the pressure equipment safety authority

PRESSURE EQUIPMENT SAFETY REGULATION

User Guide AB-516 Edition 4, Revision 1 - 2025-01-14

User Guide for

Pressure Equipment Safety Regulation

Alberta Regulation 49/2006

With amendments up to and including Alberta Regulation 195/2015

Regulation and Notes

NOTE: This document is unofficial, and does not reflect the opinions of Alberta Municipal Affairs

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Introduction

Pressure equipment may contain a considerable amount of energy and, if it fails in use, it can seriously injure or kill people and cause major damage to property.

Pressure equipment is installed throughout Alberta in schools, shopping malls, buildings, industrial plants and other facilities. Anyone can be affected if pressure equipment fails in service.

The Alberta *Safety Codes Act* and regulations govern pressure equipment safety in Alberta. The *Pressure Equipment Safety Regulation* was developed to prevent pressure equipment accidents and incidents and establishes requirements that must be met by persons who own, operate, design, construct, install or maintain pressure equipment or provide related services.

This User Guide is intended to assist stakeholders in meeting the requirements of the *Pressure Equipment Safety Regulation*, and to assure the safe operation of pressure equipment installed in Alberta. The reaffirmation date for this document is February 28, 2025.

The following documents have been approved by the Administrator for pressure equipment safety under the provisions and authority of the *Pressure Equipment Safety Regulation (PESR).* These documents provide the detailed requirements that must be met, as provided for in the PESR, and supplement the information covered in this User Guide.

AB-505, *Risk-Based Inspection Requirements for Pressure Equipment*
This document establishes the mandatory requirements governing the application of risk-based inspection (RBI) in Alberta.

AB-506, *Inspection & Servicing Requirements for In-Service Pressure Equipment*
This document covers integrity assessment and pressure relief device examination and servicing requirements for in-service equipment.

AB-512, *Owner-User Pressure Equipment Integrity Management Requirements*
This document specifies quality management system requirements for owners who are required to hold a Certificate of Authorization Permit under PESR subsection 11(3).

AB-513, *Pressure Equipment Repair and Alteration Requirements*
This document covers inspection and certification and other requirements for post-construction repairs and alterations to pressure equipment.

AB-515, *Quality Management System Requirements for Integrity Assessment Organizations*
This document specifies quality management system requirements for companies that are required to hold a Certificate of Authorization Permit to provide integrity assessment services per subsection 11(2) of the PESR.

AB-518, *Pressure Piping Construction Requirements*
This document specifies quality management system requirements for companies that are required to hold a Certificate of Authorization Permit to construct pressure piping under the PESR.

AB-519, *Alternative Test Methods Procedure Requirements*
This document outlines the requirements that must be included in an Owner-User integrity management system procedure that would allow the use of alternative test methods for ASME B31.3 closure or tie-in welds.

AB-520, *Finite Element Analysis (FEA) Requirements*
This document outlines the requirements for documentation that must be submitted with a design that is justified based on FEA.

AB-521, *Requirements for Engineered Pressure Enclosures*
This document specifies requirements for submission of designs and installation procedures for engineered enclosures used to make temporary containment repairs to in-service pressure equipment.

AB-522, *Standard Pneumatic Test Procedure Requirements*
This document specifies requirements that must be met for the establishment of a standardized pneumatic testing procedure for low-risk pneumatic tests as a part of an authorized organization's management system.

AB-523, *Procedure Guideline for Replacement of Mechanically Assembled Piping Components*
This document provides advice and recommendations to owner-user organizations for developing a work procedure for simple repairs to ASME B31 pressure piping systems consisting only of replacement in kind with mechanically assembled parts.

AB-524, *Pressure Relief Devices Requirements*
This document establishes requirements for activities relating to pressure relief devices, including manufacture, assembly, selection and sizing, inspection, repair, servicing, setting and sealing, and installation.

AB-525, *Overpressure Protection Requirements*
This document provides guidance and establishes requirements for overpressure protection of pressure vessels and pressure piping by means of pressure relief valves, rupture disc and pin devices, and other methods of overpressure protection.

AB-526, *In-Service Pressure Equipment Inspector Certification Requirements*
This document establishes requirements for certification of in-service pressure equipment inspectors.

AB-527, *Inspector Competence Management System Guidelines for In-Service Pressure Equipment Integrity Assessment Programs*
This document provides guidance to owner-user organizations for developing processes for assessing inspector competence.

AB-529, *Pressure Equipment Exemption Order User Guide*
This document provides a section-by-section breakdown of the Pressure Equipment Exemption Order, with important notes and additional discussion relating to the use of exemptions permitted by that regulation.

AB-530, *Quality Plan Requirements for Pressure Vessel Design Submissions*
This document provides details of an alternative 'quality plan' approach to submissions for registration of pressure vessel designs, centered on a secondary certified review being provided by the design submitter which is verified by audit.

AB-531, *Quality Plan Requirements for Piping Design Submissions*
This document provides details of an alternative 'quality plan' approach to submissions for registration of pressure piping systems, centered on a secondary certified review being provided by the design submitter which is verified by audit.

AB-532, *Design Registration Requirements for Application-Specific Pneumatic Test Procedures*
This document establishes requirements for pneumatic test procedures that must be registered for a specific application, without the scope limitations required of a pneumatic test procedure that is accepted as a part of an organization's quality management system.

AB-534, *Harmonized Requirements for Historical Boilers*
This document establishes harmonized requirements across several Canadian jurisdictions for boilers which are used for historical demonstration processes.

AB-535, *Requirements for Alteration Design Registration Based on Fitness for Service*
This document establishes requirements for the use of fitness-for-service principles for the alteration of pressure equipment, or to justify its continued service.

AB-536, *Requirements for the Integrity Management of Grade 91 Steel Used Above Currently-Permitted Allowable Stresses*

This document establishes requirements for the continued use of pressure equipment which makes use of Grade 91 steel at a stress level that was permitted by the code of construction but which is no longer permitted by its current edition.

AB-537, *Thermal Liquid Heating System (TLHS) Requirements*
This document establishes requirements for thermal liquid heating systems, and provides clarification on the applicability of and limitations of available exemptions.

Information Bulletin IB24-004, *In-Service Pressure Equipment Inspector Certificate of Competency*

Your attention is also drawn to AB-507, *Guidelines for the Inspection of Fired Heaters.*

Pressure Equipment Safety

Pressure means energy is stored in a container or vessel. Pressure equipment such as boilers and pressure vessels may contain an enormous amount of energy. If boilers or pressure vessels are not designed, operated, or maintained properly or the safety protection devices fail to prevent excessive pressure buildup, the result can be a destructive explosion causing injuries to people and damaging property.

The purpose of the *Pressure Equipment Safety Regulation* and this User Guide is to promote pressure equipment safety and reduce pressure equipment accidents and incidents. Knowing the pressure equipment hazards and the root causes of accidents and incidents helps us to reduce the occurrence of pressure equipment accidents and incidents.

Main Hazards of Pressure Equipment

- impact from the blast of an explosion,
- impact from the release of high pressure steam, liquid or gases contained in the equipment,
- impact from failed equipment parts or any flying debris,
- contact with the released steam, liquid or gases, and
- fire resulting from explosion or from the escape of flammable liquids or gases.

Root Causes of Failure of Pressure Equipment

- inadequate design or material for the loading and operating conditions,
- incorrect or defective manufacture,
- poor installation,
- unanticipated in-service deterioration such as corrosion or fatigue cracking,
- improper operation, operator error, poor training/supervision,
- system errors in operation, maintenance or over-pressure protection,
- malfunction of instrumentation, control systems or feed and utility supplies,
- inadequate repairs or alterations,
- other factors such as weather, etc.

Preventing Pressure Equipment Failure

To prevent pressure equipment failures, root causes of failure must be addressed:

- ensuring the design is suitable for all loading and operation conditions;
- ensuring that the pressure equipment is constructed in accordance with the design requirements;
- using competent persons for construction;
- following manufacturer's operating instructions;
- ensuring all controls, instrumentation, and over-pressure protection devices are tested on a regular basis and are in good working order;
- having up-to-date operating procedures for normal and emergency operating conditions and having them readily available to the operators;
- using competent persons, who have appropriate skills and training and any required certifications, to operate pressure equipment;
- maintaining equipment in good working condition;
- assessing the condition of pressure equipment throughout its service life to ensure it remains safe for operation.

Legislation Governing Structure of Pressure Equipment in Alberta

In Alberta, the Minister of Municipal Affairs establishes public safety policy through the legislative and regulatory process. For pressure equipment safety, the legislation is the *Safety Codes Act* and the regulations under the Act. The partners in Alberta's pressure equipment safety system include:

- Minister of Municipal Affairs
- Alberta Municipal Affairs
- Safety Codes Council
- Pressure Equipment sub-council
- Pressure Equipment Administrator
- ABSA, the pressure equipment safety authority

Alberta Safety Codes Act and Regulations

Legislation that governs the pressure equipment discipline includes

Safety Codes Act

- *Pressure Equipment Exemption Order* (Alberta Regulation 56/2006),
- *Pressure Equipment Safety Regulation* (Alberta Regulation 49/2006),
- *Power Engineers Regulation* (Alberta Regulation 85/2003),
- *Pressure Welders Regulation* (Alberta Regulation 169/2002), and
- *Administrative Items Regulation* (Alberta Regulation 16/2004).

Alberta Municipal Affairs

The Minister of Municipal Affairs establishes public safety policy through legislative process. The Minister is accountable for the administration of the *Safety Codes Act*. The Minister delegates the delivery of safety programs to ABSA through an Administration Agreement.

On behalf of the Minister, Alberta Municipal Affairs facilitates the total safety systems for pressure equipment in the province and plays a key role in promoting safe communities and workplaces. In this role, the Government ministry:

- develops and recommends changes to the *Safety Codes Act* and its regulations;
- conducts policy and program audits of ABSA;
- assists the Minister in prosecutions of *Safety Codes Act* offenders;
- acts as liaison between the Minister and ABSA.

Safety Codes Council (SCC)

The Safety Codes Council is a not-for-profit, non-government organization charged with the responsibilities of overseeing the *Safety Codes Act*. It acts as a liaison between the Minister and persons or organizations interested in safety matters covered by the Act. In doing so, the SCC provides a mechanism for stakeholders' participation in the development and delivery of Alberta's safety system.

Pressure Equipment sub-council

The Pressure Equipment sub-council, a part of the Safety Codes Council, is made up of volunteer stakeholder representatives from the pressure equipment industry, educational institutions, and workforce associations. The sub-council:

- reviews compliance with the *Safety Codes Act*, provincial regulations, and national and international standards;
- reviews, formulates, and recommends changes to codes, standards, and regulations;
- establishes competency requirements for safety codes officers;
- hears and rules upon appeals under the Act;
- provides advice and other support to the Minister.

Pressure Equipment Administrator

The Minister of Municipal Affairs appoints the Administrator respecting pressure equipment and prescribes the Administrator's powers and duties under the *Safety Codes Act* and regulations. The Administrator for Pressure Equipment is Djordje Srnic who is also the Chief Inspector of ABSA.

The Administrator is the Alberta jurisdiction representative on Codes and Standards committees and is responsible for:

- establishing requirements for programs and activities, and
- technical issues involving pressure equipment safety programs.

ABSA, the pressure equipment safety authority

ABSA is registered under the *Societies Act* as a not-for-profit organization and is designated by the SCC as an accredited agency. *The Boilers Delegated Administration Regulation* defines the authority, power and duties for ABSA. ABSA is delegated by the Alberta Government for the delivery of the pressure equipment safety program services in Alberta and to carry out jurisdictional duties under the *Safety Codes Act*.

Working under the direction of a five-member Board of Directors representing pressure equipment industry stakeholders, ABSA works with designers, manufacturers, users, and other stakeholders to promote pressure equipment safety.

ABSA contact information and office locations are available on the ABSA Web site at www.absa.ca. ABSA's Edmonton and Calgary office locations are:

Edmonton Head Office
9410 – 20 Avenue,
Edmonton, Alberta T6N 0A4
Tel (780) 437-9100 / Fax (780) 437-7787

Calgary Office
Deerfoot Atrium South
Suite 380, 6715 8th Street NE
Calgary, Alberta T2E 7H7
Tel (403) 291-7070 / Fax (403) 291-4545

Summary

Pressure equipment safety is critical to everybody. It affects your safety, life and property. This User Guide helps us to better understand the *Pressure Equipment Safety Regulation* which is developed to prevent pressure equipment accidents and incidents.

About this User Guide:

Text within boxes is quoted from the *Pressure Equipment Safety Regulation* or the *Safety Codes Act* (shaded boxes).

Text outside of boxes is unofficial and has no force under law. Contact ABSA for advice regarding specific situations.

This User Guide is only valid to the date indicated. The most current version is posted at www.absa.ca.

The purpose of this User Guide is to provide a better understanding of the intent of the *Pressure Equipment Safety Regulation* and it cannot override the Regulation. It is intended to provide guidance on what users should do to comply with the requirements of the Regulation.

ABSA intends to update the User Guide as issues or improvements are identified. If you have any suggestions for improving the User Guide, please advise ABSA at prefumo@absa.ca.

Pressure Equipment Safety Regulation and Notes

Section 1: Interpretation

1(1) In this Regulation,

(a) "Act" means the *Safety Codes Act*;

The *Safety Codes Act* is an Alberta law that sets out general safety requirements for:

- fire protection
- buildings (includes barrier-free design and access)
- electrical systems
- elevating devices, amusement rides and rope lifts
- gas systems
- plumbing and private sewage disposal systems
- pressure equipment.

The requirements in the Act apply to all of the disciplines above. The *Pressure Equipment Safety Regulation* ("PESR") sets out requirements that apply specifically to pressure equipment. Both the Regulations and the Act are law in Alberta.

(b) "Administrator" means the Administrator in the pressure equipment discipline appointed under the Act;

The Administrator is an official with specific powers to enforce the Act and the Regulation. The Administrator for pressure equipment is Djordje Srnic, Chief Inspector of ABSA, the pressure equipment safety authority. The Administrator is appointed by the Minister of Municipal Affairs.

(c) “Alberta identification number” means a number that is assigned by a safety codes officer to an item of pressure equipment that identifies the item in an information system under section 58 of the Act;

An Alberta identification number is also known as an "A-number." It is a unique Alberta number used to identify each individual boiler, pressure vessel, fired-heater pressure coil and thermal liquid heater in Alberta. An A-number has the letter “A” in a circle followed by a series of numbers. It is usually stamped on the item of pressure equipment on or near the nameplate or code stamping.

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See "Certificate of inspection permit" in section 33.

(d) “alteration” means any change to an item of pressure equipment as described in the original manufacturer’s data report that requires a change of design calculations or otherwise affects the pressure-containing capability of the item of pressure equipment;

Alterations can be physical or non-physical changes. An example of a physical change is the addition of nozzles or the addition/deletion of shell sections. An example of a non-physical change is an increase or decrease in the maximum allowable working pressure (internal or external) or the design temperature of the pressure equipment. A reduction in the minimum design metal temperature is also considered an alteration.

(e) “ASME Code” means the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code or Pressure Piping Code declared in force applicable to the equipment;

(f) “boiler” means a vessel in which steam or other vapour can be generated under pressure or in which a liquid can be put under pressure by the direct application of a heat source;

Boilers are found in heating plants and power plants.

See the definitions for ‘heating plant’ in section 1(1)(o), and ‘power plant’ in section 1(1)(y).

(g) “certificate of authorization permit” means a permit issued pursuant to section 44 of the Act authorizing a person to carry out the activities stated on the certificate of authorization permit;

A certificate of authorization permit signifies that the company has provided a quality management system acceptable to the Administrator for specific pressure-equipment-related activities. See section 11.

(h) “certificate of inspection permit” means a permit issued pursuant to section 44 of the Act authorizing the operation of a boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system as stated on the certificate of inspection permit;

A certificate of inspection permit is issued by an ABSA safety codes officer after the pressure equipment has been inspected and it complies with the requirements of the Act.

See section 33.

(i) “competent”, in relation to a person, means possessing the appropriate qualifications, knowledge, skills and experience to perform the work safely and in accordance with the Act;

It is the owner's responsibility to ensure that only competent persons operate, inspect or maintain pressure equipment.

"Appropriate qualifications" includes certification required by the *Power Engineers Regulation* or other legislation, and would include certification required for power engineers, in-service inspectors, pressure welders and welding examiners.

The employer should be able to justify the basis on which a worker is considered to have appropriate qualifications, appropriate knowledge, appropriate skill and appropriate experience.

“design” includes *plans, diagrams, drawings and specifications depicting the arrangement* and *operation of any thing, process or activity to which this Act applies*

– from the *Safety Codes Act, section 1(1)(j)*

(j) “CSA” means the Canadian Standards Association;

Note: The Canadian Standards Association is now known as CSA Group.

