

Application of the Safety Codes Act to Pressurized Equipment

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A bit of history

- ❖ October 1, 1994, *Boilers and Pressure Vessels Act* replaced by the *Safety Codes Act*
- ❖ 1995 - Boilers Branch became the Alberta Boilers Safety Association (ABSA)
- ❖ More recently, de-emphasized 'Boilers' and we now call the organization
"ABSA, *the pressure equipment safety authority*"

Today

- ❖ Focus has changed from being strictly inspection and operator certification to include:
 - **design review,**
 - **fabrication inspection,**
 - **in-service inspection,**
 - **certification of operators and welders,**
 - **certification of quality management systems for a range of undertakings**

Today

- ❖ PESR puts emphasis on responsibility of pressure equipment owners to have an integrity management system for their equipment.

Some recent stats

- ❖ 108 employees of whom 62 are Inspectors, known today as Safety Codes Officers
- ❖ ~ 9,000 designs reviewed
- ❖ ~ 14,500 new vessels inspected in shops
- ❖ ~ 3,000 welder tests done
- ❖ 658 audits done

Some recent stats

- ❖ ~ 6,000 initial and installation inspections
- ❖ ~ 16,000 in-service inspections
- ❖ ~ 14,000 owner inspections processed
- ❖ ~ 5,700 power engineer exams written
- ❖ ~ 21,000 valid power engineer certificates
- ❖ ~ 105,000 boilers and pressure vessels subject to in-service inspection, of which 2/3 are covered by certified Owner/User pressure equipment integrity management systems and 1/3 are inspected by ABSA

Applicable Legislation

❖ Safety Codes Act

- Pressure Equipment Safety Regulation, AR 49/2006
- Pressure Equipment Exemption Order, AR 56/2006
- Power Engineers Regulation, AR 85/2003
- Pressure Welders Regulation, AR 169/2002
- Administrative Items Regulation, AR 16/2004



PRESSURE EQUIPMENT SAFETY REGULATION
User Guide AB-516 REV. 1: 2006-04-18

Regulation and Notes

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

Design Registrations

- ❖ Required for:
 - Boilers and pressure vessels
 - Pressure piping
 - Fittings
 - Fired heater pressure coils
 - Welding procedures
 - Alterations (and significant repairs) to boilers and pressure vessels

Design Registrations

- ❖ CRN's (Canadian Registration Numbers) apply only to boiler, pressure vessel and fittings designs, and to such things as fired heater pressure coils and line heaters, which are registered as pressure vessels
- ❖ Pressure piping, special (limited) designs and welding procedures get registration numbers exclusive to Alberta

CRNs

- ❖ Boiler and pressure vessel CRNs are of the form **T1234.2**
- ❖ Fitting CRNs are of the form **0C01234.2**
- ❖ Note that leading zero in the underlined portion of the CRN above is merely a placeholder and need not be included
- ❖ To be valid in Alberta, a CRN must have a 2 somewhere to the right of the decimal

Definitions

- ❖ “pressure vessel” means a vessel used for containing, storing, distributing, processing or otherwise handling an *expansible fluid* under pressure
- ❖ “fitting” means a valve, gauge, regulating and 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

Definitions

- ❖ “pressure piping system” means pipes, tubes, conduits, fittings, gaskets, bolting and other components that make up a system for the conveyance of an *expandable fluid* under pressure and may also control the flow of that fluid

Definition: Expansible Fluids

- ❖ Gases or vapours or liquids under pressure and at such a temperature that they would change to a gas or vapour if the pressure were reduced to atmospheric or if the temperature were increased to ambient temperature
- ❖ Owner or designer must decide if a fluid is expansible and therefore, if a pressure vessel or pressure piping system is subject to the Act

Pressure Equipment

PESR

- ❖ 14(1) No person shall
 - a) construct or manufacture for use in Alberta, or
 - b) import for use in Albertaany pressure equipment unless the design of that pressure equipment is registered by the Administrator . . . and the design of the pressure equipment meets the requirements of this Regulation

