pressure piping code.

Depending on the scope of the regulated work to be performed and the specific applicable code requirements, additional information that is beyond the contents of this guideline may be required.

## 5. Review and acceptance of the applicant's quality control program

Technical Safety BC reviews the quality control program for acceptance before issuing a contractor licence. Additionally, in accordance with the adopted CSA B51 code, we may ask the applicant to demonstrate to us that they meet the following requirements:

- They have adequate equipment and facilities to perform the scope of work specified in their quality control program.
- They have a thorough working knowledge of their quality control program.

Technical Safety BC will review the demonstration project, assess the application of the quality control program requirements, and, if these are found to be acceptable, will issue the Class MA contractor licence.

## 6. Maintaining the quality control program

Quality control programs must remain current, up to date, and in compliance with the *Safety Standards Act*, and they must accurately reflect the current requirements contained in the *Act* and Regulations, adopted codes, directives, and safety orders as amended from time to time.

A licensee may change, update, or revise their quality control program at any time, provided that they submit the changes, updates, or revisions to Technical Safety BC, along with a copy of the Boiler Contractor Licence Application Form (FRM-811), for acceptance before implementation. For more information, see Directive: Boiler, Pressure Vessel, and Refrigeration Contractor Licensing Requirements (D-BP 2019-01).

The licensee must review their quality control program for any changes that may affect the program and must submit any required revisions to Technical Safety BC for acceptance as part of the license-renewal process.

## 7. Audits of the licensed contractor quality control program

Quality control programs are subject to inspection, including investigation, monitoring, and audit, by Technical Safety BC at any time. We inspect licensee's quality control programs and associated regulated activities to confirm that a contractor is meeting the expectations under their licence, including, but not limited to, following, and applying all aspects of their quality control program.

## Appendix A. Quality control program manual guideline

The following information provides guidance for documenting an effective quality control program within a manual and may be used in conjunction with CSA B51, including 'Annex F' for pressure fitting manufacture.

Depending on the complexity of the regulated work to be performed and the specific applicable code requirements, additional information that is beyond the contents of this guideline may be required in the manual.

### 1. Cover page

Note the following information on the quality control program manual's cover page:

- the organization's name, logo, and physical address;
- the contractor's licence number and class;
- a summary or preview of the quality control program's scope;
- the manual issue date;
- the manual edition;
- the manual revision level; and
- whether the manual document is a controlled or uncontrolled copy, etc.

### 2. Scope

Provide a detailed scope (see Table 1) of work that identifies the regulated work that will be performed by the organization:

- Reference the class of contractor licence.
- Indicate, by listing all applicable adopted code sections and standards and by retaining up-to-date copies of the applicable codes adopted by the Power Engineers, Boiler, Pressure Vessel, and Refrigeration Safety Regulation (the "Regulation"), that the regulated work will be performed according to the described scope of work.
- Describe the controls that are put in place to ensure that regulated work outside the scope of the contractor licence will not be performed, and that the contractor will comply with the contractor licence terms and conditions.
- Specify where the regulated work will be taking place and include provisions for implementing the quality control program in the manufacturing shop, at a field location(s), or both, as is applicable.
- List the activities that will be performed solely by the licensee organization and those that will be subcontracted to competent third parties. Examples of activities to consider are design, drawings, pressure welding, non-destructive examination, and heat treatment.

During the review of the quality control program, Technical Safety BC will use the scope of work provided to determine the complexity of the regulated work to be performed.

**Table 1.** This example scope of work applicable to a Class MA contractor licence (manufacturing shop) is provided for reference. See the schedule of the Regulation for a list of the adopted codes and standards.

| Class MA | Example: Scope of work |
|---|---|
| Boilers | Assembly, manufacture, or construction of boilers, including boiler external piping conforming to CSA B51, and following the applicable ASME construction code(s).<br>i.e., Section I, Section IV, and B31.1 |
| Pressure vessel | Assembly, manufacture, or construction of pressure vessels conforming to CSA B51, and following the applicable ASME construction code(s).<br>i.e., Section VIII Div.1, Div.2, Div.3 and Section X or XIII |
| Pressure fittings | Assembly, manufacture, or construction of pressure fittings conforming to CSA B51 |
| Pressure piping | Assembly, manufacture, or construction of pressure piping conforming to CSA B51 and following the applicable ASME construction code(s).<br>i.e., B31.1, B31.3, B31.5, and B31.9 |

## 3. Statement of Authority and Responsibility

Describe the authority and responsibilities of the person(s) in charge of the quality control program. In addition, provide documentation that those in charge have the freedom to identify non-compliances and to take corrective actions, including stopping work if needed, with the full support of management.

