



Boilers and Pressure Vessels Safety Program	Ref. No.: BPV-18-01
CODE ADOPTION DOCUMENT AMENDMENT - FINAL	Date: April 17, 2018

IN THE MATTER OF:

THE *TECHNICAL STANDARDS AND SAFETY ACT, 2000*, S.O. 2000, c. 16 (the "Act")

- and -

**ONTARIO REGULATION 223/01
(Codes and Standards Adopted by Reference) made under the Act**

- and -

ONTARIO REGULATION 220/01 (Boilers and Pressure Vessels) made under the Act

Subject: Amendments to the 2001 Boilers and Pressure Vessels Code Adoption Document

Sent to: Boilers and Pressure Vessels Advisory Council and posted on the Technical Standards and Safety Authority website

The Director for the purposes of Ontario Regulation 220/01 (Boilers and Pressure Vessels), pursuant to section 2(1) of Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), hereby provides notice that the BOILERS AND PRESSURE VESSELS CODE ADOPTION DOCUMENT published by the Technical Standards and Safety Authority and dated June 1, 2001, as amended, is further amended as follows:

All sections of the Code Adoption Document dated June 1, 2001 are amended as follows:

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Additional notes to CAD Amendment:

In this CAD Amendment:

Section 1.0 is revised in subsections 1.11, 1.28 and 1.29.

Sections 2.0 and 3.0 are unchanged.

Sections 4.0 and 9.0 are new sections.

Sections 5.0 and 8.0 are revised.

Sections 6.0 and 7.0 are renumbered with no other changes.

FOREWORD

The *Boilers & Pressure Vessels Regulation* made under the *Technical Standards and Safety Act* adopts this *Code Adoption Document* for the Province of Ontario.

This *Code Adoption Document* establishes essential requirements and minimum standards for the: design; fabrication; installation; repair; alteration; inspection; testing; operation; and use of boilers, pressure vessels, fittings and piping.

Definitions in the *Code Adoption Document* have the same meaning as in the *Boilers & Pressure Vessels Regulation* made under the *Technical Standards and Safety Act* unless otherwise stated.

In the event of conflict between a provision of this *Document* and adopted codes and standards, this *Document* shall prevail.

Enquiries regarding this *Code Adoption Document* may be addressed to:

Technical Standards and Safety Authority
Boilers and Pressure Vessels Safety Program
345 Carlingview Drive
Toronto, Ontario
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1.0 CSA B51

Additional notes to CAD Amendment:

Section 1.0 is revised in subsections 1.11, 1.28 and 1.29 in this CAD amendment.

1.1 CSA B51-14 Boiler, pressure vessel and pressure piping code, as amended from time to time, is hereby adopted with the following exceptions, additions or positions on requirements in the following referenced clauses from the Standard:

NOTE: Reference Clauses as given in CSA B51.

CSA B51 - PART 1

1.2 Clause 2, Reference publications, the references listed in this clause are revoked and the following substituted:

CSA B52-13

Mechanical refrigeration code

Unless otherwise stipulated by the Director or the design code, such as the ASME Boiler and Pressure Vessel Code, the latest edition of the referenced standards listed below are adopted and come into force and effect 6 months after the date of publication of the applicable standard or code

CSA (Canadian Standards Association)

CAN/CSA-ISO 9000

Quality Management Systems - Fundamentals and Vocabulary (Adopted ISO 9000)

CAN/CSA-Z180.1

Compressed Breathing Air and Systems

Z299 series of Standards

CAN3-Z299.1

Quality Assurance Program -Category 1

CAN3-Z299.2

Quality Assurance Program – Category 2

CAN3-Z299.3

Quality Assurance Program – Category 3

CAN/CSA-Z7396.1

Medical Gas Pipeline Systems - Part 1: Pipelines for medical gases, medical vacuum, medical support gases, and the anaesthetic gas scavenging systems

Note clause 8.3 and TSSA authorized inspector instructions for piping inspection supercedes instructions for pressure testing in CSA Z7396.1, such as clauses 12 and B.1.

ANSI (American National Standards Institute)

ANSI/ASQ Z1.4

Sampling Procedures and Tables for Inspection by Attributes

CGA G-2.1

Safety Requirements for the Storage and Handling of Anhydrous of Ammonia (an American National Standard)

API (American Petroleum Institute)

ANSI/API 530

Calculation of Heater Tube Thickness in Petroleum Refineries (ISO 13704)

ASME (American Society of Mechanical Engineers)

Sections I, II, IV, V, VIII, IX and X of the *Boiler and Pressure Vessel Code*

Note: Use of ASME Section VIII Division 1, UG-140 (b) or Appendix M for pressure vessel installations requires TSSA approval.

Additional notes to CAD Amendment:

- a. *Use of ASME Section VIII, Division 1, UG-140(b) or Appendix M require a design submission to TSSA that shall include a demonstrated need to use these methods and require implementation verification by inspection and/or audit.*
- b. *ASME Sections VI and VII are recommended practices only and Section XII are federally regulated pressure vessels.*

B16.5

Flanges and Flanged Fittings NPS ½ Through NPS 24 Metric/Inch Standard

B31.1

Power Piping Code

B31.3

Process Piping

B31.5

Refrigeration Piping and Heat Transfer Components

CSD-1

Controls and Safety Devices for Automatically Fired Boilers excluding Part CF Combustion Side Control

PVHO-1

Safety Standard for Pressure Vessels for Human Occupancy

The American Society of Nondestructive Testing

ASNT SNT-TC-1A

Personnel Qualification and Certification in Nondestructive Testing

CGSB (Canadian General Standards Board)

CAN/CGSB-48.9712 / ISO 9712

Non-destructive Testing: Qualification and Certification of Personnel

MSS (Manufacturers Standardization Society)

SP-25

Standard Marking Systems for Valves, Fittings, Flanges and Unions

National Board of Boiler and Pressure Vessel Inspectors

NB-18

Pressure Relief Device Certifications

ANSI/NB 23

National Board Inspection Code

Note 1: ANSI/NB 23 Part 3 paragraph 3.4.2 is revoked.

Note 2: For discrepancies between ANSI/NB 23 requirements and CSA B51, the CSA B51 requirements shall prevail.

NFPA (National Fire Protection Association)

NFPA 58

Liquefied Petroleum Gas Code

PACE (Petroleum Association for the Conservation of the Canadian Environment) Report

No. 87-1

Guideline for the Impressed Current Method of Cathodic Protection of Underground Petroleum Storage Tanks

Additional notes to CAD Amendment:

Although PACE no longer exists, a copy of this report can be obtained by contacting the Canadian Petroleum Products Institute.

RMA (Rubber Manufacturers Association)

RMA IP-2

The RMA Hose Handbook

ULC (Underwriters' Laboratories of Canada)

CAN/ULC-S603.1 Standard for External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids

Additional notes to CAD Amendment:

The following standards are not included in the list of references as they are under the scope of the Fuels Safety program at TSSA and the appropriate Code Adoption Document should be consulted for the correct edition: CSA Z662 Oil and Gas Pipelines Systems

CAN/CSA B149.1 Natural Gas and Propane Installation Code

CAN/CSA B149.2 Propane and Storage and Handling Code

CAN/CSA-B149.5 Installation Code for Propane Fuel Systems and Tanks on Highway Vehicles

1.3 Clause 3 is amended:

- i. by revoking the definitions of "Act", "Authorized inspection agency" and "Regulatory authority" with the following substituted:

Act – the Acts, regulations, or ordinances governing the design, fabrication, installation, repair, and alteration of boilers, pressure vessels, fittings, and piping and in the province of Ontario is the Ontario Technical Standards and Safety Act, 2000, Ontario Regulations for Boilers and Pressure Vessels, Minister's Order and Director's Orders.