(k) “equipment record” includes design information, data reports, inspection plans and integrity assessment, repair and alteration records;

(l) “expansible fluid” means

(i) a vapour or gaseous fluid, or

(ii) a liquid under pressure and at a temperature at which the liquid changes to a gas or vapour when the pressure is reduced to atmospheric pressure or when the temperature is increased to ambient temperature;

"Expansible fluid" is a gas or a liquid that would be a gas at design temperature and atmospheric pressure. A refrigerated liquid that would be a gas at design pressure and ambient temperature (or lower) would be an expansible fluid.

The designer of pressure equipment is responsible for determining if the equipment will contain an expansible fluid or is likely to contain an expansible fluid under foreseeable operating conditions.

An owner should be able to justify that an item is not in expansible fluid service.

(m) “fired-heater pressure coil” means the total fluid-retaining system within the internally insulated enclosure and header boxes of a petroleum or chemical plant fired-heater, including tubes, return bends, crossover piping, inlet and outlet headers and manifolds;

A fired-heater pressure coil is always part of a process (i.e., process heating as opposed to building heating). For example, a fired-heater pressure coil within a refinery may be used to increase temperature to aid process reactions.

A separately fired water heater, steam generator, steam superheater or superheater coil in a process heater enclosure is a boiler and is not considered a fired-heater pressure coil even though it is in the same heated gas flow path.

(n) “fitting” means a valve, gauge, regulating or controlling device, flange, pipe fitting or any other appurtenance that is attached to, or forms part of, a boiler, pressure vessel, fired-heater pressure coil, thermal liquid heating system or pressure piping system;

See section 5 and section 17.

(o) "heating plant" means

(i) a boiler in which steam or other vapour can be generated at a pressure not exceeding 103 kilopascals and a temperature not exceeding 121 degrees Celsius,

(ii) a boiler in which liquid can be heated to a pressure not exceeding 1100 kilopascals and a temperature not exceeding 121 degrees Celsius at or near the outlet of the boiler, or

(iii) a system or arrangement of boilers described in subclause (i) or (ii),

and the pressure vessels, pressure piping systems and fittings used in connection with one or more of the boilers;

These conditions distinguish a heating plant from a power plant.

In most cases, boilers in a heating plant conform to ASME Section IV and boilers in a power plant conform to ASME Section I. It is the operating conditions as allowed on the Certificate of Inspection Permit for the boiler rather than its original code of construction that determines whether a plant is a heating plant or something else.

(p) "hydropneumatic tank" means a vessel in a non-expansible liquid system that contains air, nitrogen or an inert gas, the compression of which serves only as a cushion;

A hydropneumatic tank, as part of a hydraulic system, provides a compressible gas cushion that prevents excessive on/off cycling of pumps and drive motors. A pressure tank in a water storage/delivery system is an example of a hydropneumatic tank. Vessels which contain a non-expansible fluid or granular product, such as water or cement, and have an expansible fluid introduced at a pressure in excess of 103 kPa to blanket or force the non-expansible or granular product out of the vessel are to be considered as pressure vessels. An expansion tank in a hot water heating system is not a hydropneumatic tank.

(q) "integrity assessment" means an examination of an item of pressure equipment, related processes and documentation to determine its conformity to the requirements established by the *Safety Codes Act* and the regulations;

Integrity assessment includes the inspection and evaluation of pressure equipment to determine if it is in a safe condition for continued operation.

(r) "integrity assessment program" means a program, described in section 41, with respect to pressure equipment;

(s) “integrity management system” means a system for ensuring that pressure equipment is designed, constructed, installed, operated, maintained and decommissioned in accordance with this Regulation;

See section 11(3) and section 37(b).

(t) “liquefied petroleum gas” means any material that is composed predominantly of propane, propylene, normal butane, isobutane and butylene either by themselves or in any mixture of them;

(u) “manufacturer’s data report” means a manufacturer’s data report as defined in CSA Standard B51, *Boiler, Pressure Vessel and Pressure Piping Code*;

A manufacturer’s data report is a document in an accepted form by which a manufacturer certifies that a boiler, pressure vessel, or fired-heater pressure coil has been manufactured in accordance with the particular section of the ASME Code or the CSA B51 Code. The document supplies a technical description of the vessel, is signed by a representative of the manufacturer, and provides for a countersignature by an inspector or authorized inspector, where required.

See also section 31 for pressure piping data reports.

(v) “maximum allowable working pressure” means the pressure authorized on the design registration or a lesser pressure as indicated on the manufacturer’s data report;

Maximum allowable working pressure (MAWP) is the highest pressure at which the equipment may be operated at its design temperature. MAWP is measured at the top of the vessel in its operating position.

The maximum allowable working pressure of an item can be found on the manufacturer’s data report and on the certificate of inspection permit. If the equipment's pressure rating has been changed ("re-rated"), the maximum allowable working pressure is shown on the certificate of inspection permit and on the rerate nameplate.

It is permissible for the manufacturer to show, on the boiler or pressure vessel nameplate and manufacturer’s data report, a value lower than the pressure for which the design was registered. This is sometimes done if the manufacturer has a design registered for one pressure but his client orders a piece of equipment for a lower pressure and the manufacturer simply certifies the equipment for the pressure that was ordered rather than registering a new design which might be made of the same thicknesses of materials anyway.

(w) “non-expansible fluid” means a fluid that is not an expansible fluid;

See "expansible fluid" definition in section 1(1)(l). A non-expansible fluid will be a liquid if the design temperature is below the atmospheric boiling temperature of the fluid.

(x) “operate” includes placing under pressure;

Commissioning a boiler, or doing steam blows for example, would be classified as operating since they require the unit to be pressured up with an expansible fluid. A pressure piping system is "in operation" any time it is being used to convey, for any purpose, an expansible fluid under pressure after the final pressure test specified in the engineering design has been completed.

“owner” includes a lessee, a person in charge, a person who has care and control and a person who holds out that *the person has the powers and authority of ownership or who for the time being exercises the powers and authority of ownership;*

– from the *Safety Codes Act, section 1(1)(v)*

"Owner" refers to a person or company who has care and control of pressure equipment, regardless of whether the equipment is the actual property of that person or company.

(y) “power plant” means

(i) a boiler in which steam or other vapour can be generated at a pressure exceeding 103 kilopascals or a temperature exceeding 121 degrees Celsius,

(ii) a boiler in which liquid can be heated to a pressure exceeding 1100 kilopascals or a temperature that exceeding 121 degrees Celsius, or both, or

(iii) a system or arrangement of boilers described in subclause (i) or (ii),

and the pressure vessels, pressure piping systems and fittings used in connection with one or more of the boilers;

These conditions distinguish a power plant from a heating plant.

(z) “pressure” means pressure that is above atmospheric pressure unless stated otherwise;

This pressure is commonly referred to as "gauge pressure."

“pressure equipment” means a boiler, a fired-heater pressure coil, a thermal liquid heating system and other equipment designed to contain expansible fluid *under pressure, including, but not limited to, pressure vessels, pressure piping systems and fittings, as defined in the regulations,*

– from the *Safety Codes Act, section 1(1)(y)*

(aa) “pressure piping system” means pipes, tubes, conduits, fittings, gaskets, bolting and other components that make up a system for the conveyance of an expansible fluid under pressure and may also control the flow of that fluid;

If a piping system does not contain and is not intended to contain a fluid that would be expansible at the system maximum design temperature, it is not a pressure piping system under this regulation.

(bb) “pressure plant” means a pressure vessel or a system or arrangement of pressure vessels and the pressure piping system used in connection with the pressure vessel or the system or arrangement of pressure vessels;

A pressure plant can range from an air receiver with piping in an automotive repair garage to a full-scale refinery complex.

(cc) “pressure vessel” means a vessel used for containing, storing, distributing, processing or otherwise handling an expansible fluid under pressure;

If a vessel does not contain and is not intended to contain a fluid that would be expansible at the system maximum design temperature, it does not need to be constructed and maintained as a pressure vessel under the Safety Codes Act. But, if it is not built as a pressure vessel, it cannot be put into expansible fluids service.

Propane storage tanks, air receivers and distillation columns are examples of pressure vessels.

“quality management system” means all the documented, planned and systematic actions needed to ensure that this Act is complied with;

– from the *Safety Codes Act, section 1(1)(aa)*

See section 11.

(dd) “registered by the Administrator” means a design registered in accordance with section 40 of the Act and recorded in the information system maintained pursuant to section 58 of the Act;

(dd.1) “registered by a safety codes officer” means a design registered in accordance with section 40 of the Act and recorded in the information system maintained pursuant to section 58 of the Act;

Registration requirements apply to designs of pressure equipment, to repair or alteration procedures, to certain testing procedures and to welding, brazing and other joining procedures.

See sections 14 through 22.

(ee) “safety codes officer” means a safety codes officer, designated under the Act, in the pressure equipment discipline;

Only employees of ABSA may be safety codes officers for pressure equipment.

See section 31 of the *Safety Codes Act.*

(ee.1) “shop inspection” means the inspection by a safety codes officer of any boiler or pressure vessel during, and upon completion of, construction in Alberta;

(ff) “thermal liquid” means a non-expansible fluid other than water or a mixture of water and glycol that is used as a heat transfer medium without vaporization at the maximum design temperature and atmospheric pressure;

A thermal liquid does not vaporize at the maximum design temperature and atmospheric pressure. See definition of ‘thermal liquid heating system’ below.

(ff.1) “thermal liquid heating system” means one or more thermal liquid heaters, and any connected piping system or vessel, in which a thermal liquid that is not pressurized by the application of a heat source is used as the heat transfer medium;

It is important to distinguish a thermal liquid heating system from a power plant or a heating plant.

A thermal liquid heating system is designed and operated so that the thermal liquid cannot be pressurized by the application of heat. This is usually accomplished by venting to atmosphere since thermal expansion of the liquid in a closed system will pressurize the system.

If the thermal liquid heating system can be pressurized by the application of heat, the system is a power plant or a heating plant and the heater is deemed to be a boiler.

(gg) “volume” means the maximum volume of water that may be contained in an item of pressure equipment.

(2) In this Regulation, a reference to a professional engineer means a professional engineer as defined in the *Engineering and Geoscience Professions Act.*

The Regulation and adopted codes and standards sometimes require the involvement of a professional engineer, such as is required on pressure piping design submissions. See section 9.

Section 2: Paramountcy

2(1) If there is a conflict between a code or standard declared in force by this Regulation and another regulation under a statute of Alberta, the other regulation prevails over the code or standard.

In some situations, the codes and standards adopted in the Regulation (such as CSA and ASME codes or standards) can contradict requirements in other regulations under Alberta law.

If there is such a conflict, the Alberta regulation always overrides the code or standard and must be followed.

(2) If there is a conflict between the provisions of the CSA Standard B51, *Boiler, Pressure Vessel and Pressure Piping Code*, declared in force by this Regulation and any other code or standard declared in force by this Regulation, the provisions of the CSA Standard B51, *Boiler, Pressure Vessel and Pressure Piping Code* prevail over the other code or standard.

If the requirements of the CSA B51 Code are more stringent than or otherwise contradict those in another adopted code or standard, the requirements of the CSA B51 Code must be followed.

Section 3: Exemptions

3 Repealed AR 158/2014 s5.

The exemptions in this section have been repealed by section 5 of the Pressure Equipment Exemption Order Amendment Regulation (AR 158/2014) and are now included in the Pressure Equipment Exemption Order (AR 56/2006) section 2(2) – clauses (p), (q), (r) & (s).

Section 4: Partial Exemption

4(1) In this section, "DN" means a dimensionless designator used in the SI (metric) system to describe pipe size.

(2) Pressure piping

(a) that does not exceed DN 50,

(b) that has a maximum allowable working pressure not exceeding 1035 kilopascals,

(c) that has a design minimum temperature no lower than minus 46 degrees Celsius and a design temperature not exceeding 186 degrees Celsius,

(d) that contains air, nitrogen, argon, carbon dioxide, steam, hot water or water and glycol, and

(e) that is constructed to the applicable ASME Code,

is exempt from all the other requirements of this Regulation except section 35.

DN is a metric designation system for standard pipe sizes similar to the imperial NPS (nominal pipe size) system. DN 50 is equivalent to NPS 2, and has a 2.375 inch (60.3 mm) outside diameter, as defined in ASME B36.10M.

Pressure piping that is DN 50 or smaller and that meets all[1] the other conditions listed in the partial exemption, must still be designed, constructed and tested to the applicable ASME piping code for this partial exemption to apply.

The exclusion of section 35 requires that all unsafe conditions, accidents and fires involving this piping must be reported to ABSA. Other requirements of the regulation are exempt, including requirements for design registration, use of registered fittings, and requirements for a certificate of authorization permit and registration of an associated integrity management system.[2]

It is important to note that this partial exemption does not apply if the design minimum temperature is colder than -46°C.

The owner needs to be able to satisfy an ABSA safety codes officer that a piping system, built under this exemption, meets the requirements of the applicable ASME Code. There is always the possibility that the safety codes officer could ask for proof that the code has been met.

This partial exemption is from a portion of the *Pressure Equipment Safety Regulation* only. The Pressure Welders Regulation still applies in the case of welded piping, even within the scope of the partial exemption.

[1]Where a list of items has the word "and" between the next-to-last and the last items, it is the same as if there were the word "and" between each pair of items. All items in the list must be satisfied in order for this partial exemption to apply.

[2] Boiler external piping in a power plant must meet the requirements of ASME B31.1, Power Piping Code, which requires a quality program to construct, and requires inspection and certification by an Authorized Inspector. In Alberta, an Authorized Inspector is an ABSA safety codes officer. This partial exemption therefore cannot be used for boiler external piping.

Section 5: Pressure Vessels

5(1) The following types of pressure vessels, regardless of volume, must meet all the requirements for pressure vessels in this Regulation:

(a) steam jacketed sterilizers;

(b) autoclaves;

(c) steam jacketed kettles;

(d) air cooled heat exchanger headers;

(e) compressor bottles;

(f) hairpin type heat exchangers.

The pressure vessels listed here must be designed and constructed as pressure vessels, and must meet all regulatory and code requirements for pressure vessels. They cannot be registered or constructed as fittings, even if their volume is less than 42.5 litres. These vessels may, however, be exempted from the requirement for a Certificate of Inspection Permit (see section 33).

Generally, these items have a more complex design and require more detailed design work than other small pressure vessels, which may be registered as fittings.

Note: 5(1)(d) is intended for box type heat exchangers.

Full designs, including the AB-31, Design Registration Application Form, must be submitted to ABSA's Design Survey Department.

(2) A type of pressure vessel not listed in subsection (1) that has a volume not exceeding 42.5 litres shall not be manufactured or operated unless it is registered by the Administrator or a safety codes officer and it may be registered and manufactured as a fitting.

Notwithstanding that the small pressure vessel *may* be registered and manufactured as a fitting, it is still a pressure vessel and must be designed and built to the pressure vessel code. Because this section is permissive, pressure vessels of less than 42.5 litres volume not listed in subsection (1) may also be registered and manufactured as pressure vessels.

(3) If there is a dispute as to whether an item of pressure equipment may be registered by the Administrator or a safety codes officer and constructed or manufactured as a fitting or as a pressure vessel, the dispute may be referred to the Administrator for a ruling.

In Alberta, Figure 1(b), or potentially Figure 1(c) for vessels in lethal service, in CSA B51 is used as a guide to determine if a small pressure vessel can be treated as a category H fitting.

However, the Administrator has the final say over whether an item may be registered as a fitting or must be registered as a pressure vessel.

See Figure 1(b) in CSA B51.

(4) Hot water tanks and water heaters containing water at a temperature exceeding 65 degrees Celsius must meet all the requirements of the Regulation respecting pressure vessels.

Water tanks and heaters that contain water warmer than 65°C must meet all the requirements for pressure vessels, such as design registration, certificate of inspection permit, etc. This is consistent with CSA B51.

The *Pressure Equipment Exemption Order* provides additional exemptions based on the size of the water tank or water heater. Vessels used as hot water tanks or water heaters and that have an internal diameter not exceeding 610 mm are exempt from the PESR per PEEO sections 2(2)(*f*) & (*g*).