The highest authority noted on the organizational chart must sign the Statement of Authority and Responsibility: include a copy of that signed statement in the quality control program manual.

## 4. Tables of contents, revision history, and defined terms

In this section of the manual, include the following three tables:

- a table of contents, listing the manual's sections and exhibits, its revision level, and room for the contractor to approve the manual and for Technical Safety BC to accept it by signing and dating or other means;
- a table that tracks the manual's revision history; and
- a table of definitions (glossary) for all abbreviated titles of personnel, control documents, organizations, cited codes, standards, laws, and regulations, and any technical terms used frequently within the manual.

## 5. Manual control

In the quality control program manual, stipulate provisions for how it will be prepared, revised, distributed, and implemented. The provisions should specify the person(s) responsible for the manual's control, including for submitting manual revisions to Technical Safety BC, and should describe how the licensed contractor will review and update the manual to ensure that knowledge of the *Safety Standards Act* and Regulations, directives, safety orders, adopted codes, and standards is maintained and kept current.

## 6. Organizational chart

Include an organizational chart that shows the reporting relationships and lines of communication between management, engineering, purchasing, manufacturing, production, inspection, quality control, and subcontractors, as applicable and as reflects the actual organization. Brief explanations of the duties and responsibilities of key personnel whose performance affect the quality control program are also required.

## 7. Drawings, design, calculations, and specifications

In the manual, include the provisions that will be used in the quality control program to identify the minimum information necessary, in the form of drawings, specifications, or other means, to comply with the construction code:

- Describe the procedures that will be applied to ensure that the latest applicable drawings, design calculations, specifications, and instructions are used for construction, assembly, examination, inspection, and testing in the work to be undertaken. If the design and drawing function is subcontracted to a third party, describe the process by which the organization will review and approve those documents before they are released to the production team.
- If computer calculations will be used in creating the drawings, design, calculations or specifications for the regulated work, the codes regarding boilers, pressure vessels, and refrigeration require that any computer-generated calculations used in regulated work be verified manually before use and that the verification documents or computer files be retained. Include provisions in the manual for this verification and documentation to help ensure the computer program or software used produces acceptable calculations.
- Identify the person(s) responsible for preparing, reviewing, and approving designs and drawings for regulated work, the person(s) responsible for specifying the materials to be used, and the person(s) responsible for controlling regulated work that will be performed in the manufacturing shop and/or at the field location(s). Identifying the responsible person(s) by their title(s) is acceptable.
- In case any of the project's approved designs and drawings are revised, include descriptions of the controls that will be applied to ensure obsolete designs and drawings are withdrawn from the manufacturing shop and field location(s) and are replaced with the revised designs and drawings.
- Describe the controls that will be used to ensure that regulated manufacturing work will be performed only when the original design of regulated equipment has been registered with Technical Safety BC, according to the Regulation and the adopted CSA B51 code requirements.

## 8. Material control

Specify and describe the system that will be used for ordering, receiving, and controlling material. This quality control program element helps to ensure that the correct material (including welding consumables) is procured, inspected after receipt, properly stored, and released for production:

- Define the controls that will be used for maintaining material traceability until project completion, including heat numbers and colour code applications.
- Include provisions to ensure that the received materials have the required material certifications, material test reports, or certificates of conformity to meet the applicable code requirements.
- Specify and describe the material control system that will be used to ensure that only the intended material is used when performing regulated manufacturing work, either in shop or in field location(s), under the scope of the licence, and that the material is used according to the specifications of the applicable codes and standards.
- Include provisions for how materials not in compliance with the registered design or the applicable code will be handled, as well as provisions to ensure the substitution of materials is allowed. This includes applicable procedures for the control of substitutions and the designation

of the individual who is authorized to approve them with the authorized inspector's (boiler safety officer's) approval.

## 9. Assembly, manufacture, or construction

Designate and identify the person(s) responsible for overall quality control program management for the regulated assembly, manufacture, or construction work. The person(s) to identify in the manual include those responsible for material ordering, receiving, and incoming inspection, those responsible for issuing materials to be used, and those responsible for examining and inspecting regulated work in the shop and field location(s). In addition, include provisions for all required code inspections to be performed by an authorized inspector (boiler safety officer) employed by Technical Safety BC.