Authorized inspection agency – the inspection agency authorized by the regulatory authority to perform inspections required under the Act and in the province of Ontario is the Technical Standards and Safety Authority.

Regulatory authority – the body responsible for administering and enforcing the Act governing the design, fabrication, installation, repair, and alteration of boilers, pressure vessels, fittings, and piping, in the province of Ontario is the Technical Standards and Safety Authority.

- ii. by adding the following to the end of the definition of “Fitting”:

Fitting – Category H fittings as described in Table 1 NOTE (2), that are not attached to a boiler, pressure vessel, or piping under the Act, are exempt from O. Reg. 220/01.

Additional notes to CAD Amendment:

The definition for fitting identifies that it is not a fitting unless the fitting is attached to an item such as a boiler, pressure vessel or piping system that is captured by the regulation and this is consistent with O.Reg.220/01.

Stand-alone items including category H items e.g. pressure vessel with volume less than 1.5 cubic feet or a small piping system that has an internal diameter less than 6” and internal volume less than 1.5 cubic feet, are exempt.

- 1.4 Clause 4.1.1** is revoked and substituted with the following:

4.1.1

The calculations, drawings, and specifications, pertaining to the designs of boilers, pressure vessels, and fittings as specified in Clause 4.2, fired-heater pressure coils, and piping shall be submitted to the regulatory authority in the province where the item is intended to be used. The submission shall identify the substance for which the item is intended. It shall be the responsibility of the users or an agent they designate to determine whether the substance is lethal. Items less than 6” in internal diameter or less than 1.5 cubic feet in internal volume are classified as Category “H” fittings not pressure vessels. Acceptance and registration should be obtained before construction commences. A person may commence construction before the submission is registered if the person assumes all risks related to the construction, whether for an installation or alteration.

Use of ASME Section VIII, Division 1, UG-140 (b) or Appendix M requires an approval by TSSA which shall include a demonstrated need for these methods.

Additional notes to CAD Amendment:

Clause 4.1.1 is amended by the following sentence being revoked from this clause: “The name of the authorized inspection agency to be employed where a boiler or pressure vessel is to be manufactured outside Canada shall also be submitted where required”. Reference to Figures 1a), 1b) and 1c) included in section 1.35, below, are also removed and are superseded by the exemptions in O. Reg. 220/01 section 2(2), for pressure vessels. O.Reg.220/01 Section 4(2) permits construction to begin for a design that has been submitted for registration however in cases where registration has not been completed the owner assumes all risks related to the construction.

Clause 4.1.9 (b) refers to used equipment, not equipment built for stock.

Clause 4.1.9 (b) and (c) may require an installation inspection by the TSSA authorized inspector. To note, pressure vessels which are for fuel application, such as propane storage tanks, refer to installation requirements specified by the Fuels Safety program at TSSA – these pressure vessels are not subject to an installation inspection by the Boilers and Pressure Vessels Safety program at TSSA.

- 1.5 Clause 4.2.1** the second sentence is revoked and substituted with the following:

Registrations of fittings shall be resubmitted for validation not more than ten years after the date of acceptance by the regulatory authority in the original registering province. Validation of fitting registration in Ontario needs to be submitted to Technical Standards and Safety Authority and where original registration was obtained in another province prior to Ontario, validation in that province shall be obtained prior to submitting to Technical Standards and Safety Authority.

Additional notes to CAD Amendment:

A central registration system has not been created.

1.6 Clause 4.2.3 is revoked.

Additional notes to CAD Amendment:

Clause 4.2.3 A central registration system has not been created.

Clause 4.2.9 requirements for safety relief valves for propane storage tanks operating within the scope of the O.Reg.211/01 Ontario Propane Storage and Handling Regulation, are specified by the Fuels Safety program at TSSA which requires certification to ANSI/UL 132, "Standard for Safety Relief Valves for Anhydrous Ammonia and LP-Gas".

1.7 Clause 4.3.2 is amended with the following added:

Items previously registered in a province other than Ontario or to be registered as pressure vessels in another province that are defined as fittings in Ontario will be registered with the same CRN issued plus the suffix '.5 FITG'.

1.8 Clause 4.3.4 is revoked and substituted with the following:

4.3.4

The number allotted to a registered design of a fitting shall be a number preceded by a zero and the category letter and followed by a decimal point, to the right of which shall be added the digit or letter indicating the first province in which the design is registered.

Additional notes to CAD Amendment:

Clause 4.3.4 a central registration system has not been created.

Clause 4.4.1 welding and brazing procedure qualification records are used for the basis of registration of welding and brazing procedures in Ontario.

1.9 Clause 4.4.2 is revoked and substituted with the following:

4.4.2

Welding or brazing procedures used for equipment fabricated outside Canada for installation in Ontario shall be approved by an authorized inspection agency that is acceptable to Technical Standards and Safety Authority.

1.10 Clause 4.5.3 is revoked and substituted with the following:

4.5.3

Welder, welding operator or brazer, brazing operator performance tests for equipment fabricated outside Canada for installation in Ontario shall be approved by an authorized inspection agency that is acceptable to Technical Standards and Safety Authority.

1.11 Clause 4.7.2 is amended by revoking Notes 1) and 2) and the following substituted:

Notes:

- 1) NBIC ANSI/NB-23 shall be used as a guide for the development of repair or alteration procedures for equipment operating in Ontario.
- 2) Annex B is not adopted. Requirements for preauthorization of repairs are prescribed by Technical Standards and Safety Authority.

3) Welded and non-welded boiler tube replacements are treated as repairs and require repair inspections.

Additional notes to CAD Amendment:

Note 2, a TSSA Certificate of Authorization is required for owner/user programs for self-inspection of repairs. Instructions for obtaining this authorization are provided for in TSSA's quality program document, "Accreditation of Owner/User Self-Inspection Repair Program".

1.12 Clause 4.7.3 is revoked and substituted with the following:

4.7.3

Hot tapping should be considered only when no alternative method is feasible or practical. Regulatory authority acceptance of the proposed procedure, including joint design, welding method, and base material identification, shall be obtained before hot tapping commences. Appropriate safety precautions shall be taken. The hot tapping experience and competency of the company and personnel performing this activity may be considered by the regulatory authority.

1.13 Clause 4.8.1 is revoked and substituted with the following:

4.8.1

Shop inspection of boilers, pressure vessels, fire-heated pressure coils, or piping covered by this Standard shall be conducted as follows:

- (a) In Canada, by an inspector employed by the regulatory authority in the province of fabrication.
- (b) Outside Canada, by an authorized inspection agency acceptable to Technical Standards and Safety Authority. Authorized inspection agencies include ASME accredited inspection agencies.

1.14 Clause 4.8.2 is revoked and substituted with the following:

4.8.2

Vessels shall be subject to individual shop inspection except as follows:

- (a) low-pressure steel boilers with 30 ft² (2.79 m²) or less of wetted heating surface;
- (b) cast iron and cast aluminum sectional boilers;
- (c) miniature pressure vessels, as defined in Section VIII, Division 1, of the ASME Code, when the manufacturer has registered its quality control manual with the regulatory authority where the manufacturing shop is located and has completed a manufacturer's data report for miniature pressure vessels (see figure D.1(a));
- (d) hot water tanks, hydropneumatic tanks, and cushion tanks 24 in (610 mm) diameter or less;
- (e) propane storage tanks for recreational vehicles not exceeding 0.09 m³ (3.2 ft³) in volume and 2143 k Pa (312 psi) in design pressure;
- (f) low pressure electric boilers of a capacity 30 kW or less;
- (g) small pressure vessels registered as Category H fittings;
- (h) high-pressure boilers with 10 ft² (0.93 m²) or less of wetted heating surface or a power rating of 10 kW or less;
- (i) any other applicable exemptions provided for in O. Reg. 220/01 Section 2(2).

