

PROVINCE OF BRITISH COLUMBIA
REGULATION OF THE MINISTER OF
COMMUNITY, ABORIGINAL AND WOMEN'S SERVICES

Safety Standards Act **M 62**

I, Murray Coell, Minister of Community, Aboriginal and Women's Services, order that the attached Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation is made, effective April 1, 2004.

DEPOSITED

MAR 23 2004

B.C. Reg. 104/2004

March 22/04

Date

Murray Coell

Minister of Community, Aboriginal and Women's
Services

(This part is for administrative purposes only and is not part of the Order.)

Authority under which Order is made:

Act and section:- Safety Standards Act, S.B.C. 2003, c. 39, section 88

Other (specify):- _____

March 19, 2004

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POWER ENGINEERS, BOILER, PRESSURE VESSEL AND REFRIGERATION SAFETY REGULATION

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SCHEDULE

Definitions for the Act

1 For the purposes of the Act:

“**boiler**” means a vessel, in which by the application of heat,

- (a) gas, steam or vapour is capable of being generated and pressurised, or
- (b) a liquid is capable of being pressurised

and includes fittings and boiler external piping associated with the vessel;

“**boiler system**” means a power plant, low pressure steam plant, low temperature low pressure fluid plant, low pressure fluid plant, low pressure thermal fluid plant, high pressure thermal fluid plant, oil well plant, greenhouse plant or pressure plant;

“**pressure piping**” means a system of pipes, tubes, conduits, gaskets, bolts and other components, the sole purpose of which is the conveyance of an expansible fluid under pressure and the control of the flow of an expansible fluid under pressure between 2 or more points;

“**pressure vessel**” means a vessel and its fittings, other than a boiler, that is capable of being used to contain, store, distribute, transfer, distil, process or otherwise handle gas, vapour or liquids under pressure;

“**refrigeration equipment**” means machinery in which refrigerants are capable of being vaporised, compressed and liquefied;

“**refrigeration system**” means a refrigeration plant.

Definitions and interpretation for this regulation

2 (1) In this regulation:

“**Act**” means the *Safety Standards Act*;

“**antique show boiler**” means a boiler forming part of a traction engine, threshing machine, donkey boiler plant, or other plant which is operated for historical interest or demonstration purposes and is not used for commercial purposes;

- “assistant chief engineer”** means a power engineer who
- (a) is employed in a plant to assist the chief engineer,
 - (b) holds a certificate of qualification not less than one class lower than that required to operate the plant as the chief engineer, and
 - (c) is placed in charge of the plant when the chief engineer is absent from the plant;
- “assistant engineer”** means the power engineer who is a person in charge of a part of a plant under the supervision of the shift engineer;
- “assistant shift engineer”** means the power engineer who is under the immediate supervision of the shift engineer and assists the shift engineer with the supervision or operation of the plant;
- “boiler capacity”** means the heat receiving surface of a boiler as specified in section 46;
- “brazer”** means a pressure brazer;
- “brazing”** means pressure brazing;
- “chemical recovery boiler”** means a boiler that is capable of being fuelled by the black liquor that results from the Kraft pulp manufacturing process;
- “chief engineer”** means a power engineer who is designated by the owner to be responsible for the operation and maintenance of a plant and who is responsible for ensuring that all regulated work in the plant is performed by appropriately qualified persons;
- “code”** means the current edition of a code or standard referred to in the Schedule and adopted under this regulation;
- “compressed gas”** means a gas or combination of gases that is contained under pressure whether or not the gases are liquefied, vaporized, dissolved or in any combination of these states;
- “control system”** means an electronic, digital, pneumatic or other system that compares the process variable to a set point and automatically adjusts the input signal to the final control device;
- “CSA B51”** means the CSA Standard B51, the Boiler, Pressure Vessel and Pressure Piping Code;
- “CSA B52”** means the CSA Standard B52, the Mechanical Refrigeration Code;
- “cushion tank”** means a pressure vessel designed for installation in a fluid plant or cooling system to provide a pneumatic cushion for the expansion or contraction of the fluid;
- “electric boiler”** means a boiler heated by electricity;
- “engineering degree”** means a degree in mechanical engineering from an institute of learning that has been registered by the council of The Association of Professional Engineers and Geoscientists of the Province of British Columbia under the *Engineers and Geoscientists Act*;
- “expansible fluid”** means any
- (a) vapour,

(b) gaseous substance, or

(c) liquid under such pressure and temperature that changes to a vapour when the pressure is reduced to atmospheric pressure;

“fitting” means a valve, gauge, regulating or controlling device, flange, pipe fitting, nozzle or other component that is attached to or forms part of a boiler, a pressure vessel, a pressure piping system or refrigeration equipment, but does not include pressure piping on a pressure vessel;