In addition, include provisions in the manual for liaison with the authorized inspector (boiler safety officer) and for providing the authorized inspector (boiler safety officer) with unrestricted access to a controlled copy of the quality control program manual, to all quality control program records, and to all locations within the shop and field location(s) where the regulated work is being conducted.

## 10. Welding and brazing control

In the manual, include provisions that the welding and brazing work that will be performed will conform to the requirements of the *Act* and Regulations, adopted codes, directives, and safety orders:

- Describe the process that will be used to ensure only individuals who hold a pressure welder Certificate of Qualification are assigned to perform pressure welding on a regulated product, that the extent of their work is limited to the pressure welder certificate class that they hold, and that these individuals maintain all applicable qualifications, including their certificates.
- Describe the measures that will be used to prepare, qualify, and register welding procedure specifications and brazing procedure specifications with Technical Safety BC.
- Define the measures that will be used to control welding and to ensure that the welding work undertaken is traceable, as is required by the applicable codes – This includes measures for tracking the storage and distribution of welding consumables.
- Define the measures for removing or inspecting tack welds.
- Include provision for the authorized inspector's (boiler safety officer's) obligation to require re-qualification of a welder or procedure with just cause.

In addition, include provisions in the manual for the subcontracting of welding on regulated products to ensure subcontracted welding companies hold valid contractor licences issued by Technical Safety BC and have Technical Safety BC–accepted quality control programs. In the event the organization subcontracts pressure welding, provisions should be in place, and be described within the manual, to clarify the use of the subcontractor's quality control program or the main contractor's quality control program for pressure welding controls and documentation.

## 11. Non-destructive examination

Specify and describe the controls and measures that will be used to ensure performed or subcontracted non-destructive examination occurs according to the applicable code requirements. The described controls and measures must address the requirement that personnel qualified in accordance with the organization's written practice must complete the non-destructive examinations and that the written practice must contain non-destructive examination procedures that previously have been demonstrated to be effective, in accordance with code requirements.

## 12. Heat treatment

Include provisions in the manual for the control of the heat treatments performed or subcontracted by the organization, specify measures to ensure that the heat treatments comply with the applicable codes and standards, and require that records such as heat treatment charts and thermocouple

attachment schematics are kept on file and made available to the authorized inspector (boiler safety officer) on demand.

## 13. Examination and inspection program

Include provisions in the manual to ensure that the inspections and tests required by the *Act* and Regulations and the applicable codes are undertaken and recorded accordingly:

- Describe the procedures for the types of inspections and tests performed.
- Identify the person(s) responsible for the control of the inspection and test plan.
- Specify that, before the work starts, the inspection plan be submitted to and reviewed by the authorized inspector (boiler safety officer), who will determine the inspection stages, and that the authorized inspector (boiler safety officer) will be given unrestricted access to all required documentation for the regulated products being assembled, manufactured, or constructed.
- Include provisions to ensure that all manufacturing activities have been accepted by the authorized inspector (boiler safety officer) before code stamping is completed, and that all code-required manufacturers' data reports are maintained and made available to the authorized inspector (boiler safety officer).
- Detail the procedures for how pressure testing (hydrostatic and pneumatic) will be conducted safely.

## 14. Calibration

Include provisions in the manual for the calibration of measuring and test equipment. This includes specifying the calibration methods used, the frequency of calibration, and how calibration records will be kept, as well as any other requirements stipulated by the *Act* and Regulations and the applicable codes.

## 15. Correction of non-compliances

Specify and describe the system that will be used for correcting non-compliances and any other condition that does not comply with the requirements of the *Act* and Regulations, design, specifications, and applicable codes, and stipulate that non-compliances must be corrected or eliminated for the completed component to be considered compliant.

In the manual, specify how all non-compliances and their disposition will be documented, as well as that the person(s) responsible will inform the Technical Safety BC–authorized inspector (boiler safety officer) of non-compliant conditions for review and acceptance.

## 16. Record retention

Describe the measures that will be enacted as part of the quality control program to ensure that records related to the project are maintained as required by the *Act* and Regulations and the applicable codes.

## 17. Exhibits

Include samples of all forms referenced within the manual, with the company name and logo noted therein. The manual's text should also cite the referenced forms' titles in a way that is consistent with how they appear in the exhibit samples. The exhibits should also include forms that conform to those listed in CSA B51, Annex D, as applicable to the work's scope.

**Note:** You do not need to include in the exhibits any Technical Safety BC forms that are referenced within the manual.

