



Guide for Manufacturers, Fabricators, Installers, Repairers, Alterers, and Audit Teams

For the Certification of:

Pressure Piping System Fabricators, Installers, Repairers and Alterers in accordance with:

- CSA B51 – Boiler, pressure vessel and pressure piping code
- CSA B52 – Mechanical Refrigeration Code
- ASME B31.1 – Power Piping
- ASME B31.3 – Process Piping
- ASME B31.5 – Refrigeration Piping and Heat Transfer Components
- ASME Section 1 – Rules for Construction of Power Boilers (For Boiler External Piping)
- CSA Z7396.1 – Medical Gas Pipeline Systems

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Boiler and Pressure Vessel Repairs or Alterations in accordance with:

- CSA B51 – Boiler, pressure vessel and pressure piping code
- NBIC NB-23 Part 3 – Repairs and Alterations
- Original Code of Construction

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Fitting Manufacturers in accordance with:

- CSA B51 – Boiler, pressure vessel and pressure piping code
- ASME Code(s) – As applicable to the manufactured fitting

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Manufacturers of Boilers and Pressure Vessels in accordance with:

- CSA B51 – Boiler, pressure vessel and pressure piping code
- ASME Section VIII Division 1 – Rules for Construction of Pressure Vessels
- ASME Section I – Rules for Construction of Power Boilers
- ASME Section IV – Rules for Construction of Heating Boilers

(This guideline is not applicable to ASME Section IV Cast Iron and Aluminum Boilers, ASME Section VIII Division 1 UG 90(c)(2) and Graphite Vessels, ASME Section VIII Division 2 and Division 3, and Engineering contracted under ASME Section I)



Introduction

This guide is prepared for the use of manufacturers, fabricators, installers, repairers, alterers, and non-nuclear audit team leaders, members, observers, and applicants for a TSSA Certificate of Authorization (C of A). It is not intended to replace or interpret the requirements of the CSA, ASME, and/or NBIC Codes. The checklist does not list all of the detailed requirements of CSA, ASME and/or NBIC Codes referenced, but rather lists the highlights that the applicant is required to include in the written Quality Program Manual.

In addition, to assist the TSSA Audit Team, this guide is provided to applicants for their use in identifying and verifying the paragraphs where the Quality Program Manual addresses all applicable control requirements of the CSA, ASME, and/or NBIC Codes. The Quality Program Manual must contain the description of the controls necessary for implementing the Quality Program, but it is not required to contain all of the programmatic requirements which may be found in the Quality Program, such as written procedures.

The guide is based upon the CSA, ASME, and NBIC requirements. The guide is subject to revision by TSSA based on changes made to CSA, ASME, and NBIC from time to time, or based on feedback received from users.

An audit must cover a Quality Program Manual and its implementation. It is recognized that the scope of work, Quality Program Manual, and implementation will vary from one applicant to another, therefore only those activities to be performed under the scope of an applicant's TSSA C of A are required to be addressed in the Quality Program Manual. TSSA audit teams are advised that this guide may not outline all possible aspects of each audit. The Quality Program Manual need not follow the format of this guide but shall describe the applicable requirements.

Questions of possible need for interpretation raised by the audit team members or the applicant shall be submitted to the TSSA Boiler and Pressure Vessel Chief Inspector for resolution.

How to use this guide

Review each element in the checklist against the Quality Program Manual. Select the appropriate response of "Yes", "No", or "N/A" (Not Applicable). Note the specific Quality Program Reference number in the column provided (For example, please do not state "Section 3", state "Section 3.1.2").

Submit one copy of this completed checklist with one uncontrolled copy of the current signed (or unsigned for new applicants) Quality Program Manual to TSSA for review at least one week prior to the scheduled audit.

Demonstration of the Quality Program

Refer to the applicable guideline for demonstration requirements located on the TSSA website:

- *Implementation Guideline for Piping System Fabricators, Installers, Repairers, and Alterers*
- *Implementation Guideline for the Manufacture of Boilers or Pressure Vessels*

Please reach out to bpvqa@tssa.org or your assigned auditor for additional information, questions, or concerns.