PP Numbers

- ❖ Pressure plants are registered under PP numbers that take the form

PP-0567-E-017-R

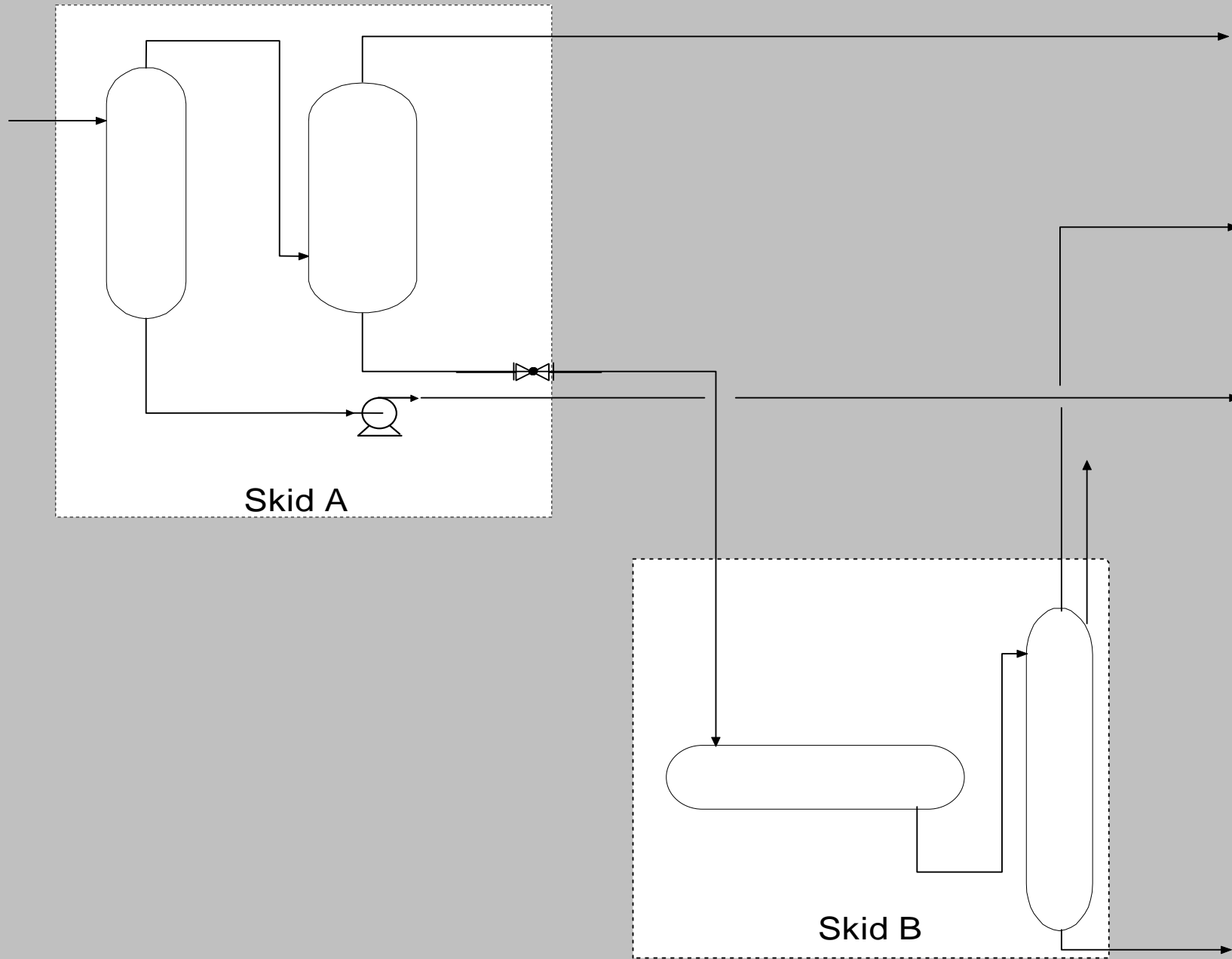
- ❖ PP No's are associated with a specific Legal Subdivision (LSD) or street address
- ❖ PP No's are req'd for piping volumes >500 litres