Section 6: Codes and Standards

6 The following codes, standards and bodies of rules are declared in force as amended or replaced from time to time as they relate to pressure equipment:

(a) the following provisions of the CSA Standard B51-14, Boiler, pressure vessel and pressure piping code, published by the CSA Group:

(i) Part 1, General requirements for boilers, pressure vessels and pressure piping, including informative Annex E Inspection of welds in pressure coils exposed to direct radiant heat;

(ii) Part 2, High-pressure cylinders for the on-board storage of natural gas and hydrogen as fuels for automotive vehicles;

(iii) Part 3, Compressed natural gas and hydrogen refuelling station pressure piping systems and ground storage vessels;

(b) CSA Standard B52-13, Mechanical refrigeration code, published by the CSA Group;

(c) CSA Standard Z662-15, Oil and gas pipeline systems, published by the CSA Group;

(d) ASME Boiler and Pressure Vessel Code – 2015, published by the American Society of Mechanical Engineers, except that Section VIII Rules for Construction of Pressure Vessels, Division 2 – Alternative Rules, Part 5 Design by Analysis Requirements cannot be used to override the requirements stated in other parts of ASME Boiler and Pressure Vessel Code – 2015, Section VIII, Division 2, unless such use meets the terms and conditions set out in a variance issued to the owner of the pressure vessel by the Administrator;

(e) the following sections of the ASME Code for Pressure Piping, B31, published by the American Society of Mechanical Engineers:

(i) B31.1-2014, Power Piping, including Mandatory Appendices A to G, J and Non-mandatory Appendices II and III;

(ii) B31.3-2014, Process Piping, including Appendices A to E, K, L and X;

(iii) B31.5-2013, Refrigeration Piping and Heat Transfer Components;

(iv) B31.9-2014, Building Services Piping;

(f) American National Standards Institute (ANSI) CGA G-2.1-2014 Safety Requirements for the Storage and Handling of Anhydrous Ammonia, published by the Compressed Gas Association;

(g) NFPA 58, Liquefied Petroleum Gas Code,

2014 edition, published by the National Fire Protection Association;

(h) NFPA 59, Utility LP- Gas Plant Code,

2015 edition, published by the National Fire Protection Association;

(i) MSS Standard Practice SP-25-2013, Standard Marking System for Valves, Fittings, Flanges and Unions, published by the Manufacturers Standardization Society of the Valve and Fitting Industry;

(j) TEMA Standards of Tubular Exchanger Manufacturers Association (9th edition), published by the Tubular Exchanger Manufacturers Association;

(k) API Standard 661-2013, Air-Cooled Heat Exchangers for General Refinery Services (7th edition), published by the American Petroleum Institute;

(l) ISO-16528 Boilers and Pressure Vessels – Part 1, 1st Edition, 2007, published by the International Organization for Standardization, for construction not addressed in the above codes and standards provided the same engineering philosophy, safety margins and administrative requirements in CSA B51 are followed.

These codes, standards and bodies of rules are the legal requirements for pressure equipment in Alberta.

Note that if code or standard requirements conflict with any Alberta regulation (including this one), the Alberta regulation must be followed.

Automatic adoption: PESR Section 6 provides that the codes, standards and bodies of rules are declared in force "as amended or replaced from time to time." This means that the regulation does not need to be amended to make new editions or revisions a requirement in Alberta. The Safety Codes Act establishes that they come into force 12 months after publication unless the Minister publishes an order that a particular document will not be in force, or the in-force date is changed.

Interpretations and code cases are not part of the code, and are not automatically adopted for use in Alberta. Use of interpretations and code cases may be accepted on an individual basis upon application to ABSA. Check with ABSA Design Survey before attempting to apply interpretations or code cases.

API 661 applies for general refinery air-cooled heat exchangers (ACHE's), but for the ACHE's associated with pipeline compressor stations, only the requirements relating to shoulder plugs and gaskets are invoked.

Regarding ISO-16528 Boilers and Pressure Vessels – Part 1, please refer to ABSA Information Bulletin IB23-030, *Use of ISO 16528 in Alberta*, available at www.absa.ca or any ABSA office.

Section 7: Disclaimer

7 The codes and standards declared in force by this Regulation, and any codes and standards referenced in the codes and standards, do not make or imply any assurance or guarantee by the Crown with respect to the life expectancy, durability or operating performance of equipment and materials referenced in the codes and standards.

Many factors affect the integrity and operating performance of an individual item of pressure equipment. Information in the codes and standards should not be understood as any kind of guarantee of operating life or performance.

The owner of pressure equipment has the responsibility to ensure that the requirements of the Act and regulations are complied with, and to ensure the safety of the pressure equipment.

Section 8: Design and Construction

8 A person who designs, constructs, manufactures or imports pressure equipment must ensure that

(a) the pressure equipment is designed and constructed to prevent unintentional release of contained fluid,

(b) the pressure equipment is designed and constructed so that integrity assessments required to determine its condition may be carried out,

(c) if the pressure equipment has means of access to its interior, the access may be made safely, and

(d) the pressure equipment is securely anchored so that there will be no displacement of the pressure equipment when pressure is released through a safety valve, rupture disk, vent or by any other intended or designed means of release.

This section lays out some of the responsibilities of designers, manufacturers, importers, vendors and contractors.

Also note that under section 37, the owner is responsible to ensure that pressure equipment meets the requirements of this Regulation.

These measures help to ensure that the pressure equipment is fit for its proposed use, can comply with this Regulation and can be operated safely throughout its working life.

(a) Design and Construction Considerations. The following should be considered and accounted for in the design:

- the expected working life of the equipment
- the properties of the fluid that will be contained in the equipment
- extreme operating conditions, including start-up, shut-down and emergency conditions
- the need for inspection of the equipment to ensure continued integrity throughout its design life
- foreseeable changes to the operation of the equipment
- conditions for standby operation
- protection against failure, and suitable measuring, control and protective devices
- suitable materials for each component part
- external forces expected to be exerted on the equipment
- a means for isolation in accordance with the OH&S Code
- means to provide safe access, such as interlocks that prevent accidental contact with process fluids
- ready access for external and internal inspection

- sufficient clearance to permit replacement of tubes of heat exchangers
- the physical (external) environment within which the equipment operates.

Pressure equipment must be designed and constructed to meet the expected service of the equipment. The main safety concern with pressure equipment is a loss of integrity (leaks, rupture or explosion), which can harm people and damage property. Proper design work and construction practices greatly reduce the possibility of accidents.

(b) Integrity Assessment Considerations. It must be possible to inspect pressure equipment to ensure that it is safe to operate. This need must be considered during design and construction, so that inspection access to critical components is provided.

Potential modes of deterioration must be determined during the design process. Inspection access to detect deterioration must also be considered during design.

(c) Personnel Safety Considerations. If pressure equipment has a manhole, there must be a safe way to enter it for inspection.

Appropriate ladders and guard rails must be in place to prevent falls. It must also be possible to purge hazardous materials and atmospheres from the equipment so that an inspector can enter safely.

(d) A safety device can release a large amount of gas under high pressure. This can cause a "rocket" effect, moving the pressure equipment in the opposite direction with great force. To prevent damage or injury, the anchoring and the discharge piping must be strong enough to withstand the force from a pressure release.

Section 9: Complex Designs and Projects

9 If, in the opinion of a safety codes officer, the size or complexity of a design or project involving pressure equipment may give rise to safety concerns, the safety codes officer may require that either or both of the following be undertaken:

(a) all plans, documents and specifications, or any part of them, be affixed with the stamp or seal of a professional engineer;

(b) the construction, installation, examination or testing of that pressure equipment be reviewed throughout the course of that work by a professional engineer.

It can be difficult to foresee every safety issue in a large or complex project. To ensure safety, ABSA can require that a professional engineer be involved in the design and construction of the pressure equipment.

ABSA may require the involvement of a professional engineer even if the code or standard does not.

Section 10: Manhole Opening Requirement

10(1) Despite any code declared in force by this Regulation, all pressure vessels exceeding 914 millimetres in the inside diameter must have a manhole opening.

(2) All pressure vessels not exceeding 914 millimetres in the inside diameter must have inspection openings that meet the requirements of the applicable codes or standards declared in force by this Regulation.

(3) Despite subsections (1) and (2), if a manhole opening or inspection opening is not considered to be justified because of the shape of the vessel or the service for which the vessel is to be used,

(a) the Administrator or a safety codes officer may accept other options permitted by the applicable codes or standards declared in force by this Regulation, or

(b) an application may be made to the Administrator for a variance.

This section sets out Alberta requirements for access and inspection openings. These requirements apply unless the code of construction is more stringent.

In unusual situations, where these openings are not considered necessary or where their presence may create an additional hazard, the manufacturer may propose and the Administrator may accept other code options or issue written permission (a "variance") to omit the openings. In such situations, the submitted design must include a notation that the designer is invoking a specific Code paragraph that either permits no inspection opening or permits an alternative to a manhole. If there is no relevant Code paragraph allowing a deviation from the regular access or inspection openings, the designer would have to apply to the Administrator for a variance from sections 10(1) or 10(2). See Form AB-140 at https://www.absa.ca/absa-publications-and-forms/other-forms/.

QUALITY MANAGEMENT SYSTEM

(Note: Sections 11-13 all apply to QM Systems)

Section 11: Quality Management System/Certificate of Authorization Permit

11(1) A person shall not

(a) construct or manufacture pressure equipment,

(b) repair or alter pressure equipment, or

(c) service, repair, set or seal a pressure relief valve,

unless that person holds a certificate of authorization permit.

(2) The Administrator may require that a person who performs integrity assessments of pressure equipment must hold a certificate of authorization permit.

(3) The Administrator may require that an owner of pressure equipment must hold a certificate of authorization permit.

11(1) The activities listed here must not be undertaken unless the person performs the work in accordance with a Quality Management System (QMS) that has been accepted by ABSA. A QMS is required under section 39 of the Act. Acceptance of the QMS is signified by a certificate of authorization permit issued by the Administrator.

The requirements established in sections 43, 44 and 46 of the *Safety Codes Act* apply to a certificate of authorization permit and they include:

- that activities shall not be undertaken or equipment used without the required permit;
- the authority for a safety codes officer to issue a permit and to suspend or cancel a permit;
- the right to appeal to the Safety Codes Council when a permit is denied, suspended or cancelled. The process for appeals is provided in sections 50 to 54 of the Safety Codes Act.

See also:

- Section 12 covers application requirements for a certificate of authorization permit and Section 13 establishes duties of the holder of a certificate of authorization permit.
- AB-518, *Pressure Piping Construction Requirements*; AB-513, *Pressure Equipment Repair and Alteration Requirements*; and AB-524, *Pressure Relief Devices Requirements*.
- QMS section of ABSA web site.

11(2) Integrity Assessment Organizations. This requirement was introduced to ensure that appropriate standards, in accordance with the *Safety Codes Act*, are consistently applied by inspection organizations who perform integrity assessments (*i. e*. inspect) and certify pressure equipment for owners. The requirements for this program are described in ABSA document AB-515, *Quality Management System Requirements for Integrity Assessment Organizations*. A separate certificate of authorization permit for integrity assessment is not required for owner-users who perform in-house integrity assessments under an ABSA-accepted Integrity Management System (Owner-User Program) that meets the requirements of AB-512, *Owner-User Pressure Integrity Management System Requirements*.

An individual who inspects and certifies pressure equipment is required to hold a certificate of competency under section 43 of this Regulation.

A key requirement for inspection companies and owner-users is to have suitable processes for ensuring that persons performing integrity assessments are competent, have the needed resources and perform their assigned integrity assessment activities effectively in accordance with their employer's quality management system and the Safety Codes Act.

The term "integrity assessment" is now used instead of inspection. As described for subsection 1(1)(q) above,

> *"integrity assessment" means an examination of an item of pressure equipment, related processes and documentation to determine its conformity to the requirements established by the Safety Codes Act and the regulations.*

See also:

- Section 43
- QMS section of ABSA web site

11(3) Integrity Management System. The Administrator may require an owner of pressure equipment to submit an Integrity Management System (also called Owner-User Program) and obtain a certificate of authorization permit. The requirements for this program are described in ABSA document AB-512, which defines the integrity management system requirements that the owner must meet.

Note: Welder Testing Organizations

The quality management system requirements for organizations that perform welder performance qualification tests are established in the *Pressure Welders Regulation*.

Section 12: Application for Authorization Permit

12(1) An application to the Administrator, for a certificate of authorization permit, must be on a form satisfactory to the Administrator and must include the following:

(a) the scope of work to be undertaken pursuant to the permit;

(b) a written description of the quality management system;

(c) a statement by a company officer committing to uphold the Quality Management System;

(d) information with respect to the organization and procedures of the applicant;

(e) any other information required by the Administrator.

(2) The Administrator may require an applicant to undertake an examination or evaluation by a safety codes officer with respect to any matter concerning the organization, operation and procedures of the applicant related to the application.

An organization that wishes to apply for a new certificate of authorization permit, required under section 11, should meet with ABSA prior to submitting its application. This will ensure that there is a common understanding of what is needed to achieve and maintain a Quality Management System Certificate of Authorization Permit.

ABSA has developed guidance documents to assist organizations in preparing the description of their quality management system. Quality system requirements documents are posted on ABSA's website. These include:

AB-512, *Owner-User Pressure Equipment Integrity Management Requirements*

AB-515, *Quality Management System Requirements for Integrity Assessment Organizations*

AB-518, *Pressure Piping Construction Requirements*

AB-524, *Pressure Relief Devices Requirements*

Other guidance documents may be provided at the initial meeting with ABSA.

For renewal of a program, contact ABSA to determine if the requirements have changed.

Submit an ABSA application form for a new permit, or renewal, together with the written description of the quality management system (Quality Manual) and the prescribed fee. The forms are posted at www.absa.ca.

An ABSA implementation audit will be scheduled once ABSA has determined that the written description of the applicant's quality management system is acceptable. The purpose of this audit is to

determine if the quality management system is satisfactory and has been implemented in accordance with the written description.

A certificate of authorization permit is issued to an organization who has provided an acceptable quality management system. The certificate of authorization permit is usually issued for a term of 3 years and is subject to surveillance by ABSA.

If a certificate of authorization permit is denied, section 44(5) of the Act provides for an appeal of the refusal to the Safety Codes Council.

Section 13: Authorization Permit Holder's Duties

13 A person who holds a certificate of authorization permit must

(a) establish and maintain a quality management system acceptable to the Administrator,

(b) satisfy the Administrator that an appropriate organization and resources for managing the quality management system effectively are in place,

(c) meet all the terms and conditions, if any, of the certificate of authorization permit, and

(d) provide the Administrator with a written description of the quality management system for managing, controlling and documenting the processes or activities permitted by the certificate of authorization permit.

A quality management system (QMS) sets out a systematic and clearly documented process for managing the activities shown in section 11 or such other activities that the Administrator may order as per section 39 of the Act.

ABSA can provide advice on establishing a quality management system.

If the certificate of authorization permit holder does not meet all the terms and conditions of the permit, a safety codes officer may suspend or cancel the permit as provided for in section 46 of the Act.

Section 46(3) of the Act provides for appeal, of the suspension or cancellation, to the Safety Codes Council.

See also:

- QMS section of ABSA web site

REGISTRATION
(Note Sections 14-24 all apply to registrations)

Section 14: Pressure Equipment Design Registration

14(1) No person shall

(a) construct or manufacture for use in Alberta, or

(b) import for use in Alberta

any pressure equipment unless the design of that pressure equipment is registered by the Administrator or a safety codes officer pursuant to section 40 of the Act and the design of the pressure equipment meets the requirements of this Regulation.

(2) A person who intends to bring into Alberta new or used pressure equipment, the design of which has not been registered by the Administrator or a safety codes officer, must ensure that the owner of the design, or the manufacturer of the boiler, pressure vessel, fired-heater pressure coil, thermal liquid heating system, pressure piping system or fitting obtains registration of the design of the pressure equipment.

(3) An applicant for the registration of a design pursuant to section 40 of the Act must submit the information that the Administrator or a safety codes officer requires.

(4) The Administrator or a safety codes officer may include conditions in the registration of a design.

(5) If a design is registered by the Administrator, the Administrator may specify the number of items of pressure equipment that are permitted to be constructed to that design.

(5.1) If a design is registered by a safety codes officer, the safety codes officer may specify the number of items of pressure equipment that are permitted to be constructed to that design.

(6) Despite subsections (1) and (2), the following are exempt from the requirement to have the design registered by the Administrator or a safety codes officer:

(a) a pressure piping system having an aggregate internal volume not exceeding 500 litres;

(b) the design of a fitting that meets the requirements of this Regulation and the codes and standards declared in force under the Act and is registered in a central fitting registration program in accordance with CSA Standard B51, Boiler, Pressure Vessel and Pressure Piping Code.

(1) Pressure equipment that is not exempted by section 3 or 4 of this Regulation or by the *Pressure Equipment Exemption Order* requires design registration.

Registration of pressure equipment designs is done by ABSA Design Survey in Edmonton. Be aware that the registration of a design does not relieve the manufacturer of responsibility for the design or construction of a boiler, pressure vessel, fitting, fired-

heater pressure coil, or pressure piping in accordance with the Act, codes and standards.

Alterations. An "alteration" means any change to an item of pressure equipment as described in the original manufacturer's data report (or other relevant documentation for pressure equipment not requiring a manufacturer's data report) that requires a change of design calculations or otherwise affects the pressure-containing capability of the item of pressure equipment. All alteration procedures must be submitted to ABSA for registration.

Repairs. A "repair" is work carried out to restore a damaged item to a condition that satisfies the original registered design. Repair procedures must be submitted to ABSA for acceptance when requested by a safety codes officer. Major repairs are typically submitted. When a repair cannot be done to meet original code requirements, it must be submitted as well.

Importing Used Equipment.

For used equipment coming into Alberta without an Alberta Canadian Registration Number (CRN), a condition report is required (recent ultrasonic thickness measurement or possibly a good visual inspection if appropriate).

