



# **ACCREDITATION OF ON-LINE LEAK SEAL ORGANIZATIONS**

## ***TSSA GUIDE FOR SURVEY TEAMS***

The Technical Standards and Safety Authority  
Boilers and Pressure Vessels Safety Division  
3300 Bloor Street West  
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CANADA

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## INTRODUCTION

This guide is prepared for the use of TSSA survey team leaders, members and applicants for TSSA Certificates of Authorization. It is not intended to replace or interpret the requirements of the Boilers and Pressure Vessels Regulation or CSA B-51 Standard. The checklist does not list all of the detailed requirements of the Boilers and Pressure Vessels Regulation or CSA B-51, but rather lists the highlights that the applicant is required to include in the written Quality Control (QC) Manual.

In addition, to assist the TSSA survey team, this guide is provided to applicants for TSSA Certificates of Authorization for their use in identifying and verifying the paragraph(s) where their QC Manual addresses all applicable control requirements of the Boilers and Pressure Vessels Regulation, CSA Standards and other applicable Quality Control requirements. The QC Manual must contain the description of the controls necessary for implementing the QC Program but, it is not required to contain all of the programmatic requirements which will be found in the QC Program, such as written procedures.

The guide is based upon the Boilers and Pressure Vessels Regulation, CSA B-51 and other Quality Control requirements. The guide is subject to revision based on changes made to the Regulation, CSA B-51 and other Quality Control requirements from time to time.

A survey must cover a QC Manual and its implementation. The implementation portion of the program shall be demonstrated on an item, which may be work in progress, or a demonstration item. It is recognized that the scope of work, QC Manual and Manual implementation will vary from one applicant to another, therefore, only those activities to be performed under the scope of an applicant's TSSA Certificate of Authorization are required to be addressed in the QC Manual. TSSA survey teams are advised that this guide may not outline all possible aspects of each survey. The QC Manual need not follow the format of this guide.

Questions of possible need for Interpretation raised by survey team members or the applicant shall be submitted to the TSSA Chief Inspector for an answer, and when submitted by the applicant a copy of the inquiry and reply should be provided by the inquirer to the applicant's Inspection Agency and any known involved enforcement authority.

## HOW TO USE THIS GUIDE

Review each checklist item in the checklist against the QC Manual and:

- 1) Check (√) the applicable column - "Yes", "No" or "N/A" (Not Applicable)
- 2) Note the paragraph number in the QC Program Manual which covers the subject addressed in the column labelled "Quality Program Reference".

Submit one copy of the completed checklist with one uncontrolled copy of the QC Manual to TSSA Head Office for review, at least one month prior to the scheduled implementation review date.



## REPAIR OR ALTERATION MANUAL REVIEW CHECKLIST

**COMPANY NAME & ADDRESS:** \_\_\_\_\_

**REVIEWED BY:** \_\_\_\_\_ **DATE(S) :** \_\_\_\_\_

No.	Section	Manual Reference	Yes	No	N/A	Comments
1.0	<b>TITLE PAGE</b>					
1.1	Company name & full street address.					
1.2	ASME Code Sections & CSA B51.					
1.3	Approval & acceptance signatures including dates.					
1.4	Controlled Number.					
1.5	Issue Number & date.					
2.0	<b>CONTENTS PAGE</b>					
2.1	Contents Page to include columns for Subject, Number (if applicable) and Revision Level, including exhibits.					
3.0	<b>SCOPE OF WORK</b>					
3.1	Does scope of work clearly describe:					
	- The scope of on-line leak seal activities the organization is capable of?					
3.2	- The type of on-line leak seal activities the organization intends to carry out?					
4.0	<b>STATEMENT OF AUTHORITY &amp; RESPONSIBILITY</b>					
4.1	Does a statement appear on a dated company letterhead signed by an officer of the company and providing the following:					
4.2	1. A statement that all on-line leak seal operations carried out by the organization shall meet the requirements of the Ontario Boilers and Pressure Vessels Regulation, CSA-B51 and TSSA as applicable?					
4.3	2. A statement that if there is a disagreement in the implementation of the Quality system, the matter is referred for resolution to a higher authority in the company?					
4.4	3. The title of the individual who will be responsible to ensure that (1) above is followed and has the freedom to carry out the responsibility?					
5.0	<b>MANUAL CONTROL</b>					
5.1	Who is responsible for preparation, revision, distribution & implementation of QC Manual?					
5.2	Who is responsible for the review of applicable Codes and addenda?					
5.3	How is the QC Manual revised & revisions identified?					
5.4	Is there acceptance of revisions by TSSA prior to implementation?					
5.5	Is there a description of a Revision Log including approval and acceptance?					