Additional notes to CAD Amendment:

The limits for these exemptions come from the Boilers and Pressure Vessels Regulation, O. Reg. 220/01, Section

2.(2). Refer to this Section in the Regulation for a complete list of exemptions for the province of Ontario.

1.15 Clause 4.8.3 is revoked and the following substituted:

4.8.3

- (a) The manufacturer's data report is required to be submitted to the Technical Standards and Safety Authority for items subject to shop inspection as per clause 4.8.2 and items (b) and (c) (as amended in subsection 1.14 above). No data report is required for Clause 4.8.2(g).
- (b) An installation inspection by the Technical Standards and Safety Authority inspector is required for all items listed in 4.8.3 (a). After acceptance of the installation inspection by the Technical Standards and Safety Authority inspector, a Certificate of Inspection will be issued to the owner permitting operation of the item.

Additional notes to CAD Amendment:

The owner is responsible to ensure that a Certificate of Inspection has been issued prior to operation of the equipment. Also, to note submittal of the completed Data Report to TSSA often triggers the scheduling of the installation inspection by the local TSSA inspector with the equipment owner.

1.16 Clause 4.9.2 is amended by revoking the Note and the following substituted:

Note: Annex C is not adopted. Requirements for an organization desiring to set, service or repair Category "G" fittings except those of the non-reclosing type is prescribed by Technical Standards and Safety Authority.

Additional notes to CAD Amendment:

The requirements for obtaining a TSSA Certificate of Authorization is provided in safety information bulletin SB00-3 Rev.3, "Ontario Requirements for the Repair of Pressure Relief Valves".

1.17 Clause 4.9.4 is revoked.

Additional notes to CAD Amendment:

Any organization that engages in the supply of materials, including piping and fittings for use in pressure piping systems, is not required to demonstrate that a quality control system is in operation to TSSA.

1.18 Clause 4.10.1.1 is amended by adding the following:

Manufacturers of fittings holding a current certificate for CSA Z299 series of standards categories 1, 2 or 3, ISO 9001 or CAN/CSA-ISO 9001 for the range of products being manufactured shall also be deemed to have a satisfactory quality control system in operation.

Additional notes to CAD Amendment:

Fitting manufacturers holding current certificates for CSA Z299 series of standards categories 1, 2 or 3, ISO 9001 or CAN/CSA-ISO 9001 for the manufacture of fittings, are accepted by TSSA without further review or issuance of certificates of authorization.

1.19 Clause 4.10.1.2 is amended with the first sentence revoked and the following substituted:

Manufacturers in countries other than Canada that manufacture and export boilers and pressure vessels to Canada shall hold an ASME Certificate of Authorization and ensure that all boilers and

pressure vessels are stamped with the ASME code certification mark and the applicable designator.

Additional notes to CAD Amendment:

Registration with the National Board of Boiler and Pressure Vessel Inspectors is not required.

1.20 Clause 4.10.2 is revoked and the following substituted:

4.10.2

Manufacturers of boilers, pressure vessels, fittings or piping not holding an ASME Certificate of Authorization or manufacturers of fittings not holding a certificate as provided for in 4.10.1 may apply to have their product accepted by the regulatory authority by meeting the following conditions:

- (a) For boilers and pressure vessels the manufacturer shall demonstrate by means of a written manual and by a review of the manufacturing facilities and procedures that the quality control system in operation meets the requirements of the applicable section of the ASME Code (e.g., Appendix 10, Section VIII, Division 1) or for fittings conforms to the quality control program described in Annex F or for piping conforms to a program that is deemed acceptable to Technical Standards and Safety Authority.
- (b) The manufacturer shall be acceptable if the regulatory authority concludes, as a result of the review, that the manufacturer meets the requirements of the applicable section of the ASME Code. This must be issued by regulatory authorization in writing.
- (c) The manufacturer shall continue to be acceptable to the regulatory authority if subsequent reviews demonstrate that its manufacturing facilities and procedures meet the requirements of the applicable section of the ASME Code. If it is found that the manufacturer is not adhering to or implementing the procedures outlined in the quality control system, the approval of the regulatory authority may be withdrawn with notice to the manufacturer.

Additional notes to CAD Amendment:

Quality program requirements for manufacturers of piping are as provided for in safety information bulletin, SB02-02 Rev. 1, "Requirements for the Manufacturers and Installers of Pressure Piping Parts and Systems".

1.21 Clause 4.11 is amended with the following addition:

Other standards acceptable for nondestructive testing personnel shall include ASNT SNT-TC-1A.

1.22 Clause 4.12 is revoked and replaced with the following:

4.12

Tanks that contain water at a temperature not exceeding 65°C (150°F) and not exceeding 1100 kPa (250 psig) and not equipped with heating units shall not be subject to registration.

Additional notes to CAD Amendment:

The limits for this exemption come from the Boilers and Pressure Vessels Regulation O. Reg. 220/01 section 2(2)(e).

1.23 Clause 4.13 including **Clauses 4.13.1** and **4.13.2** are revoked.

Additional notes to CAD Amendment:

Re-inspection is outside the scope of the Boilers and Pressure Vessels Regulations and is in the scope of the Propane and Storage and Handling Regulation, O. Reg. 211/01, and Propane Code Adoption Document under the TSSA's Fuels Safety program.

1.24 Clause 4.14 is revoked.

Additional notes to CAD Amendment:

Clause 4.14 *Manufacture of original automotive equipment is regulated under Transport Canada Regulations. Conversions of automotive vehicles to compressed natural gas or hydrogen are under the TSSA, Fuels Safety program, Ontario Regulation 214/01. The TSSA Boilers and Pressure Vessels and Safety program provides third party design review and registration of cylinders in accordance with Part 2 where required by the federal or the Ontario Regulation.*

Clause 5.3.1 *requirements for safety relief valves for propane storage tanks operating within the scope of the O.Reg.211/01 Ontario Propane Storage and Handling Regulation, are specified by the Fuels Safety program at TSSA which requires certification to ANSI/UL 132, "Standard for Safety Relief Valves for Anhydrous Ammonia and LP-Gas" and therefore the UL certification mark is required on the nameplate or on the valve body for these valves.*

1.25 Clause 6.2.1 is revoked and the following substituted:

6.2.1

The factor of safety and maximum allowable working pressure (MAWP) for a high-pressure lapseam riveted boiler shall be based on the applicable code of construction and demonstrated compliance.

Additional notes to CAD Amendment:

Clause 6.6 controls for thermal fluid heaters are considered to include pressure-relief devices and gage glasses.

1.26 Clause 7.4.1.1 is revoked and the following substituted:

7.4.1.1

The Standard does not apply to a domestic water heater which has a maximum internal diameter of 610 mm (24 in) and a maximum temperature that does not exceed 100°C (212°F) and a maximum heat input of 120 kW or less.

Additional notes to CAD Amendment:

The limits for this exemption come from the Boilers and Pressure Vessels Regulation O. Reg. 220/01 section 2(2)(f).

1.27 Clause 7.4.2.1 is revoked the following substituted:

7.4.2.1

The Standard does not apply to a hot water tank which has a maximum internal diameter of 610 mm (24 in) or less and a maximum temperature that does not exceed 100°C (212°F).

