

Guide for Quality Control Program Requirements

IP-2008-07-004

INTRODUCTION

This guide is intended to assist companies in developing a Quality Control Manual for use within the Province of Saskatchewan thus ensuring pressure equipment is constructed, repaired and altered in compliance with the applicable codes in the interest of public safety. It is based on the codes listed below and is not intended to replace or interpret the requirements of the applicable code sections or standards.

- ASME Section I
- ASME Section IV
- ASME Section VIII Div. I
- ASME Section IX
- CSA B51
- NBIC NB-57

Please keep in mind when writing your program that an English language version of the manual is mandatory for use by the review team, Authorized Inspector (AI), and Authorized Inspector's Supervisor (AIS). Also the ASME Code covers the design and construction of pressure equipment as per the applicable section, while the NBIC covers the repair, alteration and installation requirements of ASME Code items. CSA Codes and Standards cover installation and operational requirements as well as Canadian requirements which supplement the ASME Codes.

GLOSSARY OF TERMS

ASME – American Society of Mechanical Engineers

ASME A1.20-3/05 – Guide for ASME Review Teams for Review of Applicants for ASME Certificates of Authorization

NBIC – National Board Inspection Code

NB-57 – National Board ASME Guide

CSA – Canadian Standards Association

To submit or resubmit your Quality Control Manual for registration, please visit our website at www.tsask.ca and follow the links to the Quality Programs page.

For any additional questions, please contact the TSASK offices by calling:

Toll free

Phone: (866) 530-8599

In Regina

Phone: (306) 798-7111
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In Saskatoon

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Quality Control Manual Requirements

A. GENERAL REQUIREMENTS

The title page, facing page or cover sheet must contain the following information:

A.1 TITLE PAGE

1. Company name and address as it will appear on the Certificate of Authorization requested.
 - ASME A1.20-3/05, NB-57 Section 2.3.1

2. A listing of the applicable Code sections and standards work is being performed to:
 - ASME A1.20-3/05, NB-57 Section 2.3.1
 - i. ASME Section I – Power Boilers
 - ii. ASME Section IV – Heating Boilers
 - iii. ASME Section VIII Div. 1 – Pressure Vessels
 - iv. ASME Section IX – Welding
 - v. ASME B31.1 – Power Piping
 - vi. ASME B31.3 – Process Piping
 - vii. ASME B31.5 – Refrigeration Piping
 - viii. ASME B31.9 – Building Systems Piping
 - ix. CSA B51 – Boiler, Pressure Vessel and Pressure Piping Code
 - x. CSA B52 – Mechanical Refrigeration Code
 - xi. NBIC NB-23 – National Board Inspection Code
 - xii. Jurisdictional Acts & Regulations

3. Applicability of the quality program to shop and/or field work.
 - ASME A1.20-3/05

4. The manual revision level.
 - ASME A1.20-3/05

A.2. CERTIFICATE OF AUTHORIZATION

A facsimile of the current Certificate of Authorization must be contained within the manual. It must show the current physical address of the facility from which the program is managed, and also list the scope of work being performed as stated on the title page.

A.3. SCOPE

This part of the program is not required but is recommended as it will contain any limitation or additional requirements to your program outside of those required by the published code, standard, Acts & Regulations.

A.4. TABLE OF CONTENTS

Must reflect the structure of the manual, and show the revision level of each section. Must include a place for persons accountable for controlling and implementing the quality control program to sign and date as well a place for the Authorized Inspector to sign his acceptance. This also may be accomplished using a revision summary sheet or equivalent form.

Quality Control Manual Requirements

A.5. GLOSSARY OF TERMS

For the purpose of clarity all abbreviated titles of personnel, control documents, organizations, Codes, Standards, Acts & Regulations; etc used within this manual must be defined. This is not mandatory by Code but is a requirement of this Jurisdiction.