No.	Section	Manual Reference	Yes	No	N/A	Comments
5.6	Description of how QC Manual & revisions are issued and distributed, including Distribution Log?					
5.7	Is use of uncontrolled QC Manuals described?					
6.0	<b>ORGANIZATION</b>					
6.1	Is an organization chart included in the manual?					
6.2	Titles of heads of all departments within the company which perform functions that affect the quality of on-line leak seal activities.					
6.3	Does chart indicates the relationship between each department or division?					
6.4	Does the manual identify those individuals responsible for preparation, implementation, or verification of the Quality System?					
6.5	Are the responsibilities clearly defined?					
6.6	Do the individuals have the organizational freedom and authority to fulfil those responsibilities?					
7.0	<b>PREPARATION</b>					
	<b>Risk Assessment</b>					
7.1	When an on-line leak seal operation is requested, is a documented risk assessment performed by the certificate holder and the owner/user?					
	<b>Nature and Cause of Leak</b>					
7.2	Is an assessment of the leak performed to ensure that the leak seal operation will not result in failure of the equipment on which it is being performed?					
	<b>Extent of Damage</b>					
7.3	Is the full extent of the damage established to determine the suitability of the proposed leak seal operation to seal the leak, including adjacent material thickness, the presence of any cracking, corrosion of bolting, gasket deterioration, etc?					
	<b>Operating Conditions</b>					
7.4	Are normal operating pressures and temperatures, cyclic conditions and shutdown or upset conditions taken into account, including the possibility of pressure and temperature reductions during the leak seal operation?					
	<b>History: Leak Records, Bolt Re-Tightening and/or Previous Leak Sealing</b>					
7.5	Is previous history reviewed and if re-injection is required is consideration given to shutting down equipment and affecting a proper repair?					
	<b>Condition of Pressure Equipment and Gaskets</b>					
7.6	Is consideration given to the possibility of corroded and eroded material including plate, piping, flanges and					

No.	Section	Manual Reference	Yes	No	N/A	Comments
	bolts, particularly where re-injection at a previously leak sealed position is contemplated?					
7.7	When assessing the condition of gaskets are type, age and service conditions considered?					
	<b>Pressure System Contents</b>					
7.8	Is chemical compatibility of the clamp, band or box and sealing compound considered?					
7.9	Is the nature of the process fluid toxicity and flammability used to determine the need for protective clothing, air breathing equipment, nitrogen purge, and the use of special or non-spark tools?					
8.0	<b>DRAWINGS, DESIGN &amp; SPECIFICATIONS</b> Are flange clamps or bands and leak seal boxes of a purpose built design, in accordance with recognized piping and vessel Codes and good engineering practice?					
8.1	Do designs address the system design parameters and the injection pressure of the sealing compound?					
8.2	Are all seal clamp designs registered with TSSA?					
8.3	Does the system provide controls to ensure all: - design information - applicable drawings - design calculations - specifications - instructions are prepared or obtained, controlled and interpreted in accordance with the code of construction?					
9.0	<b>ON-LINE LEAK SEAL METHODS</b>					
9.1	Does the manual include controls (including written procedures) for all on-line leak seal activities including: - selection of welding procedure specification? - materials? - nondestructive examination methods? - preheat? - postweld heat treatment? - all safety concerns including protective equipment?					
10.0	<b>MATERIALS</b>					
10.1	Does the manual describe the method used to assure that only acceptable materials (including welding materials) are used for on-line leak sealing?					
10.2	Does the manual include a description of how existing materials (clamps, boxes, etc.) are identified?					
10.3	Does the manual include a description of how new materials (including clamps, boxes, etc.) are ordered, verified and identified?					
10.4	Are the individuals responsible for each function identified?					
10.5	Is a brief description given of how each function is performed?					