Quality Program Manual Checklist

Company Name:	Reviewed By:	Date:			
No.	Quality Program Elements	Yes	No	N/A	Quality Program Manual Reference
1	<p>General Quality Control System Requirements</p> <p>(a) The Quality Control System (QCS) is documented in detail in a Quality Program Manual that addresses all the requirements of the applicable Code and includes:</p> <p style="margin-left: 20px;">(i) A cover sheet that contains the company name, physical address, and a description of the program scope(s) as it will appear on the requested Certificate(s) of Authorization.</p> <p>NOTE: The cover sheet may also contain the effective date of the manual, mailing address, phone number, or other information desired by the certificate holder or applicant.</p> <p>(b) A brief description of the products being fabricated and/or work being accomplished under the Code or the work the Company wishes to accomplish under the Code, including the applicability of the QCS to shop activities, field activities, or both.</p> <p>(c) Table of Contents page which includes each section by subject, number, and revision number (as applicable)</p>				(Indicate Section number and paragraph number for all references)
2	<p>Statement of Authority and Responsibility</p> <p>The Statement of Authority and Responsibility shall include the following:</p> <p>(a) A statement that all work carried out by the applicant meets all applicable Code and Jurisdictional requirements.</p> <p>(b) The authority and responsibility of those in charge of the QCS are clearly established and documented.</p> <p>(c) Persons performing quality control functions have sufficient and well-defined responsibility, the authority, and the organizational freedom to identify quality problems, and to initiate, recommend, and provide solutions, including stop work orders if further processing would result in a non-conformance with the applicable Code section.</p> <p>(d) A statement that all disagreements in the implementation of the QCS is referred for resolution to a higher authority in the company.</p> <p>(e) The Statement of Authority and Responsibility is signed and dated by a senior company official responsible for Code activities (i.e., President, Vice-President, Plant Manager, etc.)</p>				
3	<p>Manual Control</p> <p>Note: A glossary of terms is desirable from the standpoint of clarity and if abbreviated titles of personnel and control documents are used throughout the Manual.</p> <p>(a) Manual revision controls are clearly described (i.e., the Manual is revised by page, by section, etc.).</p> <p>(b) The title of the individual responsible for revising the Manual.</p>				



	(c) The title of the individual responsible for reviewing the current TSSA Code Adoption Document, new editions of the CSA, ASME, and/or NBIC Codes, and making any required changes to the Manual within six months from the new edition issue date.				
	(d) Provision for review and approval of the Manual to maintain it is current.				
	(e) Provision for submittal of the Manual revisions to the TSSA Representative for acceptance prior to implementation, including timely update of all copies to reflect the approved revisions.				
	(f) In the case where the Manual exists in more than one language, at least one version is in English and identified as the authoritative version.				
	(g) In the case where the Manual exists in languages other than English, a statement shall be provided by the C of A holder that the translation is correct.				
	(h) Provision for distribution of the revised Manual (controlled or uncontrolled), including hard copy and/or electronic copy controls.				
4	Organization				
	(a) An organization chart showing the relationship between management, engineering, purchasing, manufacturing, production, field assembly, field construction, inspection, and quality control (as applicable) exists and reflects the actual organization. Note: The purpose of this chart is to identify and associate the various organizational groups with the specific function for which they are responsible. The Code does not intend to encroach on the right to establish or alter whatever form of organization considered to be appropriate for Code work.				
5	Drawings, Design Calculations, and Specification Control				
	Controls exist which assure that the latest applicable drawings, design calculations, specifications, and instructions required by the Code, as well as authorized changes, are used for the manufacture, assembly, examination, inspection, and testing. Controls include provisions for:				
	(a) The title of the individual responsible for preparing design calculations and drawings produced internally (as applicable).				
	(b) The title of the individual responsible for reviewing and approving drawings, calculations, and specifications prepared internally or supplied by the customer to ensure Code compliance (approval by signature and date on all applicable documents).				
	(c) <u>Repairers and alterers of boilers and pressure vessels only</u> – The title of the individual responsible for obtaining and reviewing the original Manufacturer’s Data Report to ensure the repair or alteration methods are completed per the original Code of Construction.				
	(d) The title of the individual responsible for computer aided design calculations and drawings. A detailed description of how this is verified to ensure the correct output has been obtained (where applicable).				