## Appendix B. Quality control program manual elements

The following table and information expand on the information provided in Appendix A and are meant to be used by contractors to develop and review their quality control program and its manual, as needed.

The information included in the table may or may not be applicable, as determined by the contractor's scope of work. Depending on the complexity of the regulated work to be performed and the specific code requirements, additional information beyond the contents of this table may be required.

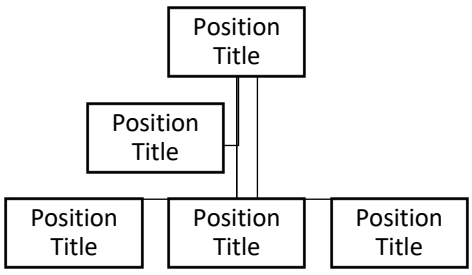
This table may be used and submitted with the quality control program manual to Technical Safety BC to facilitate our review of the manual.

**Organization name:**

**Date:**

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| 1. Cover page | 1.1 | Organization name, logo (if applicable), and physical address | | |
| | 1.2 | Class of contractor license, and contractor license number issued by Technical Safety BC | | |
| | 1.3 | Date of manual, its edition number, revision number, and whether the copy in question is a controlled or uncontrolled copy | | |
| | 1.4 | Summary or preview of the contractor license scope including location(s) work is to be performed | | |
| 2. Scope | 2.1 | Contractor license class referenced; statement that regulated work will be performed according to the described scope of work | | |
| | 2.2 | Detailed scope of the regulated assembly, manufacture, or construction work to be performed by organization | | |
| | 2.3 | Applicable code sections and standards used for the regulated work either referenced or listed<br>Per Section 4 of the Power Engineers, Boiler, Pressure Vessel, and Refrigeration Safety Regulation, the adopted codes and standards are listed under the schedule. | | |
| | 2.4 | Provisions to ensure regulated work outside the scope of contractor license or capability of contractor will not be performed, and how the organization will comply with any license terms or conditions | | |
| | 2.5 | Identification of any activities that will or may be subcontracted such as design, drawings, pressure welding, non-destructive examination, and heat treatment | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 2.6 | Identification of where regulated work is to take place and how the quality control program will be implemented in a shop or at a field location(s) | | |
| **3. Statement of authority and responsibility** | 3.1 | Statement indicating the authority and responsibility of those in charge of the quality control program to comply with the *Safety Standards Act* and Regulations | | |
| | 3.2 | Appointment and identification of a company representative or position within the company with sufficient and well-defined responsibility, authority, and freedom to identify non-compliances and to take corrective action, including stopping work if needed | | |
| | 3.3 | Appointment and identification of a company representative or position within the company responsible for the development, understanding, review, and acceptance of the quality control program | | |
| | 3.4 | Confirmation, in writing, of management's full support of those responsible for implementing the quality control program | | |
| | 3.5 | Statement of Authority and Responsibility signed by the highest authority listed on the organization chart | | |
| **4. Tables of contents, revision history, and defined terms** | 4.1 | Table of contents listing the sections and exhibits of the manual, as well as the pages, numbers, and revision levels for each section and exhibit | | |
| | 4.2 | Revision history table or other means that explains any changes made to the quality control manual | | |
| | 4.3 | Space for contractor approval of quality control program manual: name, signature, and date | | |
| | 4.4 | Space for Technical Safety BC acceptance of the quality control program manual: and authorized officer's name, signature, and the date | | |
| | 4.5 | Glossary defining all abbreviations used in the manual, including titles of personnel, control documents, organizations, codes, standards, *Act* and Regulations, as well as any term needing definition | | |
| **5. Manual control** | 5.1 | Identification of the person(s) responsible for controlling the quality control program manual, including the submission of its revisions to Technical Safety BC using Contractor License Application Form (FRM-811), as required | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 5.2 | Description of controls that will be used to prepare, revise, distribute, and implement the manual in the shop and at a field location(s) | | |
| | 5.3 | Description of how the manual will be revised (by page, paragraph, or section, etc.), how revisions will be highlighted within the manual, and how controlled copies of the manual will be kept current | | |
| | 5.4 | Provision for the submission of manual revisions to Technical Safety BC for acceptance before implementation | | |
| | 5.5 | Provisions for when and how the manual will be reviewed and kept up to date to ensure the manual accurately reflects the requirements of the *Act* and Regulations, adopted codes, standards, safety orders, directives, and information bulletins<br>**Note:** The *Safety Standards Act*, Section 24(3)(a), and Technical Safety BC Directive: Boiler, Pressure Vessel & Refrigerator Contractor Licensing requires quality control programs must be reviewed and updated at least annually before license renewal. | | |