Partial exemption

4(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 temperature between minus 29°C and 186°C,
- (d) that contains air, nitrogen, argon, carbon dioxide, steam or hot water, and
- (e) that is constructed to the applicable ASME Code,

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



Low Pressure Systems

- ❖ The *Pressure Equipment Safety Regulation* does not apply to a pressure vessel or pressure piping system that is either fully vented or operating with one or more relief valves set at 103 kilopascals or less and sized so that the operating pressure cannot exceed 103 kilopascals

Small Pressure Vessels

- ❖ CSA B51, Figure 1, provides for certain small pressure vessels to be registered and inspected as fittings – but they still meet the definition of pressure vessels
- ❖ CSA B51, Table 1, Note 2, provides for small amounts of piping to be registered as fittings

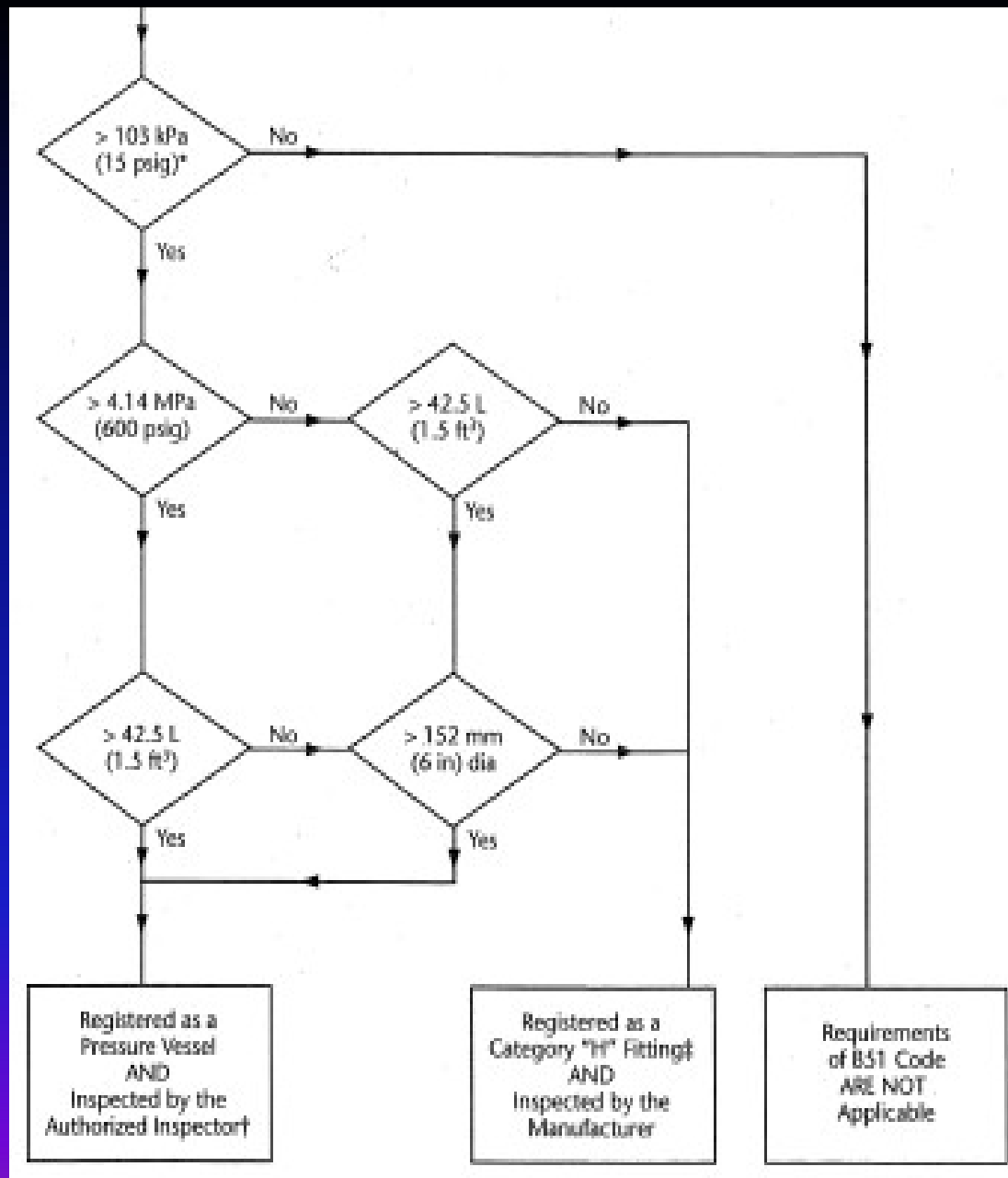


Table 1 Categories of Fittings

(See Figures 1 a), 1 b), and 1 c) and Clauses 4.1.1, 4.2.2, 4.2.5, 4.9.2, 5.1.1, and 11.2.)

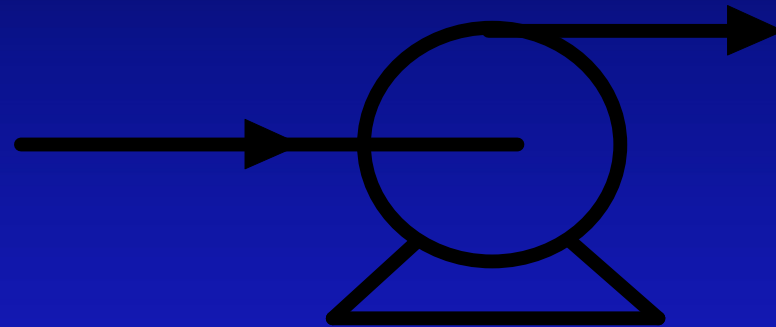
Category	Type of fitting
A	Pipe fittings, including couplings, tees, elbows, wyes, plugs, unions, nipples, pipe caps, and reducers
B	All flanges
C	All line valves
D	All types of expansion joints, flexible connections, and hose assemblies
E	Strainers, filters, separators, and steam traps
F	Measuring devices, including pressure gauges, level gauges, sight glasses, levels, and pressure transmitters
G	Certified capacity-rated pressure-relief devices acceptable as primary overpressure protection on boilers, pressure vessels and pressure piping, and fusible plugs
H	Pressure-retaining components that do not fall into any of the above categories

Notes:

- 1) *These categories of fittings do not take into account size, material, end connections, rating, schedule, and method of fabrication.*