“fluid plant” means an assembly of one or more boilers that has a working pressure not more than 1 100 kPa and an operating temperature of 121°C or less, containing liquid but not thermal fluids;

“fuel cut-off device” means any device that has a manual reset and which will cut off fuel to the boiler burner when activated by a safety device;

“fuel firing system” means an assembly of equipment used to condition, convey, regulate, burn and exhaust combustible gaseous, liquid and solid fuels in a plant;

“general supervision status plant” means a plant for which the supervision of boilers, pressure vessels or refrigeration equipment is carried out in accordance with the requirements set out in section 55 and the technical and administrative specifications required by a provincial safety manager;

“greenhouse plant” means a low temperature low pressure fluid plant used in a greenhouse, hot house, horticultural facility or other vegetable, flower or tree growing operation;

“heat exchanger” means a vessel other than a boiler where heat is transferred, either directly or indirectly, from one medium to another;

“heating surface” means the surface area of a boiler or pressure vessel that transfers heat, as determined under section 46;

“high pressure steam plant” means an assembly of one or more boilers and includes ancillary equipment, the pressure piping system and a pressure plant, in which steam or vapour is generated at a pressure greater than 103 kPa;

“high pressure thermal fluid plant” means an assembly of one or more thermal fluid boilers, but does not include a low pressure thermal fluid plant, and includes ancillary equipment, a pressure piping system and a pressure plant connected to an assembly of thermal fluid boilers;

“high temperature, high pressure fluid plant” means an assembly of one or more boilers and includes ancillary equipment, a pressure piping system and a pressure plant, in which liquid is heated to a temperature greater than 121°C or liquid is contained at a pressure greater than 1 100 kPa;

“hydraulic or hydraulic purposes” means a system of machinery and auxiliary components that utilise only an incompressible fluid under pressure to generate, transmit and control mechanical energy;

“ice facility plant” means a refrigeration plant used to make and maintain an artificial ice surface that is used for recreational purposes;

“institution” means premises in which persons are confined to receive medical, charitable, educational or other care or treatment, or in which persons are held or detained;

- “interim power engineer’s certificate of qualification”** means a certificate issued under section 27 for a specific plant operation;
- “low pressure fluid plant”** means an assembly of one or more fluid boilers that operate at a temperature of 121oC or less, but greater than 100oC, and a pressure of 1 100 kPa or less, but greater than 206 kPa, and includes ancillary equipment, a pressure piping system and a pressure plant;
- “low pressure thermal fluid plant”** means an assembly of one or more thermal fluid boilers that have no valves or other obstruction to prevent circulation between the boiler and an expansion tank that is fully vented to the atmosphere, and includes ancillary equipment, a pressure piping system and a pressure plant;
- “low temperature low pressure fluid plant”** means an assembly of one or more boilers, including ancillary equipment, that contain liquid and operate at a working pressure of 206 kPa or less and a temperature of 100oC or less;
- “low pressure steam plant”** means an assembly of one or more boilers that operate at a steam or vapour pressure of 103 kPa or less and includes a pressure plant that is connected to the assembly of boilers;
- “maintenance engineer”** means a power engineer employed in the maintenance of a plant or associated auxiliary equipment;
- “oil well plant”** means a high pressure steam plant that is used in the operation of a drilling rig or drilling operation;
- “person in charge”** means the power engineer, operator or other individual present on the premises during a period of time, and designated by the owner or chief engineer to be responsible for and in control of the plant while it is in operation;
- “plant”** means a power plant, low pressure steam plant, low temperature low pressure fluid plant, low pressure fluid plant, low pressure thermal fluid plant, high pressure thermal fluid plant, refrigeration plant, oil well plant, greenhouse plant or pressure plant;
- “power engineer”** means an individual who holds a final or interim certificate of qualification issued under section 13, 15, 17, 19, 23, 28 or 29;
- “power engineer trainee”** means an individual who has received training and who assists in the operation of a plant but does not hold a certificate of qualification;
- “power plant”** means a high pressure steam plant or a high pressure thermal fluid plant or a high temperature high pressure fluid plant;
- “pressure”** means gauge pressure; for the purposes of this regulation, 103 kPa is equivalent to 15 psi;
- “pressure plant”** means an assembly of one or more pressure vessels and includes the engines, turbines, pressure piping systems, fittings, machinery and ancillary equipment of any kind used in connection with it or them;
- “pressure vessel plant”** means a pressure plant that is not connected to a boiler plant or refrigeration plant;
- “pressure brazer”** means a brazer conforming to the Welder or Brazer Performance Qualifications of CSA B51;