B. STATEMENT OF AUTHORITY

This must contain the following information:

1. Statement referencing the code section and standards listed on the title page with which the quality control program is intended to comply.
 - *NB-57 Section 2.3.2*
2. State the authority and responsibility of those persons accountable for controlling and implementing the quality control program.
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*
3. Establish the individual's freedom within the organization to identify quality control problems, initiate, recommend and provide solutions.
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*
4. Must contain a statement indicating the full support of management for the quality control program.
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*
5. Statement must be signed and dated by a senior company official responsible for code work.
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*

C. ORGANIZATION CHART(S)

This must contain the following information:

1. Must contain the job titles of key personnel used throughout the program to designate responsibilities within the organization. The job titles shown in the organization chart must be consistent within the quality control program.
 - *ASME A1.20-3/05, NB-57 Section 2.3.5*
2. Must show the relationship between key personnel to reflect the current structure of the company.
 - *ASME A1.20-3/05, NB-57 Section 2.3.5*
3. The chart must be dated and include a revision number
 - *NB-57 Section 2.3.5*
4. The personnel assigned the responsibility for the quality program must have sufficient authority or communication within the organization to effect change.
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*

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D. QUALITY CONTROL RESPONSIBILITIES

This must contain the following information:

D.1. MANUAL CONTROL

1. Preparation, revision, distribution and implementation of the quality control manual must be assigned.
 - *NB-57 Section 2.3.6*
2. Detail how the quality control manual will be revised, when revisions will be completed, and how the revisions will be identified within the manual.
 - *ASME A1.20-3/05, NB-57 Section 2.3.6*
3. Ensure that all proposed revisions to the quality control system are presented to the Authorized Inspector prior to inclusion and implementation within the program.
 - *ASME A1.20-3/05, NB-57 Section 2.3.6*
4. Ensure a current controlled manual is available for use by the Authorized Inspector at all locations work is being performed.
 - *ASME A1.20-3/05, NB-57 Section 2.3.6*

D.2. LIASON

1. Assign responsibility for liaison with the Authorized Inspector
 - *NB-57 Section 2.3.6(g)*
2. Free access for the Authorized Inspector to all shop and field locations where work is being performed must be indicated
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*
3. Ensure that the Authorized Inspector is notified of all work in progress and approaching inspection points or assigned hold points.
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*
4. Assign responsibility for the custody and control of code stamp(s) and their use if applicable.
 - *ASME A1.20-3/05, NB-57 Section 2.3.2*

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E. DRAWING, DESIGNS, CALCULATIONS AND SPECIFICATIONS

This must contain the following information:

1. Specify who prepares and approves design calculations and drawings.
 - ASME A1.20-3/05, NB-57 Section 2.3.7(b)
2. Assign responsibility for review of customer's supplied calculations, specifications and drawings to ensure code compliance and/or registration.
 - NB-57 Section 2.3.7(a)
3. How are drawings and latest revisions issued and retrieved? How are superseded drawings disposed of; what are the procedures to ensure all the documents are the latest revision?
 - NB-57 Section 2.3.7(h)
4. Who approves drawings for fabrication?
 - NB-57 Section 2.3.7(i)
5. What additional information is to be identified on the approved drawings?
 - NB-57 Section 2.3.7(j)
 - i. Code Edition and Addenda
 - ii. MAWP
 - iii. MDMT
 - iv. NDE required
 - v. WPS
 - vi. CRN
6. A system to identify designs, drawings and specifications to the work being completed.
 - NB-57 Section 2.3.7(f)
7. Who ensures that all designs, drawings and specifications are submitted to Jurisdictional Authority when required?
 - Act & Regulations
8. Statement to ensure that no fabrication will commence unless design registration is complete or prior approval received from the Authorized Inspector.
 - Act & Regulations

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E. MATERIAL CONTROL

This must contain the following information:

E.1. PURCHASING

1. Who is responsible for ordering materials, and who establishes the material requirements for code compliance?
 - *ASME A1.20-3/05, NB-57 Section 2.3.7(b)*
2. What source is used for ordering materials?
 - *NB-57 Section 2.3.7(a)*
3. Are substitutions of materials allowed; by whose authority; and is there Authorized Inspector involvement?
 - *NB-57 Section 2.3.8(b)*
4. Are purchase orders complete, with all the information required by the Material Specification and the applicable code section?
 - *NB-57 Section 2.3.8(b)*
 - i. Request for MTR's when required by code
 - ii. ASME or ASTM specifications
 - iii. Identification to the work being completed
5. Who reviews and approves purchase orders prior to use? How are purchase orders distributed once they have been approved?
 - *NB-57 Section 2.3.7(i)*

E.2. RECEIVING

1. Who is responsible for receiving materials?
 - *ASME A1.20-3/05, NB-57 Section 2.3.7(b)*
2. How are materials and parts inspected upon receipt?
 - *NB-57 Section 2.3.7(a)*
3. What source of information is used to verify that they are correct?
 - *NB-57 Section 2.3.8(b)*
4. How are non conforming materials handled?
 - *NB-57 Section 2.3.8(b)*
5. How are acceptable materials identified and material traceability maintained?
 - *NB-57 Section 2.3.7(i)*
6. Who reviews MTR's and COC's for compliance with ASME Sec. II when required? How are they traceable to the work being completed? Where are they stored?
 - *ASME A1.20-3/05, NB-57 Section 2.3.7(b)*
7. Who ensures standard pressure parts are verified for code compliance and registration with the Jurisdictional Authority when required?
 - *NB-57 Section 2.3.7(a), Act & Regulations*