Importing used pressure piping systems into Alberta is discouraged due to the difficulty in verifying materials, design, workmanship or even who fabricated the piping.

(4) Conditions. Examples of conditions that may be included:

- In the case of a used vessel, the design may be accepted, but with a condition attached that construction of vessels to this design is not permitted.
- ABSA may require that the owner of a vessel agree to accept the existence of a local thin area (LTA) that would otherwise meet code. It would not be sufficient for the vessel manufacturer to demonstrate to ABSA that the local thin area meets Appendix 32 of ASME Section VIII, Div. 1; the end user of the vessel must confirm that it is aware of and agreeable to leave the LTA in place.

(6)(a) Pressure Piping. This exemption would also apply to plant expansions, where the piping added is less than 500 litres. Note that the pressure piping system refers to the plant piping as a whole, not to an air system or a fuel gas system. It should be noted also that if the piping system is protected from overpressure by means other than by a pressure relief valve, then this exemption does not apply because the alternative means of overpressure protection needs to be specifically accepted by the Administrator, as required by section 38(1)(b). For more information, see AB-525.

In the event that small plants (packaged units or "skids") are tied together into a single process entity where the aggregate volume of

the pressure piping exceeds 500 litres, they are no longer exempt from design registration. New pressure piping not exceeding 500 litres added to an existing pressure piping system does not require design registration.

(6)(b) Fitting Registration. At the present time, there is no Canadian central fitting registration program available.

ABSA offers a one-window service to fitting manufacturers wishing to register their designs in multiple Canadian provinces. See the "Submission Requirements for Fitting National Registration" information on ABSA's website (www.absa.ca).

Find the Status of a Submission to ABSA Design Survey
ABSA has developed a directory on our website that will allow users to look up the status of a submission to Design Survey. The directory will provide information on active submissions and on submissions that have been closed within the previous 10 days. A search by tracking number will show whether an active submission is queued for review or is on hold or the review has been completed. The identity of the submitter and the results of the review are not made publicly available on the web. The tool can be found on our website in the 'Directories' menu, by selecting 'Design Submission Status Directory', or by navigating directly to https://www.absa.ca/directories/design-submission-status-directory/.

Section 15: Boilers, Pressure Vessels, Fired-Heater Pressure Coils, Thermal Liquid Heating Systems Design Submissions

15(1) Pursuant to section 14(3), the drawings, specifications and other information to register the design of a boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system must be submitted to the Administrator in duplicate and must include the following:

(a) the design pressure and temperature;

(b) details of the arrangement and dimensions of all component parts;

(c) ASME specification numbers for all materials;

(d) weld joint details;

(e) non-destructive examination details;

(f) the welding procedure specification numbers;

(g) the title of the applicable code or standard, including the relevant edition and addenda dates;

(h) calculations;

(i) a report of any physical tests conducted for the purpose of establishing the working pressure of the boiler or pressure vessel or any part of it;

(j) any other information that is necessary for the Administrator or a safety codes officer to survey the design and determine whether it is suitable for registration.

(2) The drawings, specifications and information referred to in subsection (1) must bear the name of

(a) the owner of the design, or

(b) the person who will be the manufacturer of the pressure equipment.

Drawing Submission. Submit the drawings *etc*. to ABSA's Design Survey department in Edmonton. See the ABSA website for more details. The drawings submitted must be approved for construction (i.e., not preliminary drawings). Any subsequent design changes must be submitted as well.

Material Specification Numbers. Specification numbers must include the entire designation, including grade, type, class, *etc*.

Weld Joint Details. Weld joint details must demonstrate compliance with code requirements (*e. g*., full penetration seams or correct fillet weld sizes).

Non-Destructive Examination. Where there is code-required non-destructive examination (NDE), the details and extent of examination must be submitted.

For example: submit UW-11 requirements for radiography or UG-93(d)(3) requirements for magnetic particle examination or liquid dye penetrant examination.

If additional testing (over and above code) has been done, it must also be noted on the drawing.

WPS Designations. The information required is not the Alberta WP number but the actual welding procedure specification (WPS) designation(s) for all welding procedures being used.

Calculations. Only a single copy of the calculations is required by ABSA. The pressure used in the calculations must be equal to or greater than the MAWP to be marked on the vessel nameplate and manufacturer's data report. A lower pressure which must be met for process conditions must not be used in the calculations. The use of alternative calculation methods in lieu of code rules is not acceptable. See ABSA document AB-520, *Finite Element Analysis (FEA) Requirements*, for pressure equipment designs incorporating FEA.

Physical Test Report. Typically, the report submitted would be something such as a proof test report (for example, as required by UG-101) and the calculation of the pressure rating from the test results, when design justification by proof testing is permitted. For used vessels, this would be a condition report.

Missing Information. Submission of complete information will help prevent delays in design registration. The design surveyor will request any necessary missing information before being able to complete registration.

Names on Submissions. Typically, the name required here is the company title block on the drawing. Note that the drawings etc. should also show the names of the persons who drew, checked and approved the drawing for construction.

Section 16: Pressure Piping Systems Design Submissions

16(1) Pursuant to section 14(3), the information to register the design of a pressure piping system must be submitted to the Administrator in duplicate and must include the following:

(a) flow or line diagrams showing the general arrangement of all boilers, pressure vessels, pressure piping systems and fittings;

(b) line identification lists showing the design pressures and temperatures for each pressure piping line;

(c) a list of pressure relief devices, including the set pressures;

(d) material specifications;

(e) size, schedule and primary service rating of all pressure pipe fittings;

(f) the welding procedure registration number;

(g) the pressure pipe test procedure outlining the type, method, test medium, test pressure, test temperature, duration and safety precautions;

(h) a form, provided by the Administrator, completed by the engineering designer or contractor that relates to the general engineering requirements for design and construction of pressure piping systems;

(i) any other information that is necessary for the Administrator or safety codes officer to survey the design and determine whether it is suitable for registration.

(2) The information referred to in subsection (1) must bear the stamp or seal of a professional engineer and the name of

(a) the owner of the design, or

(b) the person who will be the manufacturer of the pressure piping system.

Pressure piping that is not exempted by section 4 or section 14(6)(a) of this Regulation, or by the *Pressure Equipment Exemption Order*, requires design registration. Note that piping is only pressure piping for the purposes of the Act if it carries an expansible fluid under pressure.

Piping Pressures and Temperatures. Note that ASME B31.3 requires that there be a minimum design temperature as well as a maximum design temperature for each pressure piping line.

List of pressure relief devices. Each pressure piping design submission must include a list of the incorporated pressure relief devices, including their set pressures. For each pressure relief device, this list needs to include the P&ID document number that shows the location of the particular pressure relief device and a list of pressure equipment protected by that device.

Material Specification Numbers. ASTM or ASME specification numbers with all applicable grades, types, classes, etc. must be included for all materials to be used.

Note that in 16(1)(e) the term “pressure pipe fittings” includes such things as valves and pressurized instruments in addition to flanges and things such as pipe elbows, commonly referred to as pipe fittings.

Primary Service Rating. The primary service rating might be, for example, the B16.5 class for flanges or the B16.11 class for couplings.

WP Number. The information required is the WP number, as it may be impractical to list all WPS numbers and the joints to which they apply. This requirement applies to Alberta manufacturers only; other jurisdictions may not use an equivalent number. For manufacturers outside Alberta, a list of the WPS’s used should be provided.

Hydrostatic Testing. For normal hydrostatic testing, it is generally sufficient to state that the test is hydrostatic and indicate the pressure. Hydrostatic testing is required by section 30(1) for all pressure piping leak tests in Alberta, unless the Administrator accepts an alternate method in accordance with section 30(2). Refer to ABSA document AB-519, *Pressure Piping Alternative Test Methods Procedure Requirements* for discussion of alternatives to hydrostatic testing, and to AB-522, *Standard Pneumatic Test Procedure Requirements for Piping Systems* and AB-532, *Design Registration Requirements for Application Specific Pneumatic Test Procedures*, for more specific discussion relating to requirements for pneumatic testing that is to be conducted in Alberta.

Piping Systems Form. The form required is ABSA form AB-96.

See ABSA Design Registration Forms on the ABSA website.

Additional Information. ABSA may ask for any additional information that is necessary to complete the design review and register the design.

Complete Submissions. Submission of complete information will help prevent delays in design registration. The design surveyor will request any necessary missing information before completing registration.

16(2) Professional Engineer. The stamp or seal indicates that the professional engineer has verified that the design complies with the applicable code, including pipe stresses and support systems, and that the overpressure protection system complies with this Regulation.

The stamp or seal must also be signed and dated.

Section 17: Fittings Designs Submissions

17(1) Pursuant to section 14(3), the information to register the design of a fitting must be submitted to the Administrator in duplicate and must include the following:

(a) a statutory declaration in a form provided by the Administrator completed by the manufacturer;

(b) supporting documents relating to the fitting, including, but not restricted to, drawings, catalogues, bulletins or brochures that list the manufacturer's rating specifications;

(c) any other information that is necessary for the Administrator or a safety codes officer to survey the design and determine whether it is suitable for registration.

(2) Any fitting that is supplied by the applicant must be identified in accordance with the standard marking system outlined in MSS Standard Practice SP-25, Standard Marking System for Valves, Fittings, Flanges and Unions.

(3) If the applicant for registration of a fittings design is unable to declare that the design of the fittings complies with a code or standard adopted by this Regulation, the Administrator or a safety codes officer may register the fittings designs, if the applicant satisfies the Administrator or a safety codes officer that the fittings have been satisfactorily tested in a manner acceptable to the Administrator or a safety codes officer.

(4) The Administrator or a safety codes officer may require any manufacturer of fittings to submit samples for examination and testing.

(5) Any samples submitted under subsection (4) will be returned to the manufacturer if the manufacturer within 90 days of submitting the fitting requests it in writing and pays the costs of returning them and it is possible, safe and practical to return them.

(6) If the manufacturer does not request the return of samples in accordance with subsection (5) or it is impossible, unsafe or impractical to return them, the Administrator or a safety codes officer may dispose of the samples.

Statutory Declaration. The statutory declaration is a legally binding declaration that the fitting will be made by a specific manufacturer, in a specific plant, in accordance with the standard identified on the declaration, and that the manufacturer has an accepted Quality Management System (QMS) program audited by an acceptable third-party agency. Note that a QMS program may be known to some manufacturers as a quality control or quality assurance program.

ABSA requires the Alberta form. Out-of-province forms will not be accepted. See: www.absa.ca for form AB-41 and AB-41a (guide for the form).

The oath on the statutory declaration is administered by a commissioner for oaths (or "notary public"), who is a person authorized under law to take sworn statements (oaths) in the manufacturer's jurisdiction.

By this declaration, the manufacturer swears to the truth of all statements made on the form and in all attached documentation.

Only a single copy of the form is required, and it must have an original notarized signature. After registration, the original notarized form will be retained for our records, and a photocopy or scanned copy will be returned to the submitter.

The declaration must be signed by a person in the manufacturer's organization who has control over the Quality Management System (QMS) program.

Note: if the manufacturer's identifier mark is not included in the designated space on the statutory declaration form, the form will have to be resubmitted and this will cause a delay in acceptance.

Supporting Documents. Only two copies in total need be submitted. Documents should have specific reference numbers, which are to be stated on the statutory declaration form.

Additional Information. ABSA may ask for any additional information that is necessary to complete the design review and registration.

Manufacturer's Identifier. The minimum requirement of the Manufacturers Standardization Society (MSS) standard practice is that the manufacturer's mark (identifier) must be permanently affixed to the fitting. The identifier must also appear on the statutory declaration form.

For bushings and plugs, a manufacturer's identifier marking is not required.

Fittings manufactured in accordance with something other than a recognized North American standard. The statutory declaration form has space to provide identification of design and manufacturing documents other than recognized North American standards. Fittings designed and manufactured to such documents must have their pressure-temperature ratings supported by appropriate attached documentation such as a proof test report. Typically, tests would be in accordance with a code declared in force for the fitting's intended application (e.g., as described in ASME B31.3 for a fitting to be used within the scope of an ASME B31.3 piping system).

QMS program requirements. The manufacturer is responsible to maintain its QMS program registration. If the manufacturer's QMS program expires or it is not renewed, or the third-party agency cancels or withdraws the manufacturer's QC certificate, the fitting registration is immediately void.

Section 18: Welding, Brazing and Other Joining Procedures Submissions

18(1) A person shall not construct or manufacture pressure equipment by welding, brazing or other joining procedures that require registration under this Regulation unless the welding, brazing or joining procedure is registered pursuant to section 40 of the Act and the procedure meets the requirements of this Regulation.

(2) The information to register a welding, brazing or other joining procedure that must be submitted to the Administrator pursuant to subsection (1) includes the following in duplicate:

(a) the procedure specification;

(b) supporting procedure qualification records;

(c) any other information that is necessary for the Administrator or a safety codes officer to survey the procedure and determine whether it is suitable for registration.

Joining Procedure Registration. For fabrication within Alberta for use in Alberta, registration of the joining procedure(s) alone does not allow manufacturing. The procedures must be used within a Quality Management System for which a certificate of authorization permit has been issued.

These requirements also apply to companies from outside Alberta doing field assembly in Alberta (i.e., any of these joining procedures used within Alberta is subject to these requirements).

Section 27 requires registration of welding, brazing, and other joining procedures.

Welding/Brazing Procedure Specification. The specification required here is the welding/brazing procedure specification (WPS or BPS) as defined by ASME Section IX, or other joining procedures covered by the code of construction (e.g., ASME B31.3).

Procedure Qualification Records. The procedure qualification records required are defined by ASME Section IX or the code of construction.

Section 19: Pressure Equipment Design Registered

19(1) If the Administrator or a safety codes officer, on being satisfied that a design meets the requirements of this Regulation, approves the registration of the design of a boiler, pressure vessel, fired-heater pressure coil, thermal liquid heating system or pressure piping system, the Administrator or a safety codes officer must

(a) indicate approval of the registration of the design by placing a stamp on the design that indicates the registration number and the date of the registration,

(b) sign the stamp, and

(c) ensure that the following is entered into an information system:

(i) the registration number;

(ii) the name of the owner of the design and, where applicable, the name of the manufacturer or contractor;

(iii) a description of the boiler, pressure vessel, fired-heater pressure coil, thermal liquid heating system or pressure piping system;

(iv) the dimensions or size, where applicable, of the boiler, pressure vessel, fired-heater pressure coil, thermal liquid heating system or pressure piping system;

(v) maximum allowable pressure and the maximum and minimum working temperatures if applicable;

(vi) the date the design was registered.

(2) When a design has been registered, the Administrator or a safety codes officer must return a copy of the registered drawings, specifications or other design documents to the person who submitted the application for registration or to someone else designated by the person.

Acceptance of the registration of the design is carried out by the ABSA Design Survey department in Edmonton.

Calculations are considered to be supporting documentation and are neither registered nor returned by ABSA Design Survey.

The stamped, accepted drawing gives the authorized inspector (AI) permission to apply the CRN to the vessel nameplate and manufacturer's data report.

Section 20: Fittings Design Registered

20(1) If the Administrator or a safety codes officer, on being satisfied that a design meets the requirements of this Regulation, approves the registration of the design of a fitting, the Administrator or a safety codes officer must

(a) indicate approval of the registration of the design by placing a stamp on the design that indicates the registration number and the date of registration,

(b) sign the stamp, and

(c) ensure that the following is entered into an information system:

(i) the registration number;

(ii) the name of the manufacturer of the fitting;

(iii) a description of the fitting or fittings;

(iv) the identification number of the catalogue or supporting documents;

(v) the date registered.

(2) Despite subsection (1), the Administrator or a safety codes officer may register the designs of fittings collectively under one registration number.

(3) When a design has been registered, the Administrator or a safety codes officer must return a copy of the registered design referred to in subsection (1)(a) to the person who submitted the application for registration or to someone else designated by the person.

Collective Registration. A natural grouping of fittings may be registered collectively under one registration number (e.g., an entire catalogue of valves).

Return of Registered Design. The items returned are: the accepted copy of the statutory declaration form and a stamped copy of catalogues, brochures, etc. Calculations (if any) are neither registered nor returned.

Note that an expiry date will appear on the bottom of the accepted statutory declaration form. If the registration is to remain valid, the design must be resubmitted for validation before this expiry date. Validation of the design, with a new expiry date, allows manufacturing of the pressure equipment to this design to continue.

Section 21: Welding, Brazing and Other Joining Procedures Registered

21(1) If the Administrator or a safety codes officer, on being satisfied that a welding, brazing or other joining procedure meets the requirements of this Regulation, approves the registration of the procedure, the Administrator or a safety codes officer must

(a) indicate the acceptance of the registration of the procedure by placing a stamp on the procedure that indicates the registration number and the date of the registration,

(b) sign the stamp, and

(c) ensure that the following is entered into an information system:

(i) the registration number;

(ii) the name of the owner of the procedure;

(iii) the date the procedure was registered.