| | 5.6 | A statement that uses of uncontrolled copies of the manual should be for informational purposes only | | |
| | 5.7 | Exhibit: A list of those who have been distributed a controlled copy of the manual | | |
| **6. Organization chart** | 6.1 | A chart showing the reporting relationships and lines of communication between management, engineering, purchasing, manufacturing, production, field work, inspection, and quality control roles, as applicable<br>The chart should also show the lines of communication with subcontractors, as applicable.<br>Example of organization chart:<br>  | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | | **Note:** Personnel names need not be included. If names are specified, changes in personnel may require revisions to the manual. | | |
| | 6.2 | Brief explanations of the duties and responsibilities of key personnel whose performance affects the quality control program | | |
| | 6.3 | A note, if applicable, that states personnel may hold more than one title | | |
| **7. Drawings, designs, calculations, and specifications** | 7.1 | Provisions to identify the minimum information necessary to comply with the applicable code(s) of construction in the form of drawings, specifications, or other means. | | |
| | 7.2 | Procedures to ensure that the latest applicable drawings, design calculations, specifications, and instructions are used for assembly, manufacturing, construction, examination, inspection, and testing of the regulated work. | | |
| | 7.3 | Provisions to ensure that any computer program used for preparing calculations or conducting analysis meets the minimum requirements of code. | | |
| | 7.4 | Description of the mechanism that will be used to review and approve subcontracted (third-party) design and drawing documents before they are released to the production team. | | |
| | 7.5 | Identification of the person(s) responsible for preparing, reviewing, and approving the design and drawings for regulated work. | | |
| | 7.6 | Identification of the person(s) responsible for specifying which materials will be used for the regulated work | | |
| | 7.7 | Description of the controls to be applied if design drawings are revised and of the measures that will be used to ensure obsolete drawings are withdrawn from shop and field location(s) and replaced with revised design drawings. | | |
| | 7.8 | Provisions to ensure that regulated work will be performed only if the original design and the altered design of regulated equipment have been registered with Technical Safety BC, per Section 82 and Section 84 of the Regulation, as applicable | | |
| | 7.9 | Provision for the completion and submission of designs for registration with Technical Safety BC, when applicable | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | | This applies to all construction of and alterations to boilers, pressure vessels, pressure fittings, and pressure piping (exceeding 3” NPS).<br>See the Technical Safety BC requirements at Boilers and pressure vessels design registration for more information. | | |
| | 7.10 | Description of field controls for regulated work that will be performed in the field, as applicable | | |
| **8. Material control** | 8.1 | Identification of the system that will be used for ordering, receiving, and controlling material to ensure that the correct material (including welding consumables) is procured, inspected after receipt, safely stored, and released for production | | |
| | 8.2 | Identification of the system that will be used for controlling materials to ensure that only the intended materials are used when performing regulated work and the materials used meet the specifications of the applicable codes and standards | | |
| | 8.3 | Provisions that all received materials will have the required material certifications, material test reports, or certificates of conformity that satisfy the applicable code requirements | | |
| | 8.4 | Provision for the verification and documentation of materials and their material certifications, material test reports, or certificates of conformity | | |
| | 8.5 | Descriptions of the measures established for the proper identification, handling, and storage of materials | | |
| | 8.6 | Controls to maintain material traceability until project completion, including heat number, colour code application, tabulation, as-built drawings, etc., and identification of the system that will be used to track the controls and materials | | |
| | 8.7 | Provisions for the transfer of material identifications when material is cut into two or more pieces | | |
| | 8.8 | Provisions for handling materials that are not in compliance with the registered design or the applicable code | | |
| | 8.9 | Provision for material certifications to be made available to the authorized inspector (boiler safety officer) upon request | | |
| | 8.10 | Provision for materials found to be in non-conformance during receiving inspections | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 8.11 | Description of field controls for regulated work that will be performed in the field, as applicable | | |
| | 8.12 | Exhibit: Material receiving report | | |
| 9. Assembly, manufacture, or construction | 9.1 | Description of the scope and type of assembly, manufacture, or construction work the organization is capable of and intends to conduct, including the identification of the applicable codes | | |