	(e) The title of the individual responsible to ensure computer program revisions have been made within 6 months of a new Code edition issue date. The verification process that ensure the revised program is producing the correct output is described (where applicable).				
	(f) The title of the individual responsible for the design registration with the appropriate jurisdictional authority and filing the registered designs upon request shall be described.				
	(g) <u>Fitting manufacturers only</u> – The title of the individual responsible for the design registration of fittings (including the Statutory Declaration/Declaration of Conformity) with the appropriate jurisdictional authority and filing the registered designs upon request shall be described.				
	(h) The title of the individual responsible for the distribution of drawings, calculations, specifications, and the removal of all obsolete drawings, calculations, and specifications.				
6	Material Control				
	(a) Procedures for material control exist to ensure that the material received is properly identified and includes the correct documentation (i.e. material certifications, Statutory Declaration/Declaration of Conformity, material test reports, etc.) to satisfy Code requirements.				
	(b) The title of the individual responsible for identifying the need for material test reports, Statutory Declaration/Declaration of Conformity, certificates of compliance, etc., and obtaining the correct documentation.				
	(c) The title of the individual responsible for performing the receiving inspection of Code materials, including the review of required material characteristics to be checked.				
	(d) When further material testing is required at receiving inspection, or during the manufacturing operations, the applicable procedures for control of this activity is documented.				
	(e) The material control system ensures that only accepted material is issued for Code construction.				
	(f) Controls exist for the handling of material that are found to be non-conforming at receiving inspection.				
	(g) When substitution of material is acceptable, the applicable procedures for control of this activity shall be documented, including designation of the individual authorized to approve substitutions.				
	(h) Measure are established and documented to ensure the proper marking, handling, and storage of materials, including welding or brazing material (where applicable).				
7	Examinations and Inspections				
	Fabrication operations, including examinations and tests are described in sufficient detail to determine at what stages specific inspections are to be performed. Measures have been established to ensure:				



(a) Provisions for the use of checklists, process sheets, travelers, etc., for a list of examinations and tests to be performed and for the designation of inspection points.				
(b) The title of the individual responsible for contacting the Inspector prior to the start of fabrication, and providing them with the latest revised drawings, design calculations, and all job-related documents for initial review and designation of examination and inspection points on the checklist.				
(c) The title of the individual responsible for informing the Inspector of approaching examination or inspection points designated on the checklist.				
(d) Material test reports, certificates of compliance, examinations reports, test records, and other fabrication documents are available to the Inspector.				
(e) The title of the individual responsible for selecting the appropriate materials, welding/brazing procedures, preheat, non-destructive examination, and post weld heat treatment (where applicable).				
(f) Transfer of material markings to ensure traceability is maintained. If a coded marking system is used, it is documented in the manual or a written procedure acceptable to the Inspector.				
(g) The title of the individual responsible for preparing a repair procedure for required repairs to pressure retaining material and obtaining the Inspectors concurrence.				
(h) <u>ASME B31.1, ASME B31.3, and/or CSA Z7396.1 installers only</u> – Provisions exist for welded or brazed like for like replacements with the Inspectors involvement.				
(i) The individual responsible and the Inspector has witnessed all final pressure tests.				
(j) <u>Fitting manufacturers only</u> – The title of the individual responsible for preparing and approving procedures for proof testing, and to ensure the Inspector has been notified to witness all proof tests.				
(k) Measures are taken to ensure that all required examinations and inspections have been completed by the individual responsible and the Inspector.				
(l) <u>CSA Z7396.1 installers only</u> – Measures are established to ensure only BCuP-3 or BCuP-5 filler is used in medical gas piping installations.				
(m) <u>ASME B31.5 installers only</u> – Brazed refrigeration repairs shall be completed and recorded on a repair report. All repair reports shall be retained and available to the TSSA Representative during tri-annual audits.				
(n) The title of the individual responsible for the completion of the checklist and to ensure all designation points have been accepted by the Inspector.				
(o) The title of the individual responsible for the preparation of the applicable Data Report. The Data Report shall be reviewed for correctness and certified by the individual accepting the workmanship on behalf of the company prior to presenting to the Inspector for acceptance.				