(2) When a procedure has been registered, the Administrator or safety codes officer must return a copy of the registered procedure referred to in subsection (1)(a) to the person who submitted the application for registration or to someone else designated by the person.

Acceptance and registration of a procedure is carried out by the ABSA Design Survey department.

The owner of an accepted procedure will be assigned an "umbrella" registration number, known as a “WP” number.

Each individual procedure or revision of a procedure accepted from the same owner will be assigned the same registration number. However, each will be differentiated by the procedure’s individual specification number as identified by the owner of the procedure.

Section 22: Change to a Design

22(1) If a person proposes to make a change to a pressure equipment design that has been registered by the Administrator or a safety codes officer, that person must submit drawings, specifications and other information concerning the change to the Administrator for review and registration of the change.

(2) If the Administrator considers the change to a design sufficiently extensive, the Administrator may require the same information to be submitted as if the submission were a first application for registration of the design.

Design Change vs. Repair or Alteration. This section deals with changes to the design, not repairs or alterations of specific pressure equipment items. See section 40 for repair and alteration information.

For reference,
"Alteration" means any change to an existing item of pressure equipment as described in the original manufacturer's data report (or other relevant documentation for pressure equipment not requiring a manufacturer's data report) that requires a change of design calculations or otherwise affects the pressure-containing capability of the item of pressure equipment. Non-physical changes such as a change in the maximum allowable working pressure (internal or external) or design temperature of a pressure retaining item is an alteration. A reduction in minimum design metal temperature is also an alteration. All alteration procedures must be submitted for acceptance.

and,

A "repair" is any work necessary to restore pressure equipment to a safe and satisfactory operating condition, provided there is no deviation from the original design. Repair procedures must be submitted when such submission is requested by a safety codes officer. Procedures for major repairs are typically submitted. If a repair cannot be done to meet original code requirements, the repair procedure must be submitted.

Code Changes. Where a change to code or regulations has been made that invalidates the design, and the manufacturer wishes to continue manufacturing the item, the manufacturer must revise the design in accordance with the new rules and resubmit it for design review and registration.

Registration Number. Depending on the circumstances, a different registration number may be issued for the changed design.

Section 23: Alternative Design Codes and Standards

23(1) The Administrator may accept designs of pressure equipment that are not designed in accordance with the codes and standards declared in force by this Regulation submitted for registration under section 40 of the Act if, in the opinion of the Administrator, they are of an equivalent standard of safety as those codes and bodies of rules declared in force by this Regulation and they meet the requirements for registration.

(2) A safety codes officer may accept designs of pressure equipment that are not designed in accordance with the codes and standards declared in force by this Regulation submitted for registration under section 40 of the Act if, in the opinion of the safety codes officer, they are of an equivalent standard of safety as those codes and bodies of rules declared in force by this Regulation and they meet the requirements for registration.

Codes and standards declared in force (see section 6) are the benchmark for design acceptance.

If a piece of equipment cannot be made to comply with the codes and standards declared in force, the Administrator may register the design if it is as safe as or safer than it would be if it complied with the codes and standards declared in force.

All information required for normal pressure equipment registration, plus all necessary backup documentation for the alternative design codes and standards, material specifications, etc., must be submitted.

Section 24: Notification of Deregistration of Design

24 On receipt of a notice that a design is deregistered, the person who submitted the design for registration must forward copies of the deregistration notice to every person who is permitted to construct the pressure equipment in accordance with the design referred to in the notice.

In the event that an error leads to registration of an inappropriate design, the Administrator may provide notice of deregistration.

If the owner of the design has authorized other persons to construct to that design, the recipient of the deregistration notice must notify all appropriate persons to ensure that no additional pressure equipment is manufactured to this design.CSA B51, states: "The registration of a design shall not relieve the manufacturer of responsibility for the design or construction of a boiler, pressure vessel, fitting, fired-heater pressure coil, or piping in accordance with the Act, codes, and standards."

Disposition of pressure equipment items made before the design was deregistered is a matter for discussion with the Administrator. Such situations are handled on a case-by-case basis.

CONSTRUCTION
Note: Sections 25 to 32 all apply to construction

Section 25: Construction or Manufacturing

25 Any person who constructs or manufactures pressure equipment in Alberta must

(a) hold a certificate of authorization permit described in section 11 and comply with section 13,

(b) during the construction or manufacture, make available to a safety codes officer all drawings and specifications for that pressure equipment, and

(c) ensure shop inspection is conducted by a safety codes officer when the manufacturer's data report must be certified.

(a) An accepted quality management system that covers the scope of work is required and the manufacturer must work in accordance with the quality management system.

(b) A safety codes officer in the pressure equipment discipline must have access to documents such as pressure equipment drawings that have been accepted and registered, including any changes that have been accepted and registered with ABSA (usually, stamped drawings), and other information that shows evidence of registration.

(c) The safety codes officer is the Authorized Inspector in Alberta. He or she is an ABSA employee.

It is the responsibility of the constructor or manufacturer, as applicable, to contact ABSA requesting that a safety codes officer attend the location where the construction or manufacture is being conducted. The term "shop", in this context, includes field fabrication locations as well as what would normally be construed as a "shop".

Section 26: Equipment Constructed Outside Alberta

26 No person shall use in Alberta any pressure equipment constructed outside Alberta unless the person constructing the boiler, pressure vessel, fired-heater pressure coil, thermal liquid heating system, pressure piping system or fitting satisfies a safety codes officer that

(a) the construction was in accordance with the registered design,

(b) the welding or brazing performance qualification tests of the welders or brazers who were engaged in the construction complied with the ASME Boiler and Pressure Vessel Code, Section IX, and

(c) it was inspected and tested in the same way, or substantially the same way, that it would have been if it had been constructed in Alberta.

Evidence of design registration includes:

- CRN on the vessel, boiler, *etc*.
- Manufacturer's data reports bearing a CRN
- Stamped and accepted drawings for pressure piping.

Purchasers of pressure equipment for use in Alberta, but which is to be manufactured outside Alberta, must ensure that the manufacturers are made aware of the relevant Alberta requirements before the equipment is built. One important thing to ensure is that the foreign manufacturer is responding to ABSA's requests for corrections to a design or for additional information on a design in a timely fashion. The purchase order should stipulate that shipment is not to be made until a design registration has been confirmed by ABSA's Design Survey Department, typically by the issuance of a CRN or other applicable design registration number.

Section 27: Welding, Brazing and Other Joining Procedures

27(1) A person who uses welding or brazing to construct or manufacture any pressure equipment

(a) must comply with the requirements of the ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications, and

(b) shall not construct or manufacture pressure equipment by welding or brazing unless the welding or brazing procedure is registered in accordance with section 18.

(2) If the code of construction for an item of pressure equipment requires qualification of a joining procedure other than welding or brazing, a person who uses that joining procedure to construct that pressure equipment

(a) must comply with the requirements of the code of construction, and

(b) shall not construct or manufacture that pressure equipment unless the joining procedure is registered in accordance with section 18.

(3) Despite subsections (1)(b) and (2)(b), the Administrator may waive the requirements regarding pressure equipment constructed or manufactured outside Alberta for use in Alberta if the welding, brazing or other joining procedure has been approved by an organization acceptable to the Administrator.

To carry out joining activities (welding, brazing, etc.) on pressure equipment in Alberta, the procedure specifications and qualification records must be registered with ABSA.

"Other joining procedures" would include such things as gluing, soldering and bonding of plastic pipe as required in ASME B31.3.

For boilers and pressure vessels manufactured outside of Alberta, the authorized inspector (AI) is required to verify the procedure and performance requirements before signing off the boiler or vessel. ABSA does not generally register procedures used in the construction of such imported pressure equipment.

"Acceptable organizations" are typically ASME accredited authorized inspection agencies. Any other organization would have to be considered on a case-by-case basis.

Section 28: Stamping and Nameplates

28(1) Stamping and nameplates must meet the requirements of CSA Standard B51, Boiler, Pressure Vessel and Pressure Piping Code except as modified by this section.

(2) Subject to subsection (4), a boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system for use in Alberta that was constructed or manufactured in Canada must

(a) have stamped on it the Canadian registration number in accordance with CSA Standard B51, Boiler, Pressure Vessel and Pressure Piping Code, and

(b) comply with the ASME Code marking requirements except that the official ASME Code symbol is not required.

(3) A boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system for use in Alberta that was constructed or manufactured outside Canada must

(a) have stamped on it the Canadian registration number,

(b) comply with the ASME Code marking requirements,

(c) have the official ASME Code symbol stamped on it, and

(d) be registered with the National Board of Boiler and Pressure Vessel Inspectors.

Most pressure equipment built in Canada does not need an ASME Code stamp. An exception is vessels built to ASME Section VIII Division 2 or 3 which do require an ASME Code stamp for use in Alberta.

Boilers, pressure vessels and heat exchangers built outside Canada must have an ASME code stamp and data report. CSA requirements, including those for a CRN, shall apply.

The owner may require the official ASME code symbol, even if this Regulation does not. In order to apply the official ASME code symbol, the manufacturer must have a certificate of authorization from ASME for use of the symbol stamp.

The manufacturer must be registered with the National Board in order to register data reports for pressure equipment with the National Board.

(4) All pressure vessels designed and constructed or manufactured to Section VIII, Division 2 or 3 of the ASME Boiler and Pressure Vessel Code must be stamped with the official ASME Code symbol.

Divisions 2 and 3 set requirements for alternative methods of construction for high-pressure vessels. Vessels built to these standards must comply with all code requirements and be code-stamped, whether they are constructed in Canada or any other country in the world.

Section 29: Manufacturer's Data Report

29(1) The manufacturer of a boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system for use in Alberta must send to the Administrator a manufacturer's data report

(a) that conforms to the requirements of the ASME Code, or

(b) in a form acceptable to the Administrator.

If this pressure equipment will be ASME code-stamped, the manufacturer must send ABSA the manufacturer's data report required by the applicable ASME code.

If this pressure equipment will not be ASME code-stamped, the manufacturer must send ABSA a manufacturer's data report using a form that complies with the CSA B51 code. ABSA provides Alberta-specific forms on its website; see https://www.absa.ca/absa-publications-and-forms/inspection-forms/.

The drawing number and revision number on the Manufacturer's Data Report shall match with the drawing number and revision number on the design acceptance letter issued by ABSA. If the manufacturer is using a project-specific drawing on the shop floor in place of the drawing that was used for design registration, this drawing number and revision number must appear on the MDR under Remarks; the original *registered* drawing number and revision number still also need to be indicated in the appropriate field.

(2) A vendor, owner or manufacturer who brings or causes to be brought into Alberta a boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system must ensure that the manufacturer's data report has been sent to the Administrator.

For pressure equipment constructed outside of Alberta, the manufacturer's data report should be available to a safety codes officer at the time of initial inspection. The safety codes officer requires the manufacturer's data report before a certificate of inspection permit can be issued. The equipment may not be used before a certificate of inspection permit is issued.

See section 33 regarding certificate of inspection permits.

See ABSA web site for Forms.

Section 30: Pressure Piping Tests

30(1) All pressure piping leak tests must be conducted using the hydrostatic method.

(2) Despite subsection (1), the Administrator may accept, for a specific pressure piping system, alternative test methods that are allowed in a code or standard that is declared in force.

(3) A pressure piping system shall not be tested at a temperature that is colder than its minimum design temperature.

(4) When conducting pressure tests, the ductile-to-brittle transition temperature and the possibility of brittle fracture must be considered by the contractor.

Other methods of pressure pipe testing may be permitted by the Administrator. The method of pressure pipe testing must be submitted with the design registration information. A pneumatic test requires a detailed test procedure that has been approved by ABSA. Refer to ABSA document AB-519, *Pressure Piping Alternative Test Methods Procedure Requirements* for discussion of alternatives to hydrostatic testing, and to AB-522, *Standard Pneumatic Test Procedure Requirements for Piping Systems* and AB-532, *Design Registration Requirements for Application Specific Pneumatic Test Procedures*, for more specific discussion relating to requirements for pneumatic testing that is to be conducted in Alberta.

Before testing any pressure piping system, the contractor must inspect the system to ensure that the materials, construction and installation comply with this Regulation.

When conducting tests or initial start-ups, all safety precautions should be observed and only essential personnel should be present.

Section 31: Pressure Piping Data Report

31(1) A pressure piping construction and test data report form must be

(a) in a form acceptable to the Administrator,

(b) completed and certified for all pressure piping constructed, and

(c) retained on file by the owner for a period of not less than 5 years.

For piping constructed in Alberta, use ABSA form AB-83. The inspection must be certified by the owner's inspector (as defined in the ASME piping codes). This form must ultimately be provided to the owner.

The inspection declaration portion must be certified by the owner's inspector as defined by the ASME piping codes.

Note that there are specific qualifications in ASME B31.1, B31.3, and B31.5 for who can be the owner's inspector. The inspector shall be an employee of the owner or of a company acting as the owner's agent. The inspector shall neither represent nor be an employee of the manufacturer, fabricator, or erector unless the owner is the manufacturer, fabricator, or erector. Different codes have different requirements for the owner's inspector.

If the piping is boiler external piping as defined by ASME B31.1, the AB-83 form must be certified by an ABSA safety codes officer or authorized inspector. For code-stamped boiler external piping, the applicable ASME Section I piping data report form must be used.

The contractor must provide the piping data report forms to the owner prior to commissioning. Note that the AB-81 Completion of Construction Declaration may also be required in accordance with section 32.

AB-83 Pressure Piping Construction and Test Data Reports or the applicable ASME data reports for code-stamped boiler external piping are required to be submitted to and retained by the owner irrespective of whether an AB-81 Completion of Construction Declaration is required by section 32.

Retaining Forms. It is strongly recommended that the piping data report forms (AB-83's & AB-81's) be retained by the owner for the life of the plant although the regulation only requires that they be kept for a period of not less than five years.

(2) Despite subsection (1), for piping constructed outside Alberta, the pressure piping construction and test data report form must be completed by the person who constructed the piping and must be certified by an inspector acceptable to the Administrator.

For piping constructed outside of Canada,
Use ABSA form AB-83F. The form must be certified by an inspector holding a National Board New Construction Commission with an Authorized Inspector Commission (AI).

For piping construction in Canada but outside Alberta,
Use a piping construction data report that conforms to the CSA B51 Figure D.5 Construction data report for piping systems. Acceptable forms include ABSA forms AB-83, AB-83F, and the corresponding forms issued by the jurisdictional authority where the piping was constructed. Use the form referenced in the contractors quality system manual. Form selection is determined as follows.

Note: All B31.1 Boiler External Piping requires inspection and certification by an Authorized Inspector.

If the piping contractor holds a valid certificate of authorization issued by the jurisdictional authority:

- If the authorization permits the piping contractor to construct the piping without inspection by the jurisdictional inspector, use ABSA form AB-83 (or equivalent) to document construction. The form must be certified by contractor and by the owner's inspector.
- If the authorization does not permit construction without inspection by the jurisdictional inspector, use ABSA form AB-83F (or equivalent) to document construction. The form must be certified by the contractor and by a National Board commissioned new construction jurisdictional inspector with an Authorized Inspector Commission (AI).

If the piping contractor does not hold a valid certificate of authorization issued by the jurisdictional authority:

Use ABSA form AB-83F. The form must be certified by the contractor and by a National Board commissioned new construction jurisdictional inspector with an Authorized Inspector Commission (AI).

Note that there are specific qualifications in ASME B31.1, B31.3, and B31.5 for who can be the owner's inspector. The inspector shall be an employee of the owner or of a company acting as the owner's agent. The inspector shall neither represent nor be an employee of the piping manufacturer, fabricator, or erector unless the owner is the manufacturer, fabricator, or erector. Different codes have different requirements for the owner's inspector.

The contractor must ensure that all piping data reports (AB-83's or AB-83F's) are certified and submitted to the owner or to the contractor who will be installing the piping in the field and who will be completing the final AB-83 form for the piping.

Note that the Completion of Construction Declaration (AB-81) may also be required in accordance with section 32.

AB-83 or AB-83F Pressure Piping Construction and Test Data Reports are required to be submitted to and retained by the owner irrespective of whether an AB-81 Completion of Construction Declaration is required by section 32.

Retaining Forms. It is strongly recommended that the piping data report forms (AB-83's & AB-81's) be retained by the owner for the life of the plant although the regulation only requires that the AB-83's be kept for a period of not less than five years.

See: forms section of the ABSA website.

Section 32: Completion of Construction Declaration

32 Before the initial operation of any pressure piping system that requires registration of its design, the person responsible for its construction must provide the Administrator with a declaration on a form acceptable to the Administrator confirming that the construction was carried out in accordance with this Regulation.

This declaration is only required for pressure piping that requires registration of its design. The person responsible for construction must use ABSA form AB-81 to certify that the construction was carried out in accordance with the Regulation and that pressure piping and test data report forms (AB-83's or AB-83F's) have been submitted to the owner.

The completed ABSA AB-81 form itself must be submitted to ABSA before the piping system is operated. The AB-83 or AB-83F forms (see section 31) must be submitted to the owner, but are not to be submitted to ABSA.