- 2) *Category "H" may include a series of components (including piping components) joined together to form a single fitting, provided that the diameter of any component does not exceed 152 mm (6 in) and the total volume of the fitting does not exceed 42.5 L (1.5 ft³).*

Pumps

- ❖ Pumps, themselves, are not considered to be fittings subject to the Safety Codes Act
- ❖ Registration is not required



Pumps

- ❖ Many pumps contain non-expansible fluids
 - Crude oil
 - Cold water
 - Hydrocarbons below their atmospheric boiling point, *etc.*
- ❖ Note that it is the design temperature of the fluid or line, not the operating temperature, that must be considered

Pump Auxiliaries

- ❖ Seal coolers
- ❖ Seal pots
- ❖ Lube oil coolers
- ❖ Seal gas panels
- ❖ Vent and drain piping
- ❖ External balance piping
- ❖ Cooling water system
- ❖ Oil filter

Registration Considerations

- ❖ Liquid full or gas over liquid?
- ❖ Is liquid expansible at design temperature?
- ❖ Is the item a pressure vessel, fitting or pressure piping system?
- ❖ Is the item registered with an Alberta CRN or other Alberta registration number?

- ❖ Questions??
 - what did I miss?



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As authorized by the Alberta Government, ABSA is responsible for the administration and delivery of safety programs related to boilers, pressure vessels and pressure piping systems in Alberta.

Current Information

[IB07-009 Directive](#) - Impact Test Plates Required

[2007 ASME Section VIII, Division 2 Seminar](#)

[IB07-008](#) - Code Requirements for Propane Fuel Tanks

ALERTS

IB07-004 May 11/07 Alert-Jordair Coalescer Filter Canister
[read more](#)




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WHAT'S NEW?

IB07-007 Variance-Use of 2007 Edition of ASME Code Section VIII, Div.2
IMPORTANT - read more

[The Pressure News September 2007](#)

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