Additional notes to CAD Amendment:

The limits for this exemption come from the Boilers and Pressure Vessels Regulation O. Reg. 220/01 section 2(2)(f).

1.28 Clause 8.1 parts (a),(b)(v) and (c) are amended with the following additions:

8.1

(a) ASME (non-welded air piping in mines, in the main shaft, is included, whereas non-welded air piping in mines outside of the main shaft are excluded);

(b) (v) CSA Z7396.1;

Note clause 8.3 and TSSA authorized inspector instructions for piping inspection supercedes instructions for pressure testing in CSA Z7396.1, such as clauses 12 and B.1.

(c) RMA IP-2 (flexible hoses are included, except when used in mines).

Additional notes to CAD Amendment:

The exclusions for equipment in mines come from the Boilers and Pressure Vessels Regulation O. Reg. 220/01 section 2(2)(t) for flexible hoses and portable air piping used in mines.

1.29 Clause 8.3 is revoked and the following substituted:

8.3

Welded joints in a pressure piping system shall not be painted or covered, including buried piping systems until inspection by TSSA has been completed.

1.30 Clause 11.2 is amended by revoking the first sentence of the Note and the following substituted:

Note: Annex C is not adopted. Requirements for an organization desiring to set, service or repair Category “G” fittings except those of the non-reclosing type is prescribed by Technical Standards and Safety Authority.

Additional notes to CAD Amendment:

The requirements for obtaining a TSSA Certificate of Authorization is provided in safety information bulletin SB00-3 Rev.3, “Ontario Requirements for the Repair of Pressure Relief Valves”.

1.31 Clause 11.5 is revoked and replaced with the following:

11.5

Where an alteration to an existing pressure-retaining item is proposed the design of the alteration shall be submitted for review by the Technical Standards and Safety Authority.

1.32 Clause 12.7.2 is amended by revoking the **Note** and replaced with the following:

Note: Annex C is not adopted. Requirements for an organization desiring to set, service or repair Category “G” fittings except those of the non-reclosing type is prescribed by Technical Standards and Safety Authority.

Additional notes to CAD Amendment:

Clauses 12.1.3 and 12.7.2:

1. *The requirements for obtaining a TSSA Certificate of Authorization is provided in safety information bulletin SB00-3 Rev.3, “Ontario Requirements for the Repair of Pressure Relief Valves”.*
2. *Requirements for safety relief valves for propane storage tanks operating within the scope of the O.Reg.211/01 Ontario Propane Storage and Handling Regulation, are specified by the Fuels Safety program at TSSA which requires certification to ANSI/UL 132, “Standard for Safety Relief Valves for Anhydrous Ammonia and LP-Gas”. Therefore, valves certified only to ANSI/UL 132, valve repair or servicing is performed by the valve manufacturer.*

Clause 12.2.2: A design submission to TSSA shall include a demonstrated need to use isolation valves and compliance with ASME Section VIII, Division 1, Appendix M and requires implementation verification by inspection and/or audit.

Clause 12.4.3: Requests to extend Table 5 maximum servicing intervals or alternatives to the prescribed requirements shall be submitted for approval to TSSA and must include a copy of the servicing history justifying the extended interval and/or other information as prescribed by TSSA.

1.33 Clause 13.1 is amended by adding the following sentence,

Boilers and pressure vessels regulated under O. Reg. 220/01, have mandatory in-service inspections to be conducted by persons with a valid Ontario Certificate of Competency (refer to CAD Amendment Section 8.0).

Additional notes to CAD Amendment:

Refer to O.Reg.220/01 section (10) Periodic inspections. In the province of Ontario, mandatory periodic inspections of boilers and pressure vessels are inspected at a frequency specified in CAD Section 4.0, by a TSSA authorized inspector for uninsured equipment and by the insurer for insured equipment. An insurer is defined in O.Reg.220/01 Section 1(1) as a person licensed under the Insurance Act to undertake boiler and machinery insurance as defined by that Act.

1.34 Clause 13.1 Note (1) is amended with the addition of the following sentence,

Boilers and pressure vessels regulated under O. Reg. 220/01 have mandatory periodic inspection intervals provided for in CAD Amendment Section 4.0.

1.35 Figures 1 (a), (b) and (c) are revoked and replaced with the following:

Figures 1 (a), (b) and (c)

Items less than 6” in internal diameter or less than 1.5 cubic feet in internal volume are classified as Category “H” fittings not pressure vessels.

Additional notes to CAD Amendment:

Pressure vessel minimum sizes are provided in O.Reg.220/01 section 2(2)(q) and (r). Items that are smaller than these minimum sizes, would be considered category H fittings subject to the additional notes with respect to the definition of a fitting (above). Other exemptions listed in O.Reg.220/01 section 2(2) are also applicable, including subsection (d), which exemption states a maximum allowable working pressure of 15 psig (103 kPa) or less.

1.36 Table 1 Note (2)(a) is revoked.

1.37 Table 5 is revoked and replaced with the following:

- a. Power boilers
 - i. steam service operating pressure above 103 kPa (15 psig) shall have a system test or lift test annually and shall be serviced every five years,
 - ii. hot water service operating pressure above 1100 kPa (160 psig) or above the temperature 121°C (250°F) shall have a system test or lift test annually and shall be serviced every five years;
- b. Heating boilers

- i. up to and including a maximum pressure of 1100 kPa (160 psig) at a maximum temperature of 121°C (250°F) shall have a manual lift test or system test every two years and serviced every six years,
- ii. steam service operating up to and including a maximum pressure of 103 kPa (15 psig) shall have a manual lift test annually and shall be serviced every five years;
- c. Pressure vessels and piping systems
 - i. steam service, shall be serviced every 5 years; where annual lift tests are conducted from the beginning of the service interval, servicing may be extended to a maximum of 8 years,
 - ii. air service, shall be serviced every 5 years; where annual lift tests are conducted from the beginning of the service interval, servicing can be extended to a maximum of 10 years,
 - iii. Anhydrous ammonia; flammable, cryogenic and dry; flammable non-corrosive, non-toxic, non-fouling gases shall be serviced every 5 years,
 - iv. Non-flammable cryogenic and dry; non-flammable non-corrosive, non-toxic, non-fouling gases shall be serviced every 5 years; servicing may be extended to every 10 years if system pressure testing is performed every 5 years,
- d. Other pressure vessels and piping systems not listed above, including boilers other than steam or hot water service, shall be serviced every 3 years.

Additional notes to CAD Amendment:

1. *LPG service is outside the scope of the Boilers and Pressure Vessels Regulations and is in the scope of the Propane and Storage and Handling Regulation O. Reg. 211/01 and Propane Code Adoption Document under the TSSA's Fuels Safety program.*
2. *Servicing of relief valves in refrigeration service are addressed in CSA B52.*

ANNEXES

Additional notes to CAD Amendment:

Informative Annexes: *Informative annexes that are not adopted are for information purposes only and are not mandatory. Adopted annexes are mandatory.*

1.38 Annex A is not adopted.

1.39 Annex B is not adopted. Requirements for preauthorization of repairs are prescribed by Technical Standards and Safety Authority.

Additional notes to CAD Amendment:

A TSSA Certificate of Authorization is required for owner/user programs for self-inspection of repairs. Instructions for obtaining this authorization are provided for in TSSA's quality program document, "Accreditation of Owner/User Self-Inspection Repair Program".

1.40 Annex C is not adopted. Requirements for an organization desiring to set, service or repair Category "G" fittings except those of the non-reclosing type is prescribed by Technical Standards and Safety Authority.