OPERATIONS

Note: Sections 33 to 46 all apply to operations

Section 33: Certificate of Inspection Permit

33(1) A boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system shall not be operated unless

(a) a certificate of inspection permit has been issued in respect of it, and

(b) all the terms and conditions, if any, of the permit have been met.

Permit. Unless otherwise exempted from the Act or Regulations, a certificate of inspection permit must be issued for pressure equipment before it is operated. This permit is required under section 43 of the Act. If the permit has terms and conditions, all terms and conditions must be met both prior to and during operation of the pressure equipment.

You can use ABSA document AB-508, Safety Codes Act Flow Chart, to assist with determining which equipment requires a certificate of inspection permit.

The requirements established in sections 43, 44 and 46 of the *Safety Codes Act* apply to a certificate of inspection permit and they include:

- that activities shall not be undertaken or equipment used without the required permit;
- the authority for a safety codes officer to issue a permit and to suspend or cancel a permit;
- the right to appeal to the Safety Codes Council when a permit is denied, suspended or cancelled.

If the pressure equipment meets the requirements of the *Safety Codes Act* and Regulations, a safety codes officer will apply an Alberta identification number (A-number) and issue a certificate of inspection permit for an item of pressure equipment. This is done upon completion of shop inspection of equipment constructed in Alberta for use in Alberta, or upon completion of an initial inspection of pressure equipment imported into Alberta.

A certificate of inspection permit includes the following information:

- A-number
- inspection date
- maximum allowable pressure and temperature at which the pressure equipment may be operated

- minimum design metal temperature
- preferred inspection interval
- any other conditions of use or operation
- any other information required by the Administrator.

A certificate remains valid as long as the pressure equipment is maintained and operated in a safe condition with all terms and conditions met, until a new certificate is issued, or until the certificate is withdrawn or suspended. Section 46(1) limits the period of validity of a certificate of inspection permit for an item of historical pressure equipment to 12 months.

Appeal. Sections 44 and 46 of the Act provide for appeal to the Safety Codes Council of: denial, suspension, or cancellation of a permit.

Fees. All pressure equipment, unless exempt, requires a certificate of inspection permit. In addition, all pressure equipment requiring a certificate of inspection permit is subject to payment of an annual fee as per the Fee Schedule for Delegated Functions unless exempted by the Administrator's directive. See ABSA's website for the Fee Schedule and the Administrator's directive (Information Bulletin IB22-021) regarding fee-exempt equipment.

Validity. A certificate of inspection issued under the repealed regulations is equivalent to a certificate of inspection permit and remains valid until it is suspended or cancelled, until the conditions specified in the certificate of inspection are no longer valid, or until a new certificate of inspection permit is issued.

(2) Despite subsection (1), the following do not require a certificate of inspection permit but must meet all the other requirements of this Regulation:

(a) a boiler that has a volume not exceeding 42.5 litres;

(b) a pressure vessel that

(i) has a volume not exceeding 500 litres,

(ii) has a maximum allowable working pressure not exceeding 1725 kilopascals, and

(iii) is used as an air receiver, air and oil receiver, air filter, air dryer, cushion tank, hydropneumatic tank, hydropneumatic valve operating cylinder or pneumatic valve operating cylinder;

(c) a pressure vessel that

(i) does not have a quick actuating closure,

(ii) is not required by the ASME Boiler and Pressure Vessel Code to be fully radiographed,

(iii) does not exceed 150 litres in volume and 1725 kilopascals design pressure or 85 litres in volume and 2415 kilopascals design pressure or 42.5 litres in volume and 4140 kilopascals design pressure or any intermediate combination of volume and pressure obtained by straight line interpolation between adjacent pairs of values, and

(iv) is not designed and constructed in accordance with Section VIII, Division 2 or 3 of the ASME Boiler and Pressure Vessel Code;

(d) a pressure vessel that

(i) has a volume not exceeding 42.5 litres,

(ii) has an internal diameter not exceeding 152 millimetres, and

(iii) is not designed and constructed in accordance with Section VIII, Division 2 or 3 of the ASME Boiler and Pressure Vessel Code;

(e) a liquefied petroleum gas storage tank that has a volume not exceeding 10 cubic metres;

(f) a pressure vessel that

(i) contains liquefied petroleum gases or compressed natural gas,

(ii) has a volume not exceeding 1.15 cubic metres, and

(iii) is mounted on a vehicle and provides motor fuel for that vehicle, or is mounted on a vehicle subject to the *Motor Vehicle Transport Act, 1987* (Canada);

(g) a boiler, hot water tank, water heater, cushion tank or heating plant that

(i) was installed, used, operated or placed under pressure on or before June 25, 1975, and

(ii) is located in a private residence that contains not more than 4 dwelling units.

Permit Exemptions. The items listed here do not require a certificate of inspection permit to be operated, but must meet all other requirements of the Regulation regarding, for example, Alberta design registration, construction to an applicable code, inspections and integrity assessments, and repairs and alterations.

Clause (d)(ii): "Internal diameter" means the internal diameter, or maximum internal cross-section diagonal, not exceeding 152 mm. For equipment that is neither circular nor rectangular, use the maximum cross-sectional (transverse) dimension.

Notwithstanding these exemptions from the certificate of inspection permit requirement, the owner is responsible for ensuring that all pressure equipment is maintained in a safe condition and must be able to support this during an audit.

Section 34: Retention of Certificates of Inspection Permit

34 A certificate of inspection permit must be retained in a manner acceptable to the Administrator.

A certificate of inspection permit must be retained by the owner and produced at the request of an ABSA safety codes officer.

The way a certificate is retained and displayed must be acceptable to a safety codes officer. Current certificate of inspection permits may be displayed in the mechanical/control room or may be kept in a file system at the facility where the equipment is installed, and must be readily available to the safety codes officer.

Section 35: Unsafe Condition, Accident or Fire

35(1) The owner of pressure equipment must forthwith report to the Administrator under section 59 of the Act any unsafe condition, accident or fire that occurs with respect to that pressure equipment.

(2) If an accident involving pressure equipment occurs and the accident results in damage to property or an injury to or death of a person, the owner or person in charge must send a full report in writing to the Administrator as soon as possible after the accident and must specify in the report

(a) the exact place of the accident,

(b) the name of any person killed or injured as a result of the accident,

(c) a description of any damage to the property,

(d) the cause and particulars of the accident, as far as may be ascertained, and

(e) any other information that may be required by the Administrator.

(3) If an accident or fire referred to in subsection (1) has occurred, no person shall remove or interfere with any thing in, on or about the place where the accident or fire occurred without the permission of a safety codes officer unless it is necessary to do so to prevent further injury or property damage.

Extensive additional details and clarifications as to the definitions of unsafe conditions, accidents, and fires, and clarification of reporting requirements have been published in information bulletin IB18-004 Rev. 1.

Unsafe conditions are to be reported in a timely manner, as discussed by the referenced information bulletin; accidents and fires should preferably be reported the same day, but in any case, no later than the following business day.

ABSA form AB-139 can be used to report an unsafe condition, and form AB-97 can be used to report an accident or fire; these forms can be found on our website under 'Other Forms'.

For accidents, an additional full report in writing is required within 21 days, as discussed in IB18-004 Rev. 1, with determination of the root cause of the accident. For some instances, additional investigation and follow-up may be required as permitted by Section 48 of the Safety Codes Act, and as discussed by the information bulletin.

If after having reviewed the guidelines given in IB18-004 Rev. 1, you are unsure whether an accident should be reported, discuss the situation with an ABSA safety codes officer.

The accident scene must not be disturbed (except when absolutely necessary to prevent death or injury, or to prevent further property damage) unless approval to do so has been given by an ABSA safety codes officer.

Section 36: Change of Ownership or Location

36(1) An owner or vendor must notify the Administrator in writing when

(a) the owner or vendor sells, leases, exchanges, relocates or otherwise disposes of a new or used boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system, or

(b) the owner or vendor brings a new or used boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system into Alberta.

(2) A notification under subsection (1) must identify the boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system, its location, the current owner and the date of the sale, lease, exchange, relocation, disposition or arrival in Alberta.

(3) An owner or vendor described in subsection (1)(a) must provide the equipment records for the boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system to the person who acquires it.

(4) An owner who acquires a new or used boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system must

(a) ensure that the Administrator is notified in accordance with this section,

(b) request the owner or vendor disposing of the boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system to provide the equipment records for the pressure equipment, and

(c) ensure that the acquired pressure equipment meets the requirements of this Regulation and is in safe operating condition before using it or placing it in service.

(5) Subsection (1) does not apply to pressure equipment that is exempt from the requirement to have a certificate of inspection permit.

Records and Inventory. The owner of pressure equipment is accountable for its safe operation. As part of this responsibility, it is crucial to have:

- a current inventory list of all pressure equipment items owned or operated by the company
- records of equipment maintenance, service and tests.

Change of Ownership or Location. For all pressure equipment that requires a certificate of inspection permit, it is the owner's responsibility to provide current information about changes in ownership or location to ABSA so that accurate and up-to-date records can be maintained. This notification must be provided for all pressure equipment that requires a Certificate of Inspection Permit under section 33 of the PESR.

ABSA form AB-10 can be used to report a change in ownership or location. This form is available on our website under 'Inspection Forms'. The information required to identify equipment, as listed on form AB-10, includes:

- A-number
- serial number
- Canadian Registration Number (CRN)

If the vessel was sold:

- name and address of new owner
- location of vessel
- contact person and telephone number, date of sale, P.O. number

If the vessel was removed from service:

- date vessel was removed from service
- date vessel was destroyed and disposed of as scrap, and A-number was obliterated
- location to which the vessel was relocated
- date the vessel has been operating outside of the Province of Alberta
- date vessel was returned to service.

Note that the AB-10 form must be signed off by the owner's representative.

This information forms part of the records that ABSA is required to maintain on behalf of the Government. By maintaining such records, ABSA is able to provide current, accurate information to the Government and to owners. The records enable ABSA to confirm that the required inspections have been done, to ensure safe operation of the pressure equipment and compliance with the regulations.

Buying or Selling Pressure Equipment. When equipment is sold for pressure service, it is important to ensure that equipment records are provided to the new owner. This chain of control is critical to pressure equipment safety.

Equipment records that should be transferred include:

- design specifications
- integrity assessment records
- maintenance, servicing, test records
- repair or alteration records
- certificate of inspection or certificate of inspection permit.

Buyers of pressure equipment should be aware that, upon purchase, they assume responsibility (and liability) for ensuring that all requirements of the *Safety Codes Act* are met, and that the pressure equipment is maintained and operated in compliance with the Act and Regulations. This includes ensuring proper maintenance and servicing, and ensuring that integrity assessment is completed to ensure that the equipment is safe for continued operation. Also see section 37 regarding responsibility of owners.

Decommissioning Pressure Equipment. Owners who provide information to ABSA indicating that equipment has been destroyed or scrapped shall confirm that appropriate action has been taken to prevent further use of that equipment in pressure service. This shall include removal of the code nameplate, obliteration of the A-number to ensure nothing is left to indicate that the item is valid as pressure equipment, and rendering the vessel into a condition that prevents pressurization. See form AB-10.

(6) An owner who offers pressure equipment for lease must

(a) ensure that the pressure equipment meets the requirements of the Act and is safe for its intended use, and

(b) provide suitable instructions for the safe operation of the pressure equipment.

The owner (lessor) must ensure that all activities needed to comply with the Act and Regulations have been carried out, including appropriate integrity assessment, repair or alteration, and completion of records.

The user (lessee) should exercise due diligence, seeking assurances and documentation that demonstrate that the pressure equipment is safe to operate.

To protect both parties, a leasing contract should spell out who has responsibility for construction, repair, alteration, operation and integrity assessment of the pressure equipment.

Section 37: Responsibility of Owners

37 The owner of pressure equipment must ensure that

(a) the pressure equipment meets the requirements of this Regulation,

(b) an integrity management system is in place for the pressure equipment,

(c) the pressure equipment and pressure relief devices, pressure gauges and regulating or controlling devices on them are maintained in good working order and are operated safely,

(d) safe operating limits are established for the pressure equipment,

(e) the pressure equipment is operated within established safe operating limits,

(f) there are adequate and suitable instructions for the safe operation of the pressure equipment, and

(g) the person operating the pressure equipment is competent.

Integrity Management System. The extent of the integrity management system (IMS) needed to ensure safe operation will vary depending on the type and complexity of the pressure equipment. A basic, straightforward installation may only require a simple system, whereas a process facility may need a fully documented system with an accepted owner-user certificate of authorization permit.

An effective pressure equipment integrity management system provides assurance that the entire pressure equipment facility is safe throughout its full life cycle, encompassing design, construction, installation, operation and decommissioning. The owner organization ("owner-user") develops systematic methods and procedures for dealing with all aspects of pressure equipment operation, receives Administrator acceptance and commits to following these systems. Documentation is then maintained to provide evidence that the *Safety Codes Act* is complied with and that the system described in the owner-user's accepted IMS manual is being followed.

Formal Submission of IMS. When formal submission of an integrity management system for process equipment is required under section 11(3), consult ABSA document AB-512, Integrity Management Requirements. AB-512 also provides assistance to all owners. This document sets out the elements of the system required for acceptance by the Administrator, in accordance with section 11(3), as well as a suggested sequence of key tasks in the development of a system that will be formally submitted.

Safe Operating Limits. Safe operating limits should consider design conditions such as pressure and temperature, as well as material of construction, dew points, dry points, heating and cooling rates, cyclic service, flow rates, injection points, pH, chloride levels, H_2S content, amine strength, partial pressures, etc.

The exact nature and type of safe operating limits to be specified will depend on the complexity and operating conditions of the particular system. For simple processes, establishing maximum safe operating pressure and temperature limits may suffice. Complex systems may need a wide range of conditions specified, such as maximum and minimum pressures and temperatures, the nature of the processes, the volumes and flow rates of process fluids, and heat input or coolant flow. It is also important to consider the operating implications of a change of materials used in construction ("specification breaks"). In all cases, the safe operating limits should incorporate a suitable margin of safety and should consider the control range of the instrumentation. Any operation outside of these boundaries must be addressed by a Management of Change process.

Operating Instructions. "Adequate and suitable instructions" are the information (such as documentation, specifications, procedures, etc.) needed to assist a competent person in operating the pressure equipment safely. These may be manuals and operating procedures developed by the manufacturer or owner, and other technical resources that provide sufficient information. The detail depends on the type and complexity of the pressure equipment.

Competent Operator. The owner-user must ensure that all personnel have appropriate qualifications, training, experience and satisfactory knowledge of the requirements of the legislation, inspections and other relevant integrity management system activities that are to be carried out. The level of training and the extent of competency assessment and any reassessment will depend on the person's experience and qualifications, the complexity of the task and the legislated requirements. See also the definition of "competent" in section 1, and ABSA document AB-512 Integrity Management Requirements.

Section 38: Overpressure Protection

38(1) An owner of pressure equipment must ensure it has overpressure protection that is

(a) a pressure relief valve that meets the requirements of the ASME Code, or

(b) other means of overpressure protection acceptable to the Administrator.

(2) A pressure relief device must be set to open before the pressure in the pressure equipment exceeds the maximum allowable working pressure of the pressure equipment.

(3) An owner of pressure equipment must ensure that the overpressure protection system is designed and maintained so that the maximum pressure in the pressure equipment does not exceed the prescribed limit of overpressure allowed in the applicable code declared in force by this Regulation.

Overpressure Protection. All pressure equipment must have overpressure protection. ABSA document AB-525, *Overpressure Protection Requirements*, establishes requirements that must be met for overpressure protection of pressure equipment.

A pressure relief valve is required unless the Administrator gives written permission for another device or method of overpressure protection. When an owner or an owner's agent proposes to protect pressure equipment by some means other than a pressure relief valve, the owner or owner's agent must make a written submission to the Administrator that suitably justifies the alternate means of overpressure protection. It must be understood that provisions of the construction code, such as those in paragraphs UG-153(b) and UG-154(e) of ASME Section VIII, Division 1, *Rules for Construction of Pressure Vessels*, are not to be assumed to be automatically acceptable, as this regulation requirement takes precedent. Such provisions may turn out to be acceptable, but not until the Administrator or his delegate has confirmed the acceptance in writing for a specific installation. Note that rupture discs and shear or buckling pin devices are not pressure relief valves, and are therefore deemed to be "other means of overpressure protection".

Set Pressure. If the pressure relief device is not directly on the pressure equipment being protected, the set pressure must be set below the maximum allowable working pressure of the upstream vessel(s) by at least the cumulative amount of the pressure drop and head between the equipment being protected and its pressure relief device. This is necessary to account for factors such as pressure drop, head, *etc*.

Design. The design of the overpressure protection system must consider and account for all credible scenarios that could result in an overpressure condition. Pressure relief and other protective devices, their inlet and outlet piping, and any discharge collection system must be designed to prevent the pressure in any of the

pressure equipment from exceeding the overpressure limit (accumulation) allowed by the applicable ASME code.