| | 9.2 | Identification of who is responsible for all overall quality control program management with regards to the regulated assembly, manufacturing, and construction work | | |
| | 9.3 | Identification of the person(s) responsible for material ordering, receiving, and incoming inspection, of those responsible for issuance of materials to be used, and of those responsible for examining and inspecting the shop and field location(s) | | |
| | 9.4 | Provisions for all required code inspections to be performed by an authorized inspector (boiler safety officer) employed by Technical Safety BC<br>Notification should be given using the Technical Safety BC Boiler and Refrigeration Inspection Declaration Form (Form 1449). | | |
| | 9.5 | Provision for informing Technical Safety BC, in advance, when the regulated work will start.<br>This is required under Section 61(1) and Section 86 of the Regulation. | | |
| | 9.6 | Provision for the strict use of the applicable code of construction, as determined by the applicable design drawings | | |
| | 9.7 | If applicable, submission of the original design for registration with Technical Safety BC.<br>This is required under Section 82 of the Regulation.<br>See the Technical Safety BC requirements at Boilers and pressure vessels design registration for more information. | | |
| | 9.8 | Provision for informing the authorized inspector (boiler safety officer) so they can make the necessary inspections | | |
| | 9.9 | Detailed description of the required documentation package(s) that will be collated during the assembly, | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | | manufacturing, and construction work, including the applicable data reports | | |
| | 9.10 | Provisions for liaison with the authorized inspector (boiler safety officer), including providing unlimited access to a controlled copy of the quality control program, to all quality control program records, and to locations within the shop or field location(s) where the regulated work will be completed | | |
| **10. Welding and brazing control** | 10.1 | Identification of the person(s) responsible for:<br>• preparing, revising, and submitting welding procedure specifications (WPS) and brazing procedure specifications (BPS) to Technical Safety BC<br>• conducting procedure qualification tests under the direct supervision of the licensee and for recording the results on the procedure qualification record (PQR)<br>• certifying procedures and witnessing performance qualification records<br>• selecting the WPS and BPS to be registered and used for regulated work<br>• assigning and ensuring that each welder is qualified for each welding process to be used; and<br>• instructing, supervising, and assigning welders or braziers for regulated work | | |
| | 10.2 | Description of the measures that will be used to prepare, qualify, and register welding and brazing procedure specifications with Technical Safety BC.<br>This element is a requirement under Section 78(2) of the Regulation.<br>Register a design with Technical Safety BC: Boilers and pressure vessels design registration. | | |
| | 10.3 | Identification of any references or resources for the development and preparation of WPS, BPS, and PQR<br>Use the formats suggested in the ASME code, Section IX:<br>• Form QB-482: Suggested format for a brazing procedure specification (BPS)<br>• Form QB-483: Suggested format for a brazing procedure qualification record (PQR)<br>• Form QW-482: Suggested format for welding procedure specifications (WPS)<br>• Form QW-483: Suggested format for procedure qualification records (PQR) | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 10.4 | Controls listed for completing revision(s) of the registered WPS or BPS | | |
| | 10.5 | Provisions to ensure that only individuals who hold a pressure welder Certificate of Qualification are assigned to perform pressure welding on a regulated product<br><br>See Technical Safety BC's requirements regarding pressure welder certification. This is a requirement under Section 5(3) of the Regulation | | |
| | 10.6 | Provisions to ensure that the extent of the work of individuals holding welder certificates of qualification is limited to the certificate class that they hold<br><br>Note: Class "A", Class "IT", and Class "R" – only needs to be specified if class "IT" and/or "R" will be utilized by the organization | | |
| | 10.7 | Provisions for a pressure welder's Certificate of Qualification and other applicable qualifications to be maintained and renewed as required | | |
| | 10.8 | Provisions for welding performance qualifications to be conducted by a Recognized Test Administrator (RTA). The welding examiner at the RTA will complete and certify the required ASME form(s) and enter qualification(s) into the welder's logbook.<br><br>See the Technical Safety BC Information Bulletin: Pressure welding requirements in BC (IB-BP-2020-01) for information. | | |
| | 10.9 | Provisions to ensure that the continuity of welder and brazier qualifications for each welding and brazing process used are maintained<br><br>Performance qualifications may need to be updated or retested if process not used within six (6) months. | | |
| | 10.10 | Provision to requalify a welder a change occurs in any of the essential variables listed for each welding process | | |