Additional notes to CAD Amendment:

The requirements for obtaining a TSSA Certificate of Authorization is provided in safety information bulletin SB00-3 Rev.3, "Ontario Requirements for the Repair of Pressure Relief Valves".

1.41 Annex D is adopted as additional requirements and is mandatory.

Additional notes to CAD Amendment:

These are considered acceptable sample forms.

1.42 Annex E is adopted as additional requirements and is mandatory.

1.43 Annex F is adopted as additional requirements and is mandatory.

1.44 Annex G is revoked.

Additional notes to CAD Amendment:

This subject is outside the scope of the Boilers and Pressure Vessels Regulations and is in the scope of the Propane and Storage and Handling Regulation O. Reg. 211/01 and Propane Code Adoption Document under the TSSA's Fuels Safety program. Fabrication inspection and design registration is conducted by the TSSA Boilers and Pressure Vessels Safety program in accordance with CSA B51 and the requirements of Annex G.

1.45 Annex H is adopted with the exception that H.4 is revoked.

Additional notes to CAD Amendment:

H.4 is outside the scope of the Boilers and Pressure Vessels Regulations and is in the scope of the Propane and Storage and Handling Regulation O. Reg. 211/01 and Propane Code Adoption Document under the TSSA's Fuels Safety program.

1.46 Annex I is adopted as additional requirements and is mandatory, except I.7 and I.8 are revoked, I.7 is replaced with the following:

I.7 Fusible plugs

Fusible plugs shall be used in all solid fuel fired boilers. Fusible plus shall be replaced after 5 years. In addition, fusible plugs, shall be taken out, inspected, and scraped periodically.

Additional notes to CAD:

- 1. I.8 is under the regulatory authority of the Operating Engineers program at TSSA.*
- 2. Owner/users of historical boilers should contact TSSA for additional information on inspection and maintenance of their equipment.*

1.47 Annex J is adopted as additional requirements and is mandatory.

CSA B51 - PART 2

1.46 PART 2 is revoked.

Additional notes to CAD Amendment:

Manufacture of original automotive equipment is regulated under Transport Canada Regulations. Conversions of automotive vehicles to compressed natural gas or hydrogen are under the TSSA, Fuels Safety program, Ontario Regulation 214/01. The TSSA Boilers and Pressure Vessels and Safety program provides third party design review and registration of cylinders in accordance with Part 2 where required by federal law or the Ontario Regulation.

CSA B51 - PART 3

1.47 PART 3 is revoked.

Additional notes to CAD Amendment: Part 3 is regulated under the Ontario Regulation 214/01 and administered by the TSSA Fuels Safety program.

2.0 CSA B52

*Additional notes to CAD Amendment:
Section 2.0 is unchanged in the CAD amendment.*

2.1 **CSA B52-13 Mechanical refrigeration code** as amended from time to time, is hereby adopted with the following exceptions, additions or positions on requirements in the following referenced clauses from the Standard:

NOTE: *Reference Clauses as given in CSA B52.*

2.2 **Clause 2, Reference Publications,** is revoked and the following substituted:

CSA B51-14
Boiler, pressure vessel and pressure piping code

Unless otherwise stipulated by the Director or the design code, such as the ASME Boiler and Pressure Vessel Code, the latest edition of the referenced standards listed below are adopted and come into force and effect 6 months after the date of publication.

CSA (Canadian Standards Association)

CAN/CSA-B149.1
Natural gas and propane installation code

CAN/CSA-B149.2
Propane storage and handling code

C22.2 No. 63-93
Household refrigerators and freezers (Bi-national standard with UL 250)

C22.2 No. 92
Dehumidifiers

C22.2 No. 117
Room Air Conditioners

CAN/CSA-C22.2 No. 120
Refrigeration Equipment

C22.2 No. 128
Vending Machines

CAN/CSA-C22.2 No. 236
Heating and cooling equipment (Bi-national standard with UL 1995)

CAN/CSA-Z234.1-00
Metric Practice Guide

Ontario Electrical Safety Code

Additional notes to CAD Amendment:

Ontario Electrical Code is the publication that contains the complete text of C22.1, Canadian Electrical Code, Part 1 and Ontario Amendments to that Code.

American Conference of Governmental Industrial Hygienists
Annual Manual of Threshold Limit Values

ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers)
ANSI/ASHRAE 15
Safety Standard for Refrigeration Systems

ANSI/ASHRAE Standard 34
Designation and Safety Classification of Refrigerants

ASME (American Society of Mechanical Engineers)
Sections II, V, VIII, IX and X of the *Boiler and Pressure Vessel Code*
Section VIII Division 1 UG-140 (b) or Appendix M for pressure vessel installations requires TSSA approval.

Additional notes to CAD Amendment:

Use of ASME Section VIII, Division 1, UG-140(b) or Appendix M require a design submission to TSSA that shall include a demonstrated need to use these methods and require implementation verification by inspection and/or audit.

B31.5
Refrigeration Piping and Heat Transfer Components

ASTM International (American Society for Testing and Materials) B
280
Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service

D 93
Standard Test Methods for Flash-Point by Pensky-Martens Closed Cup Tester

IOR (Institute of Refrigeration)
Safety Code of Practice for Refrigerating Systems Utilizing Carbon Dioxide Refrigerant

National Research Council Canada
National Building Code of Canada

Other publication

Vestergaard, Niels P., "CO2 refrigerant for industrial refrigeration," Danfoss Industrial Refrigeration

- 2.3 Clause 3.1** is amended with the following additions to definitions for "Act" and "Approved testing laboratory" as follows:

Act: For the province of Ontario, the applicable Act, is the Ontario Technical Standards and Safety Act, 2000, Ontario Regulations for Boilers and Pressure Vessels, Minister's Order and Director's Orders.

Approved testing laboratory: Organizations accredited by the Standards Council of Canada are designated as organizations permitted to test equipment and components to the applicable approved standards or laboratory test reports for the purposes of this Regulation and Code Adoption Document.

- 2.4 Clause 4.5.2** is amended with the following added to (i)(ii):

Requests shall be submitted to Technical Standards and Safety Authority for acceptance.

- 2.5 Clause 5.1.2** is amended with the following added:

For installations in Ontario, design registration applications shall be submitted to Technical Standards and Safety Authority.

- 2.6 Clause 5.1.3** is amended with the following added:

For installations in Ontario, data reports shall be submitted to Technical Standards and Safety Authority.

- 2.7 Clause 5.3.1** is amended with the following added:

For installations in Ontario, drawings and specifications shall be submitted to Technical Standards and Safety Authority for registration.

- 2.8 Note to Clause 5.3.1** is amended with the following added:

For installations in Ontario, standard drawings are submitted to Technical Standards and Safety Authority for registration and are issued a registration number in the format: P-STDxxxxx, where 'x' is a numbered digit.

- 2.9 Clauses 5.7.2.1, 5.7.2.2 and Table 5** are revoked and replaced with:

5.7.2.1

Except for systems exempt from registration by Clause 5.2, hard-drawn copper tube and soft annealed copper tube used for refrigerant piping shall conform to ASTM B280, or hard-drawn copper tube conforming to ASTM B819. Other ASTM copper material specifications listed in ASME B31.5 may be used provided the minimum wall thickness is equal to or greater than that specified in ASTM B280 or ASTM B819, Type L, of equal outside diameter. For maximum allowable stress values for ASTM B819, use values tabulated in Table 502.3.1,

ASME B31.5 for ASTM B88 UNS No. C12200 H58 temper (except where brazed construction is used, then values for annealed material shall be used). Notes:

1. Type K provides the heaviest wall thickness and may be required due to higher pressures.
2. Consideration should be given to tube cleaning procedures for supply of degreased tubes having a clean bright internal surface. Refer to ASTM B280 or ASTM B819 for cleanness or residue test.