Any request for overpressure protection by system design, as a means of overpressure protection other than a pressure relief valve, must be supported by detailed justification and must be submitted to and accepted by the Administrator. Many issues must be considered including redundancy and maintenance of instrumentation.

Maintain. "Maintain" means ensuring that the pressure relief device is serviced or replaced as required, that the relieving flow path is kept clear, and that the design of the overpressure protection system is re-evaluated for any change in the pressure system facility or in the operating conditions to ensure that protection is or remains adequate.

The owner of pressure equipment must ensure that the pressure equipment and pressure relief valves, pressure gauges, and regulating or controlling devices are maintained in good working order and are operated safely. ABSA document AB-506 has been issued under the PESR to establish requirements for maintaining, servicing and examining pressure relief devices.

Isolation Valves. The Administrator may accept the installation of block valves in pressure relief piping for pressure vessels if the owner meets the relevant requirements AB-525 and submits the relevant design and rationale to ABSA. The owner must have an auditable management system that establishes procedures and training requirements for the control of such valves. This management system must be available for review by ABSA at all sites where block valves are installed in the pressure relief path. A typical management system would include:

- a description of where block valves would be installed
- who would be responsible for the system
- how the valves would be locked or sealed in the proper position
- how the valves would be periodically checked
- the procedure required for isolation or servicing of the pressure relief device
- the associated training requirements of all people who work with the pressure equipment involved.

Note that no block valves are permitted in the relief path either before or after the pressure relief valve that is protecting a boiler (including waste heat recovery boilers).

Section 39: Pressure Relief Devices

39(1) Adjustable parts of a pressure relief device must be sealed at the time of servicing and remain sealed during operation.

(2) Seals must be installed in a manner that prevents changing the adjustment of a pressure relief device without breaking the seal.

(3) A pressure relief device must be serviced at an interval acceptable to the Administrator.

(4) A pressure relief valve may be serviced, repaired, set or sealed only by a person who holds a certificate of authorization permit described in section 11 and who complies with section 13.

Any change to the adjustable parts of pressure relief devices must be done on a controlled basis, as this can affect system operation and safety. Adjustments must be made by a competent person who holds any required qualifications under the Act.

For servicing intervals, see ABSA document AB-506, *Inspection and Servicing Requirements*.

ABSA document AB-524, *Pressure Relief Devices Requirements*, establishes requirements for a quality management system pursuant to PESR section 11(1)(c).

Section 40: Repairs and Alterations

40(1) Pursuant to section 43 of the Act, repairs and alterations of pressure equipment installed in Alberta must be done by a person who holds a certificate of authorization permit under section 11 and who complies with section 13.

(2) The repair or alteration referred to in subsection (1) must be documented and certified on a form acceptable to the Administrator.

(3) Repairs or alterations to pressure equipment shall not be undertaken without the prior agreement of a safety codes officer.

(4) An owner of pressure equipment that is to be altered must ensure that the alteration design is registered by the Administrator, in accordance with section 14, prior to the commencement of the alteration.

(5) The Administrator or a safety codes officer may require the owner of pressure equipment that is to be repaired to submit a detailed work procedure or design details for acceptance prior to the commencement of the repair.

(6) If a boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system is to be repaired or altered, the owner of that pressure equipment must notify a safety codes officer reasonably in advance of the commencement of the alteration or repair unless otherwise provided for in a certificate of authorization permit referred to in section 11(3).

(7) Despite subsection (1), repairs and alterations done in another jurisdiction on pressure equipment that is to be brought into Alberta must

(a) be done under a quality control program in accordance with CSA Standard B51, Boiler, Pressure Vessel and Pressure Piping Code,

(b) be inspected and certified by an inspector acceptable to the Administrator,

(c) meet any other requirements of the Administrator, and

(d) be documented in a manner acceptable to the Administrator.

(8) If pressure equipment needs repair, the Administrator or a safety codes officer may require the owner of that pressure equipment to submit a detailed report setting out the circumstances that led to the damage to the pressure equipment.

See ABSA document AB-513, *Pressure Equipment Repair and Alteration Requirements*. This document has been issued under the PESR to establish pressure equipment repair and alteration requirements.

Definitions.

"Alteration" means any change to an existing item of pressure equipment as described in the original manufacturer's data report (or other relevant documentation for pressure equipment not requiring a manufacturer's data report) that requires a change of design calculations or otherwise affects the pressure-containing capability of the item of pressure equipment. Non-physical

changes such as a change in the maximum allowable working pressure (internal or external) or design temperature of a pressure retaining item is an alteration. A reduction in minimum design metal temperature is also an alteration. All alteration procedures must be submitted for acceptance.

and,

"Repair" means any work necessary to restore pressure equipment to a safe and satisfactory operating condition, provided there is no deviation from the original design. Repair procedures must be submitted when such submission is requested by a safety codes officer. Procedures for major repairs are typically submitted. If a repair cannot be done to meet original code requirements, the repair procedure must be submitted.

(1) Authorized Organizations. An organization doing repairs and alterations in Alberta must have a valid Alberta Quality Program certificate of authorization permit for the scope of the work to be performed. This requirement also applies to organizations that hold an ASME accreditation or National Board repair accreditation.

The current directory of Alberta Quality System Certificate of Authorization Permit holders and their authorized scopes is posted on ABSA's website.

(2) Documenting Repairs and Alterations. The form referred to in 40(2) is ABSA Form AB-40, Boilers and Pressure Vessels Repair and Alteration Report, for repairs or alterations performed in Alberta. Repairs or alterations to boilers or pressure vessels must be documented using the AB-40, form. The AB-40a is the guide for preparing the AB-40.

After the repair or alteration is finished, the organization that carried out the repair or alteration must submit a completed copy of the AB-40 Repair and Alteration Report form to ABSA and to the owner.

When the item is to be installed in Alberta but the repair or alteration has been completed outside of Alberta, the appropriate National Board (NB) R-1 or R-2 form or Canadian provincial form shall be provided to ABSA. A National Board R-1, Report of Repair, or R-2, Report of Alteration, is completed only by NB "R" stamp holder organizations.

ABSA forms are available at www.absa.ca.

(3) Involvement of Safety Codes Officer. The repair or alteration organization must ensure that the repair and alteration methods are approved by the owner prior to start of work. This is necessary to ensure that the work scope is suitable for the service conditions.

Unless otherwise provided for under the scope of an ABSA-accepted Owner–User Program, an ABSA safety codes officer must review and accept the repair procedure prior to the start of the work. All alterations must be reviewed and accepted by ABSA's Design Survey department. Some repairs must also be reviewed by an ABSA design surveyor. The safety codes officer will inform the owner if a repair procedure must be submitted to ABSA Design Survey. This is commonly the case when the repaired item cannot be put back into the same state as it was when originally constructed. For example, it may not be feasible to postweld heat treat the item after a welded repair although the item was originally postweld heat treated in accordance with code requirements.

See:

- AB-513, *Pressure Equipment Repair and Alteration Requirements*. This covers detailed requirements for repairs and alterations

(4) & (5) Design Survey Review of Repairs and Alterations.

All alteration designs must be submitted to ABSA Design Survey for registration. All repairs to Division 2 & 3 pressure vessels must be submitted for review and acceptance. All other repairs must be submitted to ABSA for acceptance if required by the Administrator or a safety codes officer.

The information that must be provided for review of the repair or alteration procedure includes:

- information that identifies the owner, the pressure equipment item being repaired or altered, and the physical location of the equipment
- details regarding which organization(s) is/are carrying out the work, and their Alberta Quality Program certificate of authorization permit number (AQP #)
- design conditions and the version of the ASME code that applies
- details of the defect or damage that made repair necessary
- step-by-step repair or alteration procedure
- materials, welding procedures and non-destructive examinations used in repair or alteration
- hydrostatic test pressure, if applicable
- any other information that is necessary to survey the repair or alteration procedure and to determine whether it is suitable for registration

- aspects of repair or alteration for which owner assumes responsibility, such as PWHT or radiography of welds
- certificate of inspection details.

(6) Advance Notice for Inspection. The owner must provide enough advance notice to allow the safety codes officer to schedule and prepare for the inspection. For a simple or routine repair, 24 hours may be sufficient. For an extensive or complex repair, much more time may be required to review the plans and procedures, so the owner should notify the safety codes officer much further in advance.

(7) Repairs or Alterations Done Outside Alberta.

Requirements for design survey submission apply to all alterations and repairs done outside of Alberta.

When repair or alteration work is done in other jurisdictions in Canada:

- the repairs or alterations must be certified by an inspector who holds valid National Board certification
- organizations from other Canadian provinces must be authorized to do repairs under a valid quality program as per that jurisdiction's requirements
- the repair/alteration form from that province must be completed and submitted to ABSA.

For repairs or alterations done outside Canada:

- the repairs or alterations must be done by an organization holding National Board repair accreditation as appropriate (typically, a valid "R" certificate of authorization)
- repairs or alterations must be certified by a National Board commissioned inspector
- completed and certified R-1 or R-2 repair or alteration reports shall be provided to the Administrator

Section 41: Integrity Assessment Programs

41 An integrity assessment program with respect to pressure equipment must include, but is not restricted to,

(a) maintaining an inventory of all the pressure equipment,

(b) assessing the pressure equipment in accordance with the integrity assessment requirements established by the Administrator,

(c) maintaining equipment records for each item of pressure equipment,

(d) maintaining records of maintenance, service and tests for pressure relief devices and other protective devices,

(e) assessing the integrity assessment, maintenance and operating history of the pressure equipment to ensure that the equipment is safe for continued operation, and

(f) any other matter required by the Administrator.

An "Integrity Assessment Program" is a key element in the owner's Integrity Management System to ensure that the pressure equipment is safe for continued operation.

Such a system will:

- Establish and maintain an accurate inventory of all pressure equipment, not just pressure equipment that bears an “A” number.
- Specify the competent personnel who will supervise, coordinate and conduct integrity assessment activities, such as inspections
- Maintain records (hard copy or electronic) of: design and manufacturing information, maintenance, inspection, servicing, tests, alterations or repairs for each item of pressure equipment or system
- Set out plans and procedures to ensure that a hazard assessment of the entire pressure system is completed
- Ensure inspection plans are laid out based on the hazard assessment (procedures and plans in detail)
- Ensure appropriate processes exist to correct problems found in inspections
- Ensure detailed inspection reports are completed and kept on file, and inspection plans are updated as required
- Communicate required information to new owners (records) and ABSA (status) when the equipment changes ownership or is decommissioned
- Establish a method of retaining and displaying certificate of inspection permits.

Section 42: Owner's Responsibility for Integrity Assessment

42(1) The owner of pressure equipment must, unless exempted by the Administrator, establish and maintain an integrity assessment program that is acceptable to the Administrator.

The owner of pressure equipment must maintain an appropriate integrity assessment program to ensure safe operation. The scope of an integrity assessment program depends on the complexity of the equipment.

The owner must:

- Maintain an accurate inventory of its pressure equipment
- Ensure that its pressure equipment is inspected at the prescribed intervals
- Maintain appropriate records of inspections.

Inspections must be carried out by an ABSA safety codes officer or by:

- A certified inspector with appropriate in-service inspection certification, operating under an owner-user program that is covered by a certificate of authorization permit of appropriate scope, or
- An organization (inspection agency) designated by the Administrator and that has the appropriate scope under a certificate of authorization permit.

See: policy documents on ABSA's website

- AB-506 *Inspection & Servicing Requirements for In-Service Pressure Equipment*
- AB-512 *Owner-User Pressure Equipment Integrity Management Requirements*
- AB-515 *Requirements for Inspection Companies*
- AB-505 *Risk-Based Inspection Requirements for Pressure Equipment*

Refer to section 41 for details on integrity assessment programs.

(2) When the owner of pressure equipment is requested to submit integrity assessment records to the Administrator, the records

(a) must be submitted in a form acceptable to the Administrator, and

(b) must be acceptable to the Administrator.

As part of its mandate, ABSA is required to maintain specific records on behalf of the government. Integrity assessment records must be authenticated to certify that equipment is safe for continued operation. When required, the owner must submit these records to ABSA.

If inspections (assessments) are not done by ABSA, the owner must ensure every aspect of integrity assessment is carried out.

Section 43: Qualifications of Persons Performing Integrity Assessments

43 A person shall not perform an integrity assessment of pressure equipment unless that person

(a) holds qualifications that are acceptable to the Administrator, and

(b) satisfies the conditions prescribed in the certificate of competency if such a certificate has been issued to the person.

A person performing in-service inspection of pressure equipment must be competent to carry out appropriate integrity assessments.

An individual who inspects and certifies boilers and pressure vessels is required to hold a certificate of competency. ABSA document AB-526 *In-Service Pressure Equipment Inspector Certification Requirements*, establishes the requirement for certification of in-service inspectors. The Administrator may also establish additional requirements.

A person with an in-service inspector's certificate of competency may only perform integrity assessments within the scope of an ABSA-accepted quality management system. A key requirement for inspection companies and owner-users is to have suitable processes for ensuring that persons performing integrity assessments are competent, have the needed resources and perform their assigned integrity assessment activities effectively in accordance with the *Safety Codes Act* and their employer's ABSA-accepted quality management system.

The term "integrity assessment" is now used instead of inspection:

> *"integrity assessment" means an examination of an item of pressure equipment, related processes and documentation to determine its conformity to the requirements established by the Safety Codes Act and the regulations.*

Note that these requirements do not apply to ABSA safety codes officers. The qualifications needed for ABSA safety codes officers to perform activities under the *Safety Codes Act* are established in Safety Codes Council Policy.

Section 44: Conducting an Integrity Assessment

44(1) An owner of pressure equipment must conduct an integrity assessment of pressure equipment when requested to do so by a safety codes officer.

(2) A safety codes officer may update an information system under section 58 of the Act regarding the pressure equipment.

This section provides ABSA with authority to ensure that all pressure equipment owners have appropriate inspection programs in place, assuring the safe operation of their pressure equipment.

For owner-users who hold a certificate of authorization permit for their integrity management system, the requirements for inspection programs, submission of reports and other activities are covered in their quality management system manual.

During the construction or service life of an item of pressure equipment, a safety codes officer may request a nondestructive examination or inspection from the owner or person in charge. This can include radiographic, ultrasonic, magnetic particle or any other method of nondestructive examination. A report of the nondestructive examination or inspection must be provided to a safety codes officer upon request.

Under section 34 of the Act, a safety codes officer may conduct an inspection of pressure equipment. The owner is responsible for preparing equipment for inspection, including providing proper access, cleaning the equipment for inspection, ensuring any required resources are in place to prepare and assist, and ensuring that access to and isolation of the pressure equipment comply with the OH&S Code. If all preparation and safety aspects are not addressed, the safety codes officer cannot conduct the inspection.

Section 45: Riveted Lap Joints

45(1) After a riveted longitudinal lap joint boiler's or pressure vessel's 20th year of age, the factor of safety must be increased by at least 0.1 each year.

(2) If a riveted longitudinal lap joint boiler or pressure vessel is moved to a new location, the owner shall not operate it or permit it to be operated at a pressure exceeding 103 kilopascals.

(3) Subsection (2) does not apply to a boiler or pressure vessel described in section 46.

Riveted lap joint pressure equipment has a known history of cracking problems and failures. The stringent controls set out here are necessary to ensure safe operation.

Section 46: Historical Pressure Equipment

46(1) The owner of any locomotive boiler, traction boiler or antique pressure vessel that is operated in a parade or is used for education or entertainment purposes must ensure

(a) that it is inspected pursuant to the Act as considered necessary by a safety codes officer, and

(b) that a certificate of inspection permit has been issued within the 12-month period prior to its display in an operating condition.

(2) The owner or person in charge of a boiler in subsection (1) is responsible for ensuring that any steam engine and equipment connected to it is in safe working order before displaying it in an operating condition.

Alberta, along with many other jurisdictions in North America, has inspection and certification requirements to ensure that antique steam-powered equipment is safe for operation. The high concentration of people in public venues, coupled with reported failures, reinforce the necessity of the 12-month inspection and certification cycle. See AB-534 *Harmonized Requirements for Historical Boilers for additional information.*

Prior to any operation of any of this equipment in the Province of Alberta, the design of the equipment must be registered with ABSA, the equipment must be inspected to Alberta requirements, and the owner must have a valid Alberta certificate of inspection permit issued by ABSA.

The boiler explosion at a 2001 county fair in Medina, Ohio, tragically demonstrates the importance of proper inspection and maintenance. In that instance, the crown sheets on an antique steam-tractor boiler had been reduced to 23% of their original thickness. The mechanical failure of the boiler occurred at a pressure below that of the installed safety devices, instantaneously releasing an estimated 28,000,000 ft-lbs of energy, and lifting the 20-ton steam tractor some twelve feet in the air. Five fatalities and forty-eight injuries resulted from the blast.