	(p) <u>Repairers and alterers of boilers and pressure vessels only</u> – The title of the individual responsible for verifying the applicable nameplate stamping with the TSSA Report of Repair or Alteration before presenting to the Inspector for acceptance (where applicable).				
	(q) Measures are established to ensure the Inspector has verified the attachment of the nameplate to the correct vessel (where applicable).				
	(r) Measures are established for the distribution of Data Reports.				
	(s) Measures are established to control field activities (where applicable).				
8	Non-Conformances Note: A non-conformance is any condition which does not comply with the applicable rules of the Code, Manual, or other specified requirements. Non-conformances must be corrected before the completed item can be considered acceptable to the Code.				
	Controls exist for the correction of non-conformances. When the Inspector involvement is required, a procedure shall be agreed upon with the Inspector. The procedure shall include:				
	(a) Identification of the person(s) responsible for the resolution of the non-conformances.				
	(b) Identifying and controlling further processing of non-conforming items until final disposition.				
	(c) Documenting the non-conformance, the disposition, and informing the Inspector of the non-conforming condition.				
	(d) Addressing the non-conformance on the checklist with a hold point added.				
	(e) The final inspection shall be accepted by the Company and the Inspector.				
	(f) When the disposition is “Use-As-Is”, the disposition shall involve an engineer to ensure an engineering evaluation has been carried out (where applicable).				
9	Welding and Brazing Control				
	(a) Welding/Brazing shall conform to the requirements of ASME Section IX and the Code of Construction, as applicable to the scope of work.				
	(b) The title of the individual responsible for certifying Welding Procedure Specifications (WPS), Brazing Procedure Specifications (BPS), Procedure Qualification Records (PQR), and Welder/Welding Operator Certificates and Brazer/Brazing Operator Certificates shall be designated by the Company per ASME Section IX, QG-106. Note: If the Company is a member of a Trades Association (i.e., MCAO, ORAC, etc.), the Trades Association will designate an individual per ASME Section IX, QG-106 requirements.				
	(c) Measures are established to ensure all applicable WPS/BPSs are available to the welder/brazer in the work area.				
	(d) The title of the individual responsible for maintaining welder/brazer qualifications in accordance with the TSSA Code Adoption Document, ASME Section IX, and the Code of Construction.				
	(e) A system shall be established for identifying the welds/brazes completed by each welder/brazer.				
	(f) The title of the individual responsible for ensuring the proper removal or inspection of tack welds per the Code of Construction.				



	(g) Storage and conditioning of low-hydrogen electrodes shall be established (where applicable).				
	(h) Measures are established for the issuance and return of welding/brazing material to ensure the proper welding/brazing material is used.				
	(i) Provisions exist for the revocation of welder/brazer certification when there is a reason to question their ability to make welds/brazes that meet the specification.				
	(j) <u>ASME B31.5 installers only</u> – Provisions exist for the maintenance of a brazers log and recording of brazer/brazing operator qualifications at least once every six months in accordance with the TSSA Code Adoption Document.				
10	Non-Destructive Examination (NDE)				
	Controls exist for identifying the appropriate NDE procedures applicable to the scope of work. These provisions ensure that:				
	(a) The Manual addresses requirements that the Qualification and Certification of NDE Personnel meets the requirements of CAN/CGSB-48.9712 and/or SNT-TC-1A.				
	(b) NDE examinations are performed in accordance with a written procedure demonstrated to the satisfaction of the Inspector. Procedures shall be made available to the Inspector upon request.				
	(c) NDE reports and radiography film shall be retained in accordance with the Code of Construction.				
	(d) All NDE equipment shall be calibrated, and calibration reports available upon request.				
	(e) The title of the individual responsible for accepting all NDE reports by signature and date.				
	(f) <u>ASME B31.1 and/or ASME B31.3 Installers Only</u> – The Manual addresses the qualification requirements for personnel performing visual examinations of welds.				
11	Post Weld Heat Treatment (PWHT)				
	(a) Controls are in place to ensure that PWHT is completed as required by the Code of Construction.				
	(b) The title of the individual responsible for ensuring the proper placement of thermocouples and PWHT charts are provided.				
	(c) The title of the individual responsible for maintaining traceability of the item being heat treated when sent to the subcontracted facility.				
	(d) Documentation is provided to the Inspector for assurance that all PWHT requirements have been met.				
12	Calibration of Measuring and Test Equipment				
	Controls exist for the calibration of examination, measuring, and test equipment. Measures are established to ensure:				
	(a) Calibration records are maintained and that status indicators are used to indicate the current calibration status of the equipment.				
	(b) Measuring and test equipment is maintained in good condition, checked for signs of damage, and removed from service if found defective.				