2.10 Clause 5.10.4.2 is amended with the following added:

For installations in Ontario, pressure test requirements are as given in this clause or as given in ASME B31.5.

2.11 Clause 5.10.4.4 is amended with the following added:

For installations in Ontario, refrigerant pipe joints shall be exposed for view for visual inspection by the Technical Standards and Safety Authority inspector, unless a prior alternate arrangement is reached with the Technical Standards and Safety Authority inspector and written confirmation of the agreement is confirmed by TSSA.

2.12 Clause 5.10.4.5 is amended with the following added:

For installations in Ontario, all piping systems except systems meeting the requirements specified in clause 5.2, shall be inspected and pressure test witnessed by the Technical Standards and Safety Authority inspector unless a prior alternate arrangement is reached with the Technical Standards and Safety Authority inspector and written confirmation of the agreement is confirmed by TSSA.

2.13 Clause 5.11.5 is amended with the following added:

For an installation in Ontario, the owner shall notify Technical Standards and Safety Authority of an explosion or rupture of a pressure vessel, fitting or piping or where an accident arises out of its operation or use that causes injury or death to a person or property damage.

Additional notes to CAD Amendment:

Refer to O. Reg. section 8(2) for details in regard to incident reporting to TSSA.

2.14 Clause 5.12 is amended with the following added to (a):

Substitution of refrigerant type requires permission from Technical Standards and Safety Authority which must be obtained and documented by a revised design registration submission.

2.15 Clause 6.6 is revoked.

Additional notes to CAD Amendment:

Electrical wiring is outside the scope of O. Reg. 220/01.

2.16 Clause 6.7 is revoked.

Additional notes to CAD Amendment:

Gas devices are under the scope of the Fuels Safety program at TSSA.

2.17 **Clause 7.3.6.1.3** is amended by the following addition to (c):

Requests shall be made to Technical Standards and Safety Authority for prior approval and may require approvals from other regulatory authorities.

2.18 **Clause 8.1.1** is amended by the following addition:

Discharge limits for refrigerants are outside Technical Standards and Safety Authority's jurisdiction.

2.19 **Clause 8.3** is amended by the following addition:

Storage of refrigerants is outside Technical Standards and Safety Authority's jurisdiction.

2.20 **Clause 8.4.2** is amended by the following addition to (a):

For installations in the province of Ontario, the Technical Standards and Safety Authority prescribe requirements to be followed for recertification of relief valves.

Additional notes to CAD Amendment:

The requirements for obtaining a TSSA Certificate of Authorization for recertification of relief valves is provided in safety information bulletin SB00-3 Rev.3, "Ontario Requirements for the Repair of Pressure Relief Valves".

2.21 **Clause 9.1** including Clauses 9.1.1 and 9.1.2 are revoked.

Additional notes to CAD Amendment:

Personnel protective equipment is outside the scope of O. Reg. 220/01.

ANNEXES

Additional notes to CAD Amendment:

Informative Annexes: *Informative annexes that are not adopted are for information purposes only and are not mandatory. Adopted annexes are mandatory.*

2.21 **Annex B** is adopted as additional requirements and is mandatory.

2.22 **Annex H** is adopted as additional requirements and is mandatory .

2.23 **Annex I** is adopted as additional requirements and is mandatory.

2.24 **Annex J** is adopted as additional requirements and is mandatory.

3.0 CSA N285.0

Additional notes to CAD Amendment:

Section 3.0 is unchanged in this CAD amendment.

The CSA N285.0-12/N285.6 SERIES-12 - General requirements for pressure-retaining systems and components in CANDU nuclear power plants/Material Standards for reactor components for CANDU nuclear power plants as amended from time to time is adopted. The applicable edition of this standard and any reference standards contained within, are in accordance with the Certificate of Authorization, and, License Condition and/or Owner's Approved Design Specification. Unless otherwise stipulated by the Director or design code, the latest edition of referenced standards are in force and effect 6 months after the date of publication.

Additional notes to CAD Amendment:

New construction requires that the current mandatory edition of the ASME code is used at the time of design and construction of an item.

4.0 Shop, Piping and First/Installation Inspections

Additional notes to CAD Amendment:

Section 4.0 is a new section in this CAD amendment.

4.1 The inspection of a boiler, pressure vessel (shop inspection) or piping (piping inspection) shall be conducted by a TSSA inspector at any stage of its manufacture or installation, as per the Code Adoption Document sections 1, 2 and 3. Boilers and pressure vessels must be inspected by a TSSA inspector before the boiler or pressure vessel is first activated or put into use. This inspection is a "first" inspection for new boilers and pressure vessels or an "installation" inspection for used boilers and pressure vessels, when they are first installed at a new location.

Additional notes to CAD Amendment:

Refer to O. Reg. 220/01, s. 9 (1) inspection requirements for equipment during the manufacturing process.

4.2 An inspection report, which permits the operation of a boiler or pressure vessel for a limited time, until such time as the Certificate of Inspection is issued, shall be issued by a TSSA Inspector, on behalf of the Director, after a first or installation inspection has been passed.

Additional notes to CAD Amendment:

Certificates of Inspection issued to boilers and pressure vessels listed in Section 5.1, below, do not require renewal.

4.3 For piping, the certificate of inspection is included in the Piping Systems Installation and Test Data Report and does not require renewal.

Additional notes to CAD:

Refer to O.Reg.220/01 Section 5 (1) every owner or operator of a boiler, pressure vessel, piping and fitting shall have a certificate of inspection.

4.4 Inspections of fittings must be included in all boiler, pressure vessel or piping inspections. The issuance of a certificate of inspection for a boiler, pressure vessel or

pipng, or the renewal of a certificate of inspection for a boiler or pressure vessel, as listed in section 5.2, includes its fittings.

Additional notes to CAD Amendment:

- a. Refer to definition for fitting in O.Reg.220/01 Section 1(1). By definition, fittings must be attached to a boiler, pressure vessel or piping. Those that are not, are exempt from O.Reg.220/01.
- b. Refer to section 5 of this CAD amendment below for mandatory renewals of certificates, mandatory periodic inspections and exemptions.

5.0 Periodic Inspections and Renewing Certificates of Inspection

Additional notes to CAD Amendment:

Section 4 is amended as follows: Section 4 is renumbered to section 5. Sections 5.1 -5.2 are renumbered, section 5.2 contains amendments and sections 5.3 to 5.5 are new additions to the CAD amendment.

5.1 The following classes of equipment are exempt from periodic inspection requirements:

5.1.1 Refrigerant pressure vessels and refrigerant receivers, except where the refrigerant is ammonia.

5.1.2 Blowdown tanks.

5.1.3 Water to water heat exchangers.

5.1.4 Compressed air receivers, where the maximum allowable working pressure (MAWP) is not greater than 250 psi and the capacity is not greater than 23 ft³

Additional notes to CAD Amendment:

Certificates of Inspection issued to boilers and pressure vessels listed in Sections 5.1.1 through 5.1.4 above do not require renewal.