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E.3. TRACABILITY

8. How are materials stored and issued for fabrication?
 - *NB-57 Section 2.3.8(b)*
9. What system of identification is used prior to cutting materials into 2 pieces or more? Is a color coded system to be used, coded marking system, etc?
 - *NB-57 Section 2.3.8(b)*
10. How do you ensure traceability is not lost during heat treatment processes?
 - *NB-57 Section 2.3.7(i)*

F. EXAMINATION AND INSPECTION PROGRAM

Fabrication operations, including examinations and testing procedures must be described in sufficient detail to permit the Authorized Inspector to determine at what stages specific inspections are to be performed. This must contain the following information:

1. Who is responsible developing the inspection and test plan for fabrication? Does it include all the essential sign off points and examinations for the scope of work to be performed?
 - *ASME A1.20-3/05, NB-57 Section 2.3.7(b)*
2. Who ensures the ITP and any applicable information provided to the Authorized Inspector and Owner prior to work being performed to review and assign any hold points?
 - *NB-57 Section 2.3.7(a)*
3. Does the ITP indicate welding procedure specification(s), NDE and heat treatment procedures or has other controls been provided for these functions?
 - *NB-57 Section 2.3.8(f)*
4. Who is responsible to ensure that the ITP points are marked off as they are complete? What controls are in place to ensure that the Authorized Inspector and Owners Inspector are notified in advance of assigned hold points?
 - *NB-57 Section 2.3.8(b)*
5. Who is responsible for filling out and signing the Manufacturers Data Report and ensuring it is correct prior to presenting it to the Authorized Inspector for signature?
 - *NB-57 Section 2.3.7(l)*
6. Who verifies the accuracy of the nameplate data prior to stamping and installation? For ASME Sec I Code work who ensures that the code stamp is applied in the presence of the Authorized Inspector?
 - *ASME A1.20-3/05, NB-57 Section 2.3.8(m)*
7. What provisions are made for applying code stamps to pressure equipment other than ASME Sec I work? Has concurrence of the Authorized Inspector been obtained?
 - *NB-57 Section 2.3.8(j)*
8. You must describe the process for identifying, controlling, and implementing routine repairs. Routine repairs must be defined.
 - *NB-57 Section 2.3.8(j), NB-23 Part 3 – 3.3.2(c)*

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G. CORRECTION OF NONCONFORMITIES

Nonconformity is any condition which does not comply with the applicable rules of the Code, Standards, Act & Regulations or this manual. Nonconformities must be corrected before the completed component can be considered in compliance with Code. This section must detail the following:

1. Has a non conformity been defined?
 - ASME A1.20-3/05, NB-57 Section 2.3.10(a)
2. Who is responsible for the identification, disposition and resolution of nonconformities? Types of disposition, i.e., repair, use as is, etc.
 - ASME A1.20-3/05, NB-57 Section 2.3.10(a)
3. What procedure exists for the correction of nonconformities? Where Authorized Inspector involvement is required by Code, who is responsible to ensure the inspector is notified for concurrence?
 - ASME A1.20-3/05, NB-57 Section 2.3.10(a)
4. How are nonconforming items controlled until final disposition? Who is responsible to ensure the item has been corrected as per the disposition and all actions are cleared before release for fabrication?
 - ASME A1.20-3/05, NB-57 Section 2.3.10(a)
5. If the nonconformity is a systemic problem, what controls are in place to ensure the system is corrected to ensure compliance with the Code, Standards or Act & Regulations?
 - ASME A1.20-3/05, NB-57 Section 2.3.10(a)

H. WELDING

It must be stated that all welding conforms to the requirements of ASME Sec IX and other sections of the Code as applicable to the scope of work being performed. This section must detail the following:

H.1. WPS AND PQR

1. Who is responsible for the development and certification of Procedure Qualification Records (PQR) and Weld Procedure Specifications (WPS). Who certifies the PQR for the company?
 - ASME A1.20-3/05, NB-57 Section 2.3.11(a), ASME Sec IX (QW-103.2)
2. How are revisions to WPS controlled? When changes to essential, nonessential and supplementary essential variables are required, how are they identified, dated and controlled?
 - ASME A1.20-3/05, NB-57 Section 2.3.11(a)
3. Who is responsible for assigning WPS for code welding including tack welds? Are copies of the WPS made available to the welders in the work area? How does the welder receive directions, or instructions for code welding in accordance with the WPS?
 - ASME A1.20-3/05, NB-57 Section 2.3.11(a)
4. Who is responsible for ensuring that the WPS is registered with the Jurisdiction before being released for use for Code work?
 - Act & Regulations

H.2. GENERAL WELDING REQUIREMENTS

1. Who is responsible for instructing, supervising, and assigning welders for Code work? How are they assigned?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(m)*
2. How are tack welds handled? Are they removed before completing the final weld or are they prepared and incorporated into the weld? What controls are in place to ensure they were completed by a qualified welder and WPS?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(l)*
3. How are welding materials ordered, received and stored prior to use? Who is responsible to ensure welding materials have been ordered with the correct SFA and AWS designation?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(h)*
4. Who is responsible for the issue and return of welding materials? How are welding materials issued, and how long can welding materials remain out of heated storage before they require heat treatment or must be discarded?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(j)*
5. What are the requirements for heated storage of coated electrodes after removal from the sealed containers? Are they stored in accordance with the manufactures recommendations, or Part C of ASME Sec II?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(i)*
6. How are production welds identified by the welder? What are the requirements for stamping or weld mapping? Who is responsible to ensure completion?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(k)*

H.3. WELDER QUALIFICATION

1. Who is responsible for verifying welder's qualifications before use in Code work? Who maintains a list of qualifications for each welder and updates it to ensure 6 month continuity?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(e)*
2. Who is responsible for conducting welder qualification tests? What are the minimum qualifications of welding examiner? Has their role and responsibility been defined?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(c)*
3. What procedure(s) are being followed during the qualification testing? Controls must be in place to ensure traceability to the welder performing the test.
 - *ASME A1.20-3/05, Jurisdictional Requirement*
4. It must be stated that all welder qualification tests will be performed in accordance with a registered WPS and production welds will not be used for welder testing. Has the welder been instructed in the use of the WPS assigned?
 - *ASME A1.20-3/05, NB-57 Section 2.3.11(a), Jurisdictional Requirement*
5. How are failed weld tests handled? What are the requirements for the welder to be eligible to retest?
 - *ASME A1.20-3/05, Jurisdictional Requirement*

H.3. WELDER QUALIFICATION

6. Document control and retention of the test coupon must be specified. Who is responsible to ensure the QW-484 form is filled out correctly and certified by the welding examiner and welder?
 - ASME A1.20-3/05, NB-57 Section 2.3.11(c)
7. Who is responsible to submit the documentation to the Jurisdiction for issuance of the welder's license on behalf of the welder and to ensure the license is restricted to this QCP?
 - Jurisdictional Requirement
8. Has the right to require re-qualification of the welder been addressed with the Authorized Inspector?
 - ASME A1.20-3/05, NB-57 Section 2.3.11(a)

I. NONDESTRUCTIVE EXAMINATION

It must be stated that all NDE conforms to the requirements of ASME Sec V and other sections of the Code as applicable to the scope of work being performed. This section must detail the following:

1. Who is responsible for determining if NDE is required? Is NDE performed in house or subcontracted or both?
 - NB-57 Section 2.3.12(b)
2. Are the training of personnel, approval of procedures and reports identified? The Level III Examiner may be an employee of the company or subcontracted. If they are subcontracted a letter of appointment by the QCP certificate holder must be kept on file.
 - ASME A1.20-3/05, NB-57 Section 2.3.12(d)
3. Personnel performing NDE must be qualified and certified in accordance with CGSB and their qualifications maintained by the certificate holder.
 - NB-57 Section 2.3.12(b), Jurisdictional Requirement
4. Who is responsible for ensuring that the NDE personnel have had an annual near vision test and color contrasting differentiation test?
 - NB-57 Section 2.3.12(b)
5. Who reviews and accepts the NDE interpretations to ensure code compliance? Are all NDE results, including film and interpretation sheets available for review and acceptance by the Authorized Inspector?
 - ASME A1.20-3/05, NB-57 Section 2.3.12(g)
6. Has the right to require re-qualification of the NDE personnel and procedures by the Authorized Inspector been addressed?
 - ASME A1.20-3/05
7. All NDE procedures shall be demonstrated capable of producing meaningful results to the satisfaction of the Authorized Inspector, as required by ASME Sec V, Article 1, Paragraph T-150.
 - ASME A1.20-3/05, NB-57 Section 2.3.12(h)