| | 10.11 | Provisions to ensure that each welder and welding operator is assigned an identifying number, letter, or symbol which shall be used to identify that individual's work | | |
| | 10.12 | Provisions for welding traceability as required by the applicable codes. These include but are not limited to; weld maps, drawings, and welder ID stamping. | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 10.13 | Reference to the use of ASME's Form QW-484A: Suggested format A for welder performance qualifications (WPQ) and Form QW-484B: Suggested format B for welding operator performance qualifications (WOPQ) for the qualification of welding operators<br>**Note:** The welding examiner at the RTA is responsible for completing these forms. | | |
| | 10.14 | If applicable, reference to the use of ASME's Form QB-484: Suggested format for a brazer/brazing operator performance qualification (BPQ) for the qualification of braziers<br>Note: The welding examiner at the RTA is responsible for completing these forms. | | |
| | 10.15 | Measures established for the removal and inspection of tack welds not completed by a qualified welder | | |
| | 10.16 | Provisions to ensure that, if subcontracted:<br>Welding completed on regulated equipment is done by a company holding a Technical Safety BC issued license that includes pressure welding within the scope of their accepted quality control program | | |
| | 10.17 | Measures established for the storage, distribution, and return of welding consumables | | |
| | 10.18 | Provisions for covered welding electrodes, such as low hydrogen and stainless steel, to be stored in accordance with the welding material manufacturer's recommendations or with Section II of the ASME code | | |
| | 10.19 | Measures to control welding in the field, when applicable | | |
| | 10.20 | Exhibit: welder continuity log | | |
| **11. Non-destructive examination (NDE)** | 11.1 | Controls and measures to ensure performed or subcontracted non-destructive examination meets the requirements of the applicable codes and is completed by qualified personnel | | |
| | 11.2 | If work will be subcontracted, identification of the subcontractor items to be verified by the license holder, retained with the job file, and presented to the authorized inspector (boiler safety officer) | | |
| | 11.3 | Identification of the person(s) responsible for determining if non-destructive examination is required per the applicable code | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 11.4 | Indication of whether non-destructive examination will be performed in-house, subcontracted, or both<br><br>**Note:** If performed in-house, all requirements should be covered within the quality control program. | | |
| | 11.5 | Provision for identifying the appropriate non-destructive examination procedures and written practices that are applicable to the scope of code and regulated work, and for ensuring that they have been demonstrated to meet the requirements of the applicable code | | |
| | 11.6 | Provision to ensure or verify that the personnel who will be performing non-destructive examinations are qualified in accordance with Canadian General Standards Board CAN/CGSB-48.9712/ISO 9712 and the applicable code | | |
| | 11.7 | Provision to ensure non-destructive examinations performed according to written procedures when required by the applicable code | | |
| | 11.8 | Provision to ensure equipment used for non-destructive examinations has been calibrated | | |
| | 11.9 | Provision for documentation and records of non-destructive examinations to be prepared as specified by the applicable code | | |
| | 11.10 | Exhibit: NDE Organization appointment letter | | |
| **12. Heat treatment** | 12.1 | Provisions for control of the heat treatments performed or subcontracted by the organization | | |
| | 12.2 | If work to be subcontracted, identification of the subcontractor items that will be verified by the license holder, retained with job file, and presented to the authorized inspector (boiler safety officer) | | |
| | 12.3 | Written procedures and instructions specifying the heat treatment requirements specified by the applicable code(s) | | |
| | 12.4 | Description of the measures in place to ensure that the heat treatment work, charts, and records comply with the applicable codes and standards | | |
| | 12.5 | Provision to ensure records such as heat treatment chart and thermocouple attachment schematic are kept on file and made available to the authorized inspector (boiler safety officer) on request | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 12.6 | Provisions to identify whether the heat treatment equipment used requires calibration and, if it does, what controls are in place to assure compliance | | |
| | 12.7 | Exhibit: Heat treatment instruction form | | |
| **13. Examination and inspection program** | 13.1 | Provisions to ensure inspection and testing comply with the requirements of the *Act* and Regulations and the applicable codes are recorded accordingly | | |
| | 13.2 | Procedures specified for the types of inspections and tests performed | | |
| | 13.3 | Identification of the person(s) responsible for:<br>• controlling the inspection and test plan;<br>• notifying the authorized inspector (boiler safety officer) when required;<br>• specifying the pressure test requirements; and<br>• monitoring pressure tests, performing examinations, and documenting results | | |