5.2 Every owner or operator of a boiler or pressure vessel, that is not exempted by 5.1 above, that is in operation or use, shall have it inspected at a maximum interval not to exceed the intervals listed in Table 1:

Table 1 Periodic Inspection Intervals

	Type of Boiler or Pressure Vessel	Frequency of Inspection
A	Deaerator	1 year
B	High Pressure Boiler	1 year
C	Low Pressure Boiler	2 years
D	Pressure Vessel	3 years
E	Pressure Vessel fitted with Quick-Opening Door	1 year

Additional notes to CAD Amendment:

- a. The periodic inspection interval for hydropneumatic tanks and cushion tanks has been removed from the periodic inspection interval table. The net effect of this change is that these tanks are required to be periodically inspected as specified for item D for pressure vessels and that is at a maximum interval not to exceed 3 years.
- b. Periodic inspection may include both internal and external inspections of the boiler or pressure vessel and testing of related safety devices as instructed by the TSSA inspector or insurer. Pressure relief valves,

category G fittings, used as primary overpressure protection devices for a boiler, pressure vessel or piping, has mandatory servicing requirements from CSA B51 and B52 as adopted in Sections 1.0 and 2.0 of this CAD and evidence of compliance will be verified at the time of periodic inspections for boilers and pressure vessels.

- c. *Cylinders and tubes approved under Transport Canada regulations that meet the applicable Transport Canada requirements for periodic inspection, testing, certification and/or replacement may be attached to a TSSA-regulated piping system provided the cylinders and tubes have a valid qualification stamping or marking. TSSA inspectors or insurers may request the owner demonstrate proof that the cylinder is approved by Transport Canada with a valid date stamp that has not passed its date of expiry and that the cylinder is being used in accordance with its intended use.*

5.3 Renewal of Certificates of Inspection for Boilers and Pressure Vessels

A certificate of inspection issued by TSSA to an owner or operator for equipment listed in Section 5.2, above, must be renewed at the intervals shown in Table 1. To obtain a certificate of inspection, every owner or operator must request a certificate of inspection from TSSA within 30 days of receiving a Record of Inspection from TSSA or an insurer for that equipment by:

- i. Completing the electronic application form on the BPV Portal or other instructions posted on the TSSA website;
- ii. Submitting the fee as per fee schedule shown on TSSA website; and
- iii. Validating the Record of Inspection issued by TSSA or the insurer per instructions on TSSA website.

Additional notes to CAD Amendment:

- a. *Refer to O.Reg.220/01 section 5(2) an owner or operator of a boiler or pressure vessel who holds a record of inspection for it issued before O.Reg. 220/01 section 10.1 comes into effect on July 1, 2018, is deemed valid until the next periodic inspection interval, as shown in Table 1, Section 5.2 above.*
- b. *Refer to O.Reg.220/01 Section 10.1(3), every owner or operator requiring a certificate of inspection from TSSA for equipment listed in 5.2 above, shall submit to TSSA within 30 days of receiving the record of inspection.*
- c. *Records of inspection (ROI) submitted by the insurer to TSSA are considered to be submitted on behalf of the owner or operator. If the owner or operator finds their ROI not posted with the TSSA, they must contact their insurer. The TSSA website will also have contact information to speak with someone at TSSA.*
- d. *Owners or operators are not permitted to operate boilers or pressure vessels without current certificates of inspection. Renewals must be completed prior to the expiry date of the existing certificate, including payment of fees. All parties need to consider scheduling the periodic inspection with sufficient time to allow renewals to be completed prior to the date of expiry of the certificate. Owners or operators and insurers are cautioned on the timelines specified by the Regulation, including that an insurer has up to 30 days to issue a record of inspection after the periodic inspection date and owners or operators have up to an additional 30 days to apply for a renewal of the certificate of inspection, once they receive the record of inspection. Note however that given the prohibition against operating a boiler or pressure vessel without a current certificate in section 5 of the Regulation, these timelines are of importance to an operator or owner only where the expiry date of the existing certificate of inspection has not been exceeded.*

5.4 Record of Inspection

5.4.1 Inspection Report

Upon conducting the periodic inspection as required in 5.2, above, the insurer shall issue to the owner or operator an inspection report which shall include the information listed in 5.4.2, below.

The inspection report shall state whether the inspection passed or failed. For those inspections that failed, the inspection report shall contain all instructions for the owner or operator for repairs or corrective actions required. The National Board violation category/categories shall also be identified.

Additional notes to CAD Amendment:

Refer to O. Reg. 220/01 Section 10(5) through (7) for owner or operator and insurer obligations with respect to inspection reports. Owners or operators and insurers must retain inspection reports for 6 years from the date of inspection.

5.4.2 Record of Inspection

The TSSA inspector or insurer conducting the required periodic inspection of the equipment listed in 5.2, above, shall issue a record of inspection (ROI) for each boiler or pressure vessel that has passed the inspection to the owner or operator and to TSSA within 30 days of the inspection date.

The Record of Inspection shall include the following information:

- i. Unique Identifier (TSSA numerical equipment identifier)
- ii. Owner / Operator Name
- iii. Owner / Operator Address
- iv. Owner / Operator Email Address
- v. Site Name
- vi. Insurer Name
- vii. Insurer Email
- viii. "Inspected on behalf of...(Insurer Name)" where applicable
- ix. Inspection Date
- x. Inspection Type (Internal /External)
- xi. TSSA issued Ontario Certificate of Competency number
- xii. Inspection Status
- xiii. National Board Violation Category/Categories (if repairs or corrective measures were required)
- xiv. Maximum Allowable Working Pressure (MAWP)

Additional notes to CAD Amendment:

- a. ROI technical data is imbedded in the TSSA generated Unique identifier associated with each device. Selected TSSA technical data will be transferred to the associated certificate of inspection for each ROI
- b. Refer to TSSA's website for current transmission instructions for Records of Inspection.
- c. For periodic inspections conducted by the TSSA inspector, the owner or operator will receive an inspection report. If the inspection report identifies the periodic inspection successfully passed, the inspection report is then deemed to be the record of inspection and is also considered submitted to TSSA on behalf of the owner or operator.

5.5 Notification of Changes to TSSA

5.5.1 Owner or Operator

The owner or operator shall notify TSSA of the following changes with respect to a Certificate of Inspection issued to a boiler or pressure vessel within 10 calendar days of the change occurring:

- a. Removal from service (Boiler Removal Form)
- b. Change in owner or operator
- c. Change in insurer

- d. Where it is learned that there is a defect found that renders the equipment unsafe to operate. For this case, the owner or operator shall also notify their insurer.

5.5.2 Insurer

Where the equipment is insured, the insurer shall notify TSSA of changes with respect to a Certificate of Inspection issued to a boiler or pressure vessel forthwith:

- a. Where the insurer has cancelled, suspended or not renewed the insurance.

5.5.3 Notification Information

Notification to TSSA shall be made in writing to the attention of the Director and include the following information:

- a. Facility name and address;
- b. Equipment identified by the TSSA Unique Identifier;
- c. Nature of the change;
- d. Current owner or operator and where applicable new owner or operator and related contact information; and
- e. Where insurer and/or insurance is changed, new insurer name and contact information and/or other insurance changes.

Additional notes to CAD Amendment:

- a. Refer to O. Reg. 220/01 Section 10.2 for notification requirements.
- b. Refer to TSSA's website for current forms to facilitate sending the complete information and transmission instructions.
- c. Refer to TSSA's website for the boiler removal form.

6.0 Ice Rinks for Hockey, Skating or Curling

Additional notes to CAD Amendment:

The section number was changed from "5" to "6", with no other changes in this CAD amendment.