	(c) A calibration frequency is established, maintained, and results are traceable to National Standards.				
	(d) When calibrations are performed in-house, the title of the individual responsible is identified and procedures are established.				
	(e) <u>ASME B31.5 Installers Only</u> – The calibration of pressure gauges is not required if the two-gauge method is used for pressure testing.				
13	Records Retention				
	(a) Procedures exist for the maintenance of all records for a period of time as required by the Code of Construction, but not less than 5 years.				
	(b) The title of the individual responsible for maintaining the following documentation (as applicable): (i) The applicable Manufacturer’s Data Report (ii) Manufacturer’s Partial Data Reports (iii) Manufacturer’s drawings/Registered drawings (iv) Design calculations, including any applicable proof test reports (v) Checklists, process sheets, travelers, etc. (vi) Material test reports, material certifications, Statutory Declaration/Declaration of Conformity, etc. (vii) Pressure parts documentation and certifications (viii) Welding Procedure Specifications and Procedure Qualification Records (ix) Welder/Welding Operator Qualification Records for only those welders/welding operators who welded on the vessel or part (x) Brazing Procedure Specifications and Procedure Qualification Records (xi) Brazer/Brazing Operator Qualification Records for only those brazers/brazing operators who welded on the vessels or part (xii) NDE interpretation reports (xiii) Repair procedures and records (xiv) Process control sheets (xv) Heat treatment records and test results (xvi) Postweld heat treatment records (xvii) Non-conformances and dispositions (xviii) Pressure test records (xix) Transfer forms (xx) Continuity records showing that the qualifications of welders/welding operators and brazer/brazing operators have been maintained. (xxi) Copy or photograph of nameplate(s) (xxii) Any other applicable documentation				
14	The Inspector Note: The Inspector may be an Authorized Inspector, a TSSA Inspector, an Insurance Inspector, or an Owner/User Inspector, as applicable.				
	(a) All required inspections are to be performed by an Authorized Inspection Agency (AIA). The AIA in Ontario is the Technical Standards and Safety Authority.				



	(b) <u>Repairers or alterers of boilers and pressure vessels only</u> – The AIA may be an Insurance Company or TSSA. The owner shall be contacted to verify if the boiler or pressure vessel is insured and what AIA will provide the inspection service.				
	(c) <u>Manufacturers of boilers and/or pressure vessels only</u> – An inspection agreement must be established and maintained with the AIA.				
	(d) A controlled copy of the Manual shall be made available to the Inspector at the shop or field site where Code activities are being carried out.				
	(e) The Inspector shall have access to all job documentation necessary for the Inspector to perform their duties.				
	(f) Provisions exist for providing a liaison between the Inspector and the Company.				
	(g) Provisions exist for access for the Inspector and the Inspector’s Supervisor to all areas involved in Code activities.				
	(h) Provisions exist to ensure that all Code required inspections have been performed by the Inspector.				
	(i) <u>Fitting manufacturers Only</u> – Provisions exist to ensure that the witness of proof testing has been performed by the Inspector.				
	(j) Provisions exist for periodic inspection of electrical boilers as defined in ASME Section I, PEB 18.2.2 (where applicable).				
15	Boiler External Piping (BEP) Additional Requirements				
	(a) Provisions exist for material to be ordered to ASME SA, SB, or SFA Specifications, and Material Test Reports reviewed and accepted to ASME Section II.				
	(b) Provisions exist for the Code stamping of the piping system.				
	(c) Provisions exist for the Inspector to witness all pressure testing of the piping system.				
16	Miniature Pressure Vessels Additional Requirements				
	Note: Applicants shall also hold an ASME Section I and/or ASME Section VIII Division 1 C of A.				
	(a) The Certified Individual (CI) shall be an employee of the Company, meeting the knowledge and training requirements, and shall be qualified and certified by the Company. Qualifications shall include as a minimum:				
	(i) Knowledge of the requirements of ASME Section VIII Division 1 for the verification of completeness and correctness of the nameplate stamping and Manufacturer’s Data Report.				
	(ii) Knowledge of the Company’s quality program.				
	(iii) Training to commensurate with the scope, complexity, or special nature of the activities to which oversight is to be provided.				
	(b) Records shall be developed, maintained, and certified by the Company, containing objective evidence of the qualifications of the CI and the training program provided.				
	(c) Measures are established to ensure that the CI performs all the required duties within the applicable Code, as required below:				



	(i) Verify that each miniature vessel meets all the applicable requirements of ASME Section VIII Division 1, and has a current capacity certification for the “UV” designator				
	(ii) Review documentation for each lot of miniature pressure vessels to be stamped, and that the requirements of ASME Section VIII Division 1 has been verified and completed.				
	(iii) Sign the appropriate Manufacturer’s Data Report for the miniature pressure vessel prior to it’s release.				
	(d) Provisions exist for the review of miniature pressure vessel certification after the first and second year of each three-year review cycle. Review to be performed by the Inspectors Supervisor, and the report to be submitted to TSSA.				
17	Sample Forms				
	(a) Forms used to control functions relative to quality are included within the Manual, and their use explained in the text of the Manual.				