| | 13.4 | Provision for the presentation of the inspection and test plan, if applicable, to the authorized inspector (boiler safety officer) before the work starts to allow for review and the designation of inspection and hold points | | |
| | 13.5 | Provision for notifying the authorized inspector (boiler safety officer) in advance of reaching designated inspection and test plan hold points | | |
| | 13.6 | Details, controls, and procedures for how pressure testing (hydro and pneumatic) will be conducted safely, including the calibrated gauges and the dial range that are to be used<br>**Note:** The requirements for pneumatic pressure testing procedures with stored energy values greater than 1677 kJ can be found at Technical Safety BC's pneumatic testing design registration page. | | |
| | 13.7 | Provisions to ensure final inspections are performed and all *Act*, Regulation, and applicable codes requirements have been met | | |
| | 13.8 | Provisions to ensure all assembly, manufacturing, or construction activities have been accepted by the authorized inspector (boiler safety officer) before code stamping is completed, and to include all manufacturers' data reports that are required by code | | |
| | 13.9 | Measures established to control field activities, as applicable. | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 13.10 | Exhibit: Inspection and test plan (ITP), checklist, traveler or process sheets<br>The form(s) must provide for the contractor's, owner's inspector, and authorized inspector's signoffs and note dates when the examinations were performed | | |
| | 13.11 | Exhibit: Pressure test report(s) | | |
| | 13.12 | Exhibit: Pressure testing procedure | | |
| | 13.13 | Exhibit: Visual inspection procedure<br>This applies only if code required visual inspection will be completed by the licensee. | | |
| **14. Calibration** | 14.1 | Provisions for the calibration of measuring and test equipment | | |
| | 14.2 | Description of the method to be used for identifying equipment requiring calibration, as well as of the method for indicating the status or due date of calibration (e.g., with stickers, tags, etc.) | | |
| | 14.3 | Description of the method to be used for maintaining and tracking calibration records | | |
| | 14.4 | Provision to ensure that the gauges used for pressure testing are calibrated and that the calibration frequency is identified and recorded | | |
| | 14.5 | Provision for identifying and handling non-conforming equipment | | |
| | 14.6 | Descriptions of any other applicable requirements stipulated by the applicable codes | | |
| | 14.7 | Provision for calibration records to be made available to the authorized inspector (boiler safety officer) | | |
| | 14.8 | Exhibit: List of measuring and test equipment that requires calibration, with information such as identifier and calibration status, dates, frequency, etc. | | |
| **15. Correction of non-compliances** | 15.1 | System specified for correcting non-compliances and any condition that does not comply with the requirements of the *Act* and Regulations, design, specifications, and applicable codes | | |
| | 15.2 | Identification of the person(s) responsible for the resolution of non-compliances | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| | 15.3 | Provision for non-compliances to be corrected or eliminated before the completed component can be considered compliant | | |
| | 15.4 | Provisions for the documentation of non-compliances and their disposition | | |
| | 15.5 | Provision for a Technical Safety BC–authorized inspector (boiler safety officer) to be informed of non-compliant conditions | | |
| | 15.6 | Exhibit: An example of non-compliance record form to be used to document a non-compliance and its disposition | | |
| | 15.7 | Exhibit: A sample facsimile of non-compliance identification or “hold” tag and label | | |
| **16. Record retention** | 16.1 | Measures to ensure that the records are maintained as required by the *Act* and Regulation, and applicable codes | | |
| | 16.2 | Identification of records that may be required to be maintained | | |
| | 16.3 | Provision to ensure that all required records are maintained for at least seven (7) years<br>Section 72(1)(a) of the Regulation notes this as a requirement. | | |
| **17. Exhibits** | 17.1 | Samples of forms or facsimiles referenced within the manual contain the company name and logo, and the titles are consistent with those of the forms referenced in the text of the manual<br>**Note:** Technical Safety BC forms and forms controlled by other organizations referenced within the manual, need not be included as manual exhibits. | | |
| | 17.2 | Sample forms in this section identified as “SAMPLE” or “EXHIBIT” | | |
| | 17.3 | Forms or facsimiles, when referenced throughout the manual, include the title and exhibit or sample number for each referenced in a table of contents | | |

| Section | Quality control program manual elements, per section | | Applicability (Yes, No, N/A) | Manual reference |
|---|---|---|---|---|
| **Additional notes** | | | | |

Technical Safety BC is an independent, self-funded organization mandated to oversee the safe installation and operation of technical systems and equipment.

In addition to issuing permits, licences, and certificates, we work with industry to reduce safety risks through assessment, education and outreach, enforcement, and research.

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