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J. HEAT TREATMENT

This section must detail the following:

1. Who is responsible to determine if heat treatment is required? Is heat treatment performed in house or subcontracted?
 - *ASME A1.20-3/05, NB-57 Section 2.3.13(a)*
2. Who prepares or approves written heat treatment procedures or instructions? Do they satisfy the requirements of ASME Sec II and the WPS? What measures are taken to ensure the proper placement of thermocouples?
 - *ASME A1.20-3/05, NB-57 Section 2.3.13(a)*
3. For in house heat treatment, who is responsible to monitor the activities performed to ensure compliance with the written procedures or instructions? Who reviews and approves the heat treatment charts and ensures calibration of the equipment used?
 - *ASME A1.20-3/05, NB-57 Section 2.3.13(b)*
4. For subcontracted heat treatment, what measures are taken to assure proper performance and calibration, and that proper records of heat treatment are completed? Who is responsible for the review and acceptance of the charts and calibration records of equipment used? How is traceability maintained?
 - *ASME A1.20-3/05, NB-57 Section 2.3.13(c)*
5. How is identification maintained of parts sent to subcontractors' facilities? Who is responsible to ensure the correct parts are sent and received and checked for visible damage upon receipt?
 - *ASME A1.20-3/05, NB-57 Section 2.3.13(e)*
6. Are test specimens or coupons specified and tested where required by the code section? Are Brinell hardness tests available for forged vessels?
 - *NB-57 Section 2.3.13(f)*
7. Are all heat treatment results, including charts, procedures and instruction sheets available for review and acceptance by the Authorized Inspector?
 - *ASME A1.20-3/05, NB-57 Section 2.3.13(d)*

K. CALIBRATION

This section must detail the following:

1. Who is responsible for calibration and how is calibration accomplished?
 - *ASME A1.20-3/05, NB-57 Section 2.3.14(a)*
2. How is calibrated equipment identified? How are they traceable back to a calibration record? What equipment is listed under this program? What is the frequency of calibration required for each type of equipment listed?
 - *ASME A1.20-3/05, NB-57 Section 2.3.14(a)*
3. All master equipment used for calibration must be calibrated and traceable to a NIST Standard.
 - *Jurisdictional Requirement*
4. The storage and handling of calibrated equipment must be addressed.
 - *Jurisdictional Requirement*

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L. RECORD RETENTION

The ASME Code sections vary in the responsibilities placed upon the certificate holder regarding retention and distribution of Manufactures Data Reports. As a minimum this section must detail the following:

1. Who is responsible to ensure records and reports used within this program are retrieved and stored in accordance with code? Provide a list of the information to retained and how long they will be retained.
 - *ASME A1.20-3/05, NB-57 Section 2.3.15(a), Jurisdictional Requirement*
2. Has the access by the Authorized Inspector to the records listed been addressed?
 - *ASME A1.20-3/05, NB-57 Section 2.3.15(a)*
3. How are National Board registration numbers controlled and assigned? Who is responsible for this function? (if applicable)
 - *NB-57 Section 2.3.15(b)*

M. SAMPLE FORMS

Controlling forms must be indicated in the QCP, identified by number or letter designation, and their use explained in the test of the manual. They maybe included with each section of the manual or grouped together as an appendix. They are an integral part of the manual and are subject to Authorized Inspector acceptance of changes. As a minimum this section must detail the following:

1. All company specific forms, tags; and stickers must be included with indication of color if the actual is not shown as an exhibit or in color.
 - *ASME A1.20-3/05, NB-57 Section 2.3.16(a), Jurisdictional Requirement*
2. Reference must be provided to the website, code book or standard where Jurisdictional, Code or Standard forms are used within the QCP; an actual example is not required.
 - *ASME A1.20-3/05, NB-57 Section 2.3.16(a)*
3. Ensure that the titles of the documentation included match those used within the manual.
 - *NB-57 Section 2.3.16(d)*
4. Internal procedures or instructions, WPS and PQR need not be included but may be referenced.
 - *NB-57 Section 2.3.16(c)*

N. AUDITS

This section is not required by Code, but is recommended to assist in the continual improvement of a quality program and asses its effectiveness. At a minimum it should identify the need for audits to be performed, who will conduct them, how often they will be completed and a feed back mechanism to inform those affected of any changes required.