47 Repealed AR 195/215 s18

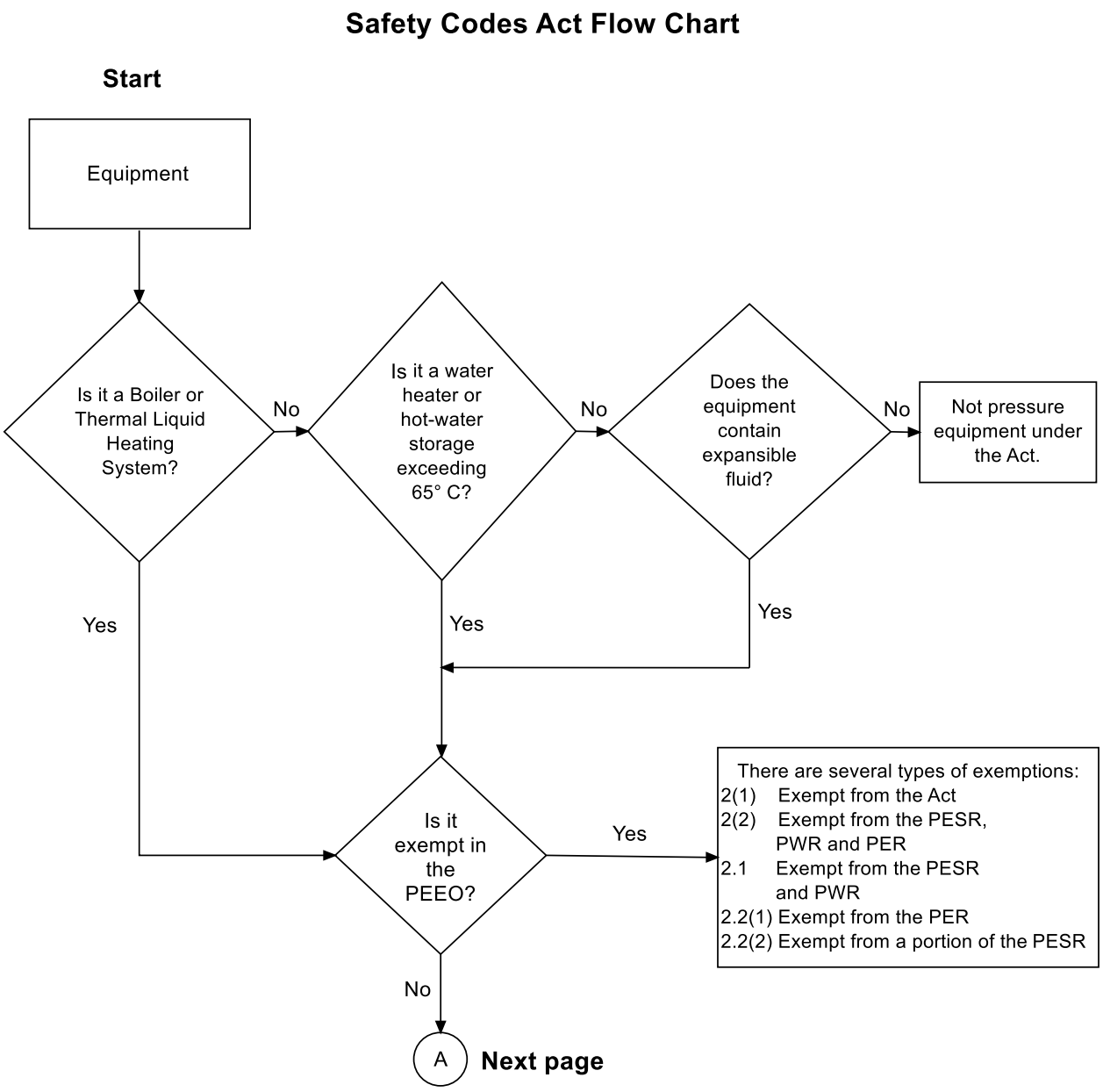
48 Repealed AR 195/2015 s18

49 Repealed AR 227/2012 s7

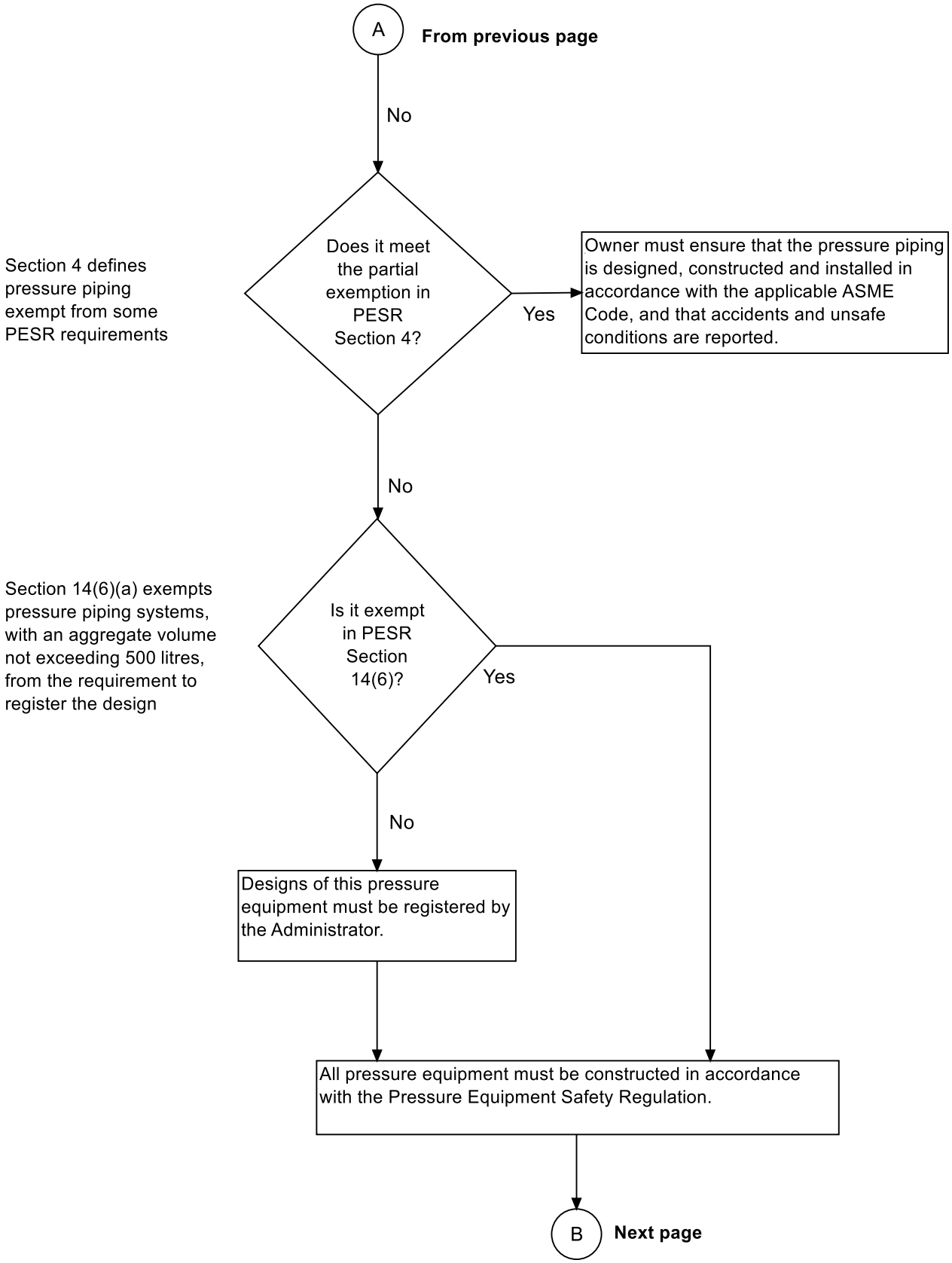
Section 50: Coming into Force

50 This Regulation comes into force on April 1, 2006.

Appendix 1: Safety Codes Act Flowchart



Act - Safety Codes Act
PESR - Pressure Equipment Safety Regulation
PEEO - Pressure Equipment Exemption Order
PWR - Pressure Welders Regulation
PER - Power Engineers Regulation


A
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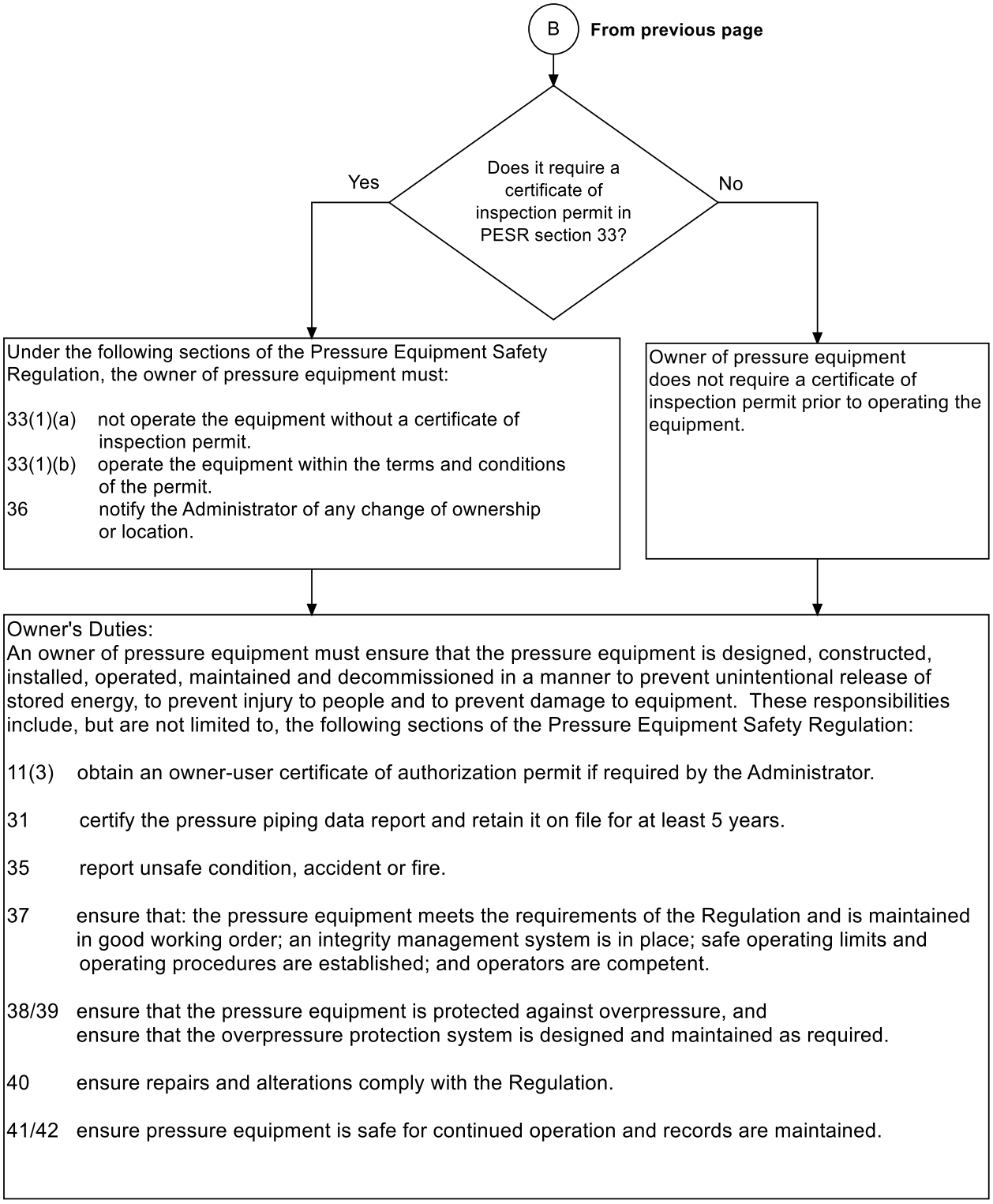
No
Does it meet the partial exemption in PESR Section 4?
Yes
Owner must ensure that the pressure piping is designed, constructed and installed in accordance with the applicable ASME Code, and that accidents and unsafe conditions are reported.
Section 4 defines pressure piping exempt from some PESR requirements
No
Is it exempt in PESR Section 14(6)?
Yes
Section 14(6)(a) exempts pressure piping systems, with an aggregate volume not exceeding 500 litres, from the requirement to register the design
No
Designs of this pressure equipment must be registered by the Administrator.
All pressure equipment must be constructed in accordance with the Pressure Equipment Safety Regulation.
B
Next page


B
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Does it require a certificate of inspection permit in PESR section 33?
Yes
No
Under the following sections of the Pressure Equipment Safety Regulation, the owner of pressure equipment must:
33(1)(a) not operate the equipment without a certificate of inspection permit.
33(1)(b) operate the equipment within the terms and conditions of the permit.
36 notify the Administrator of any change of ownership or location.
Owner of pressure equipment does not require a certificate of inspection permit prior to operating the equipment.
Owner's Duties:
An owner of pressure equipment must ensure that the pressure equipment is designed, constructed, installed, operated, maintained and decommissioned in a manner to prevent unintentional release of stored energy, to prevent injury to people and to prevent damage to equipment. These responsibilities include, but are not limited to, the following sections of the Pressure Equipment Safety Regulation:
11(3) obtain an owner-user certificate of authorization permit if required by the Administrator.
31 certify the pressure piping data report and retain it on file for at least 5 years.
35 report unsafe condition, accident or fire.
37 ensure that: the pressure equipment meets the requirements of the Regulation and is maintained in good working order; an integrity management system is in place; safe operating limits and operating procedures are established; and operators are competent.
38/39 ensure that the pressure equipment is protected against overpressure, and ensure that the overpressure protection system is designed and maintained as required.
40 ensure repairs and alterations comply with the Regulation.
41/42 ensure pressure equipment is safe for continued operation and records are maintained.

PESR User Guide Revision Log

Revision No.	Revision Date	Key Changes	Reason for Changes
0	2006-03-28	First approved document	N.A.
1	2006-04-18	Sections 11, 12, 33 & 43	Provide additional information.
2	2010-05-26	General revision	Update to current regulations and to provide additional information
3	2011-08-22	Added interpretation 1(1)(ee.1); updated codes and standard editions in Section 6; added ISO-16528 in 6(g); added shop inspection in Section 25(c); and additional information on piping data reports under Section 31.	Update to current regulations (PESR Amendment Regulation AR 138/2011) and to provide additional information
4	2012-11-26	Removed from page 40: A Professional Licensee (P. L. (Eng)) registered with APEGGA and with an appropriate scope of practice, i. e. design of pressure piping, would be an acceptable option to a Professional Engineer (P. Eng.).	Align document with PESR Section 1(2)
5	2013-12-01	Minor wording changes to Interpretations in Section 1(1) clauses (f), (o), (y) and (bb). No change in the intent or requirements.	Update the PESR as amended by Section 31 of the Power Engineers Amendment Regulation, AR 218/2013
6	2014-01-09	On page 60 under Fees replaced IB06-001 with IB13-015	Editorial change
7	2014-05-07	4(2) was changed to allow a design minimum temperature of minus 46 C and to add water and glycol to the fluids. Section 6 updated editions of the adopted codes and standards and adopted the 2013 edition of ASME Section VIII Div. 2 with conditions for use in Alberta.	Amended by the Pressure Equipment Safety Amendment Regulation, AR 85/2014.

8	2014-08-25	Section 3 repealed. Safety Codes Act Flowchart updated to reflect the change.	Update the PESR as amended by Section 5 of the Pressure Equipment Exemption Order Amendment Regulation, AR 158/2014.
9	2015-05-15	This revision updated the name of the Administrator, showed references to ABSA documents AB-515, AB-524 and AB-525 and provided some miscellaneous updates of guidance. No change in legislation.	Update of guidance information.
10	2015-06-29	Updated “Boilers and Pressure Vessels Sub Council” to “Pressure Equipment sub-council” throughout and a miscellaneous editorial to guidance.	Name changed by the Safety Codes Council.
11	2016-01-08	Section 6 updates the editions of the adopted codes and standards and provides for automatic adoption as amended or replaced. Various sections provide for safety codes officers to register designs.	Amended by the Pressure Equipment Safety Amendment Regulation, AR 195/2015
12	2017-01-11	Updated Calgary Address. Replaced contact information. Replaced “A” Endorsement with Authorized Inspector Commission (AI)	RCI-1 Updates
Edition 2, Revision 0	2017-02-01	Updated Revision to Edition 2, Revision 0 Editorial updates in Section 6	Editorial correction and IB16-019 replaced IB11-013
Edition 2, Revision 1	2018-08-13	Added Note to Section 5(1).	Clarification
Edition 3, Revision 0	2020-02-18	Updated Appendix 1 for TLHS partial exemptions in PEEO; minor updates throughout	Update
Edition 4, Revision 0	2024-09-09	Several changes for clarity and alignment with 2023 BPVC	Update – New Edition

Edition 4, Revision 1	2025-01-14	Updated to Revision 1	Editorial correction, Djordje Srnic replaced Mike Poehlmann listed as Chief Inspector and Administator