No.	Section	Manual Reference	Yes	No	N/A	Comments
11.0	<b>METHOD OF PERFORMING WORK</b>					
11.1	Are the methods for performing and documenting on-line leak seal operations described in sufficient detail to permit certificate holder staff to determine at what stages specific inspections are to be performed when necessary?					
12.0	<b>WELDING, NDE &amp; HEAT TREATMENT</b>					
12.1	Does the manual describe controls for welding, nondestructive examination or heat treatment, as applicable?					
12.2	Are the titles of individuals responsible for: - welding procedure specification - welding procedure qualification - welder qualification - welding operator qualification identified?					
12.3	Are welding procedure specifications, welders and welding operators used in the repair or alteration of pressure retaining items qualified as required by the Code of construction?					
12.4	Are means provided for welders and welding operators to maintain their proficiency while engaged in the repair or alteration of pressure retaining items, as required by the Code of construction					
12.5	Are their descriptions of similar responsibilities for nondestructive examination and heat treatment described in the manual?					
13.0	<b>EXAMINATION AND TESTS</b>					
13.1	Are descriptions of any examinations and tests required upon completion of an on-line leak seal operation provided in the manual?					
14.0	<b>CALIBRATION</b>					
14.1	Does the manual describe a scheduled & documented program for the periodic calibration of measuring instruments and pressure gauges used in the performance of on-line leak seal operations?					
14.2	Who is responsible for:  a) Ensuring that all items are maintained in good condition and are checked for signs of damage etc. before use? b) Removal from service of any such equipment found to be defective, or suspected to be so? c) Ensuring only equipment currently in calibration is used? d) Performing, or arranging for, calibration of measuring and test equipment, the results of which shall be traceable to National Standards? e) Establishing and maintaining a calibration frequency schedule for the type of equipment and its corresponding amount of use?					

No.	Section	Manual Reference	Yes	No	N/A	Comments
15.3	Is there equipment identification using label/sticker and specifying information?					
15.4	Who maintains the Calibration Log & describes information therein?					
15.5	How is calibration of working pressure gauges performed and who is responsible?					
15.6	Does calibration of master pressure test gauges describe 1] Frequency? 2] Method? (standard dead weight tester or master gauge) 3] Calibration standards certified and traceable to nationally recognized standards?					
15.7	Is it necessary to calibrate instruments such as vernier calipers, micrometers, and calibration blocks?					
15.8	If so what is the: 1] Frequency? 2] Method? 3] Standard used?					
15.9	Who is responsible for maintaining all calibration records?					
15.10	Is there a "recall" procedure when a pressure gauge is found to be out of calibration?					
16.0	<b>ACCEPTANCE AND INSPECTION OF ON-LINE LEAK SEAL OPERATIONS</b>					
16.1	Does the manual specifically state that before the work is started the inspections that are required during and on completion of the work are documented?					
16.1	Are provisions made for a TSSA Inspector to have access to: - all drawings? - design calculations? - specifications? - procedures? - process sheets? - repair or alteration procedures? - test results? - other documents as necessary to assure compliance? When necessary.					
16.2	Is a current copy of the manual made available to the certificate holder staff at the shop or field site where the work is being performed?					
17.0	<b>NONCONFORMITIES</b>					
17.1	Is there a definition of a nonconformity?					
17.2	Is there a description of the identification, documentation, evaluation, segregation, resolution and disposition of nonconformities and who is responsible?					
17.3	Is there a clear statement that nonconformities must be corrected or eliminated before the repaired or altered item can be considered in compliance with the NBIC?					

No.	Section	Manual Reference	Yes	No	N/A	Comments
17.4	Is there an exhibit of a Nonconformance report?					
18.0	<b>EXHIBITS</b>					
18.1	Are all forms referenced in the manual included as exhibits?					
18.2	For clarity are the forms completed and identified as examples?					

**REVIEW DEMONSTRATION**

*Note:* A demonstration or implementation of the QC System during the TSSA survey shall include the administrative functions to support the QC System and the manufacturing, fabrication and testing of product necessary to indicate knowledge and ability to perform the work and produce the component/parts covered by the Scope of the system.

The demonstration may be conducted on in-process work, a mock-up to current Code rules, or a combination thereof, and for renewal certificates a review of past job documentation. Where Code work is in progress, the demonstration shall include the administrative and construction functions for the products and orders which are being processed to meet Code requirements.