- “pressure brazing”** means brazing conforming to the brazing qualifications of CSA B51;
- “pressure welder”** means a welder conforming to the Welder or Brazer Performance Qualifications of CSA B51;
- “pressure welding”** means welding conforming to the welding or brazing qualifications of CSA B51;
- “public assembly occupancy premises”** means a premises in which persons congregate for civic, political, educational, religious, social or recreational purposes;
- “refrigerant”** means a fluid that absorbs heat at a low temperature and pressure, with a change in state, and rejects it at a higher temperature and pressure;
- “refrigerant group”** means the classification of one or more refrigerants into risk categories based on flammability and toxicity as defined in CSA B52;
- “refrigeration mechanic”** means a person who holds an industry training credential issued under the *Industry Training Authority Act* as a refrigeration mechanic;
- “refrigeration plant”** means an assembly of refrigeration equipment and includes a pressure plant connected to it ;
- “risk assessed status plant”** means a plant for which the supervision of boilers, pressure vessels or refrigeration equipment is done in accordance with the requirements set out in section 56 and the technical and administrative specifications required by a provincial safety manager;
- “shift engineer”** means a power engineer who is a person in charge of a plant under the supervision of a chief engineer or one who is in charge of a plant when the chief engineer is absent;
- “thermal fluid”** means fluids other than water or aqueous solutions that transfer heat with or without vaporisation;
- “thermal fluid boiler”** means boiler, including fittings and appurtenances, in which a liquid hydrocarbon, hot oil or other thermal fluid other than water is heated with or without the occurrence of vaporisation;
- “thermal fluid plant”** means an assembly of one or more thermal fluid boilers and includes a pressure plant that is connected to the assembly of boilers;
- “unfired boiler”** means a pressure vessel in which gas, steam or vapour may be generated for use external to the boiler by the application of heat resulting from something other than the combustion of fuel;
- “unfired plant”** means a plant where heat from gas, steam or vapour or other heating medium is supplied to heat exchangers or used directly for the purpose of heating a facility or a process without combustion of a solid, liquid or gaseous fuel taking place on the premises;
- “water heater”** means a vessel heated by the combustion of fuel, electricity or any other source for supplying potable hot water at pressures not exceeding 1 103 kPa and temperatures not exceeding 98.9 °C;
- “welder”** or **“welding”** means pressure welder or pressure welding.

- (2) For the purposes of this regulation 1 square metre (m²) is equivalent to 10.76 square feet (ft²).

Application of this regulation

- 3 (1) This regulation applies in respect of every boiler and boiler plant, every pressure plant, every pressure vessel, every pressure piping system, every fitting, every plant and all refrigeration equipment and refrigeration plants.
- (2) Despite subsection (1), this regulation does not apply to any of the following:
- (a) a power plant with a heating surface of 2 m² or less;
 - (b) a low pressure steam plant with a heating surface of 3 m² or less;
 - (c) a fluid plant with a heating surface of 3 m² or less;
 - (d) a low pressure thermal fluid plant with a heating surface of 3 m² or less;
 - (e) a fluid plant that has no valves or other obstruction to prevent circulation of fluid between the boiler and an expansion tank that is fully vented to the atmosphere;
 - (f) a fluid plant used to heat a building that contains only 4 or fewer self contained residential units;
 - (g) a pressure vessel operating at and with relief valves set at a pressure of 103 kPa or less;
 - (h) a pressure vessel not equipped with heating element that is constructed for the storage of water at a temperature of 65°C or less and a pressure of 1 720 kPa or less or has a diameter of 610 mm or less;
 - (i) a pressure vessel used for hydraulic purposes having an operating temperature of less than 82°C, if the primary design considerations are mechanical in nature and stresses are derived from the functional requirements of the device rather than fluid pressure;
 - (j) a refrigeration plant with a capacity of less than 5 kW prime mover nameplate rating;
 - (k) a cushion tank with a diameter of 610 mm or less that is constructed to operate at a working pressure of 207 kPa or less;
 - (l) a distribution main or service pipe as defined in the Gas Safety Regulation;
 - (m) pressure piping and fittings external to the boiler proper in a low temperature low pressure fluid plant;
 - (n) a pressure piping system operating at and with a relief valve or valves set at 103 kPa or less;
 - (o) a water heater with a heat input of 120 kW or less;
 - (p) a boiler or pressure vessel subject to the jurisdiction of Transport Canada under the *Transportation of Dangerous Goods Act (Canada)* or a boiler or pressure vessel subject to the *Canadian Shipping Act*;
 - (q) gas-insulated switchgear and control gear used for control of high voltage electricity;

- (r) refrigeration equipment used for air conditioning or refrigerated compartments on railway cars, motor vehicles, motor-drawn vehicles, aircraft or ships.