- 6.1** "direct expansion coils" means the piping in which liquid refrigerant is vaporized to produce ice in a rink for hockey, skating or curling.
- 6.2** The following shall apply to direct expansion coils using ammonia as the refrigerant:
 - (a) The direct expansion coils shall be provided with pipes and control valves installed outside the building in such a manner as to permit immediate discharge of the refrigerant to the atmosphere in case of an emergency.
 - (b) The point at which refrigerant is discharged to the atmosphere in (1) above shall be located away from any opening for a door, window or air-inlet of the rink or of any adjacent building:
 - (i) so that the fumes of refrigerant will not enter the rink or buildings, and (ii) not less than fifteen feet above any of those openings.
- 6.3** The expansion coils shall be protected by dual relief valves set to function at a pressure of 75 psig.
- 6.4** Magnetically operated stop-valves that are energized and opened only when the motor driving the compressor is itself energized shall be provided on the high-pressure side of the compressor.
- 6.5** The expansion coils shall be supported on solid foundations throughout their length.

6.6 The refrigerant shall be completely withdrawn from the expansion coils while the rink is being used for any purpose other than hockey, skating or curling.

7.0 Welder/Welding Operator and Brazer/Brazing Operator Authorization

Additional notes to CAD Amendment:

The section number was changed from "6" to "7", with no other changes in this CAD amendment.

7.1 Following the initial authorization of the welder/welding operator (welder) or brazer/brazing operator (brazer) performance test, every welder or brazer shall be re-tested at an interval not to exceed 12 months with the following exceptions:

- (a) Welders or brazers employed by an organization with a valid Certificate of Authorization for boiler or pressure vessel fabrication from the Technical Standards and Safety Authority or ASME, shall have used the specific welding or brazing process at least every six (6) months and their employer must have maintained a record of this activity in accordance with their quality control manual accepted by Technical Standards and Safety Authority or ASME.
- (b) Brazers employed by an organization with a valid Certificate of Authorization from Technical Standards and Safety Authority for refrigeration piping systems, shall have used the specific brazing process at least every six (6) months and their employer must have maintained a record of this activity in accordance with their quality control manual accepted by Technical Standards and Safety Authority.

Additional Notes to CAD Amendment:

- a. *Authorization is obtained following CSA B51 Clause 4.5 technical requirements. Test coupons are presented to the TSSA inspector for acceptance. If acceptable, the TSSA inspector will certify the welder/brazer performance qualification certificate by signing and dating the certificate.*
- b. *For additional information about refrigeration piping refer to safety information bulletin SB06-01, "Refrigeration Piping Fabrication, Installation, Repair or Alteration".*

8.0 Applications for an Ontario Certificate of Competency

Additional notes to CAD Amendment:

Section 8.0 has been renumbered and revised with 8.2 as a new subsection for this CAD amendment.

8.1 Examinations Required for New or Reinstatement of an Ontario Certificate of Competency

Persons who intend to apply for an Ontario Certificate of Competency shall take and receive a passing grade for the following examinations:

- i. Ontario Certificate of Competency Examination administered by Technical Standards and Safety Authority, and
- ii. National Board Inservice Commission Examination administered by the National Board of Boiler and Pressure Vessel Inspectors (Columbus, Ohio, United States of America).

Additional notes to CAD Amendment:

Examinations listed in Section 8.1 above are the examinations provided for in O. Reg. 220/01 Section 12. (4)(d).

8.2 Education and Experience Required for an Ontario Certificate of Competency

Persons who intend to apply for an Ontario Certificate of Competency shall have a minimum of 5 credit points accumulated in education and experience, with a minimum of 1 credit point in each area respectively, as set out in the National Board Document: NB-263, RCI-1 Rules for Commissioned Inspectors (RCI-1). Unless otherwise stipulated by the Director, the latest edition of RCI-1 is adopted and comes into force and effect on the date as specified in the standard.

Additional notes to CAD Amendment:

Refer to O.Reg.220/01 Section 12(4)(c).

8.3 Applications for an Ontario Certificate of Competency

The applicant for an Ontario Certificate of Competency including new, renewal, reinstatement and transfer applications shall have a valid and current National Board Inservice Commission issued by the National Board of Boiler and Pressure Vessel Inspectors (Columbus, Ohio, United States of America). New applicants shall demonstrate evidence of compliance with sections 8.1 and 8.2 above.

Additional notes to CAD Amendment:

- a. *To maintain an Ontario Certificate of Competency, the applicant is responsible for completing continuing education as prescribed in NB-263 Rules for National Board Inservice and New Construction Commissioned Inspectors as well as keeping their knowledge current with respect to Ontario regulatory requirements.*
- b. *A complete set of instructions for applicants for the Ontario Certificate of Competency is provided in the safety information bulletin SB13-01, "Ontario Certificate of Competency for Insurers". The terms for renewals for those without a valid and current National Board Inservice Commission are also provided.*

9.0 Insurers and Third-Party Inspection Providers

Additional notes to CAD Amendment:

Section 9.0 is a new section in this CAD amendment.

9.1 Application for a Certificate of Authorization for Third Party Inspection Providers

Applications for a certificate of authorization for Third Party Inspection Providers are made to TSSA. In order to verify the accuracy of the information provided, applications are subject to audit by TSSA. Applications shall be renewed on a triennial basis. If there is any change to information provided in the application or as an attachment or addendum to the application, notification of the change must be submitted to TSSA within 30 calendar days.

The application shall be signed by the responsible authority for the applicant and shall include the following information:

- a. Organization name, address and contact information;
- b. National Board Certificate of Accreditation as an Authorized Inspection Agency;
- c. A list of persons who will conduct inspections with valid Ontario Certificates of Competency;
- d. Organization chart with roles and responsibilities;
- e. Declaration of administrative controls for compliance with O.Reg.220/01 and relevant standards in the form of a written manual and or procedures with document control; and
- f. Confirmation of indoctrination and training of the persons conducting inspections.

Additional notes to CAD Amendment:

- a. *Refer to O.Reg.220/01 Section 12.1(2) insurers may retain the services of a third-party inspection provider to conduct a periodic inspection provided the third-party inspection provider holds a current certificate of authorization issued by TSSA.*
- b. *Refer to TSSA website for current application forms to facilitate submitting a complete application and for transmission information.*

9.2 Requirements for Insurers

Any insurer that is actively underwriting insurance for equipment listed in section 4.2 above, shall file information with TSSA about the periodic inspection schedule of that equipment that is separate and in addition to the individual record of inspection described in section 4.4 above.

Every month of May, each insurer shall document and submit a statement to be received by TSSA by June 1st attesting to the number of boilers and pressure vessels as defined in Section 4.2 above as follows:

- a. Number of boilers and pressure vessels requiring annual inspection;
- b. Number of boilers requiring inspections every two years identifying those which required inspection within the past 12 months and those requiring inspection in the following 12 months; and
- c. Number of pressure vessels requiring inspections every three years identifying those which required inspection within the past 12 months, those requiring inspection in the following 12 months and those requiring inspection in the following 13 to 24 months.

Every three years, or as directed by the Director, TSSA shall conduct an audit or compliance survey of all insurers active in insuring and inspecting boilers and pressure vessels. The purpose of the audit or compliance survey will be to determine compliance with O.Reg.220/01 and this CAD.

Additional notes to CAD Amendment:

- a. *Refer to O.Reg.220/01 section 15 for requirements for insurers.*
- b. *Refer to TSSA website for current forms for attesting to numbers of insured boilers and pressure vessels and transmission information.*

10.0 Effective Date

These amendments are effective July 1, 2018.

DATED at Toronto this

Mike Adams

Director, Ontario Regulation 220/01 (Boilers and Pressure Vessels), appointed under the *Technical Standards and Safety Act, 2000*