Adoption of codes and standards

- 4** Each code or standard and portion of a code or standard as amended from time to time and each new edition of a code or standard as issued from time to time, as listed in the Adopted Codes in the Schedule, is adopted.

PART 1 – GENERAL QUALIFICATION AND LICENSING PROVISIONS

**Division 1 – Individuals Who May Perform Regulated Work
under This Regulation**

Individuals who may perform regulated work

- 5** (1) An individual must not perform regulated work unless the individual
 - (a) holds a valid certificate of qualification issued under this regulation,
 - (b) performs regulated work in accordance with section 5 of the Safety Standards General Regulation,
 - (c) is specifically authorized in this regulation, or
 - (d) has been exempted from any specified authorization requirement under this regulation.
- (2) An individual must not perform maintenance and repairs on a refrigeration plant unless the individual
 - (a) holds a fourth class power engineer's certificate of qualification or higher, or
 - (b) is a refrigeration mechanic.
- (3) An individual must not do pressure welding relating to regulated work under this regulation unless the individual holds a pressure welder's certificate of qualification.

Exemption from authorization requirement to operate certain equipment

- 6** An individual is not required to hold a certificate of qualification to operate any of the following:
 - (a) a power plant not exceeding 10 m² of boiler capacity;
 - (b) a low pressure steam plant not exceeding 30 m² of boiler capacity;
 - (c) a low pressure fluid plant not exceeding 150 m² of boiler capacity;
 - (d) a low pressure thermal fluid plant not exceeding 150 m² of boiler capacity;
 - (e) a low temperature low pressure fluid plant not exceeding 300 m² of boiler capacity;
 - (f) an unfired plant not exceeding 150 m² of boiler capacity;

- (g) a refrigeration plant with refrigerant groups A1, A2 or B1, as defined in CSA B52, not exceeding a total plant capacity of 200 kW prime mover nameplate rating;
- (h) a refrigeration plant with refrigerant groups A3, B2 or B3, as defined in CSA B52, not exceeding a total plant capacity of 50 kW prime mover nameplate rating;
- (i) an electric boiler that consumes 100 kW or less in a power plant;
- (j) a process
 - (i) in a petroleum refinery other than in a power plant that is part of the petroleum refinery, and
 - (ii) if the heat for the process is generated as a result of a reaction that is part of the process or burning;
- (k) a pressure vessel plant.

Division 2 – Certificates of Qualification

Certificate of qualification

- 7 (1) The following classes of certificates of qualification are established:
- (a) first class power engineer;
 - (b) second class power engineer;
 - (c) third class power engineer;
 - (d) fourth class power engineer;
 - (e) fifth class power engineer (boiler endorsement);
 - (f) fifth class power engineer (refrigeration endorsement);
 - (g) category “A” interim power engineer;
 - (h) category “B” interim power engineer;
 - (i) greenhouse boiler operator;
 - (j) oil well boiler operator;
 - (k) antique show boiler operator;
 - (l) ice facility operator;
 - (m) boiler safety awareness;
 - (n) refrigeration safety awareness;
 - (o) pressure welder.
- (2) An applicant for a certificate of qualification must provide a signed, written statement from the chief engineer of the plant in which the applicant is employed, that
- (a) sets out in detail the qualifying time, experience, knowledge and qualifications of the applicant, and
 - (b) describes the plant in which the applicant is employed, including the boiler capacity and types of equipment in the plant.
- (3) For the purposes of subsection (2), if there is no chief engineer, the statement may be provided by the owner of the plant.

- (4) For the purposes of this section, a provincial safety manager may recognize equivalent training and experience that an applicant has gained from a jurisdiction other than British Columbia, subject to an examination of the applicant, as counting toward the requirements to obtain a corresponding class of power engineer's certificate of qualification issued under this regulation.

Standardized Canadian certificate of competency issued outside B.C.

- 8** (1) For this section and section 9, “**standardized certificate of competency**” means a certificate by that name issued by another jurisdiction in Canada that provides evidence of an individual's level of competence as a power engineer.
- (2) An individual who holds a standardized certificate of competency may be issued a power engineer's certificate of qualification of the same class for the purposes of the Act if
 - (a) the individual presents the standardized certificate to a provincial safety manager, and
 - (b) the individual provides evidence, acceptable to a provincial safety manager, of having the work experience required to obtain a certificate of qualification of that class.

Provincial certificate of competency issued outside of B.C.

- 9** (1) For this section, “**certificate of competency**” means document issued in Canada, other than a certificate of qualification under the Act or a standardized certificate of competency, that provides evidence of an individual's level of competence as a power engineer.
- (2) An individual who holds a certificate of competency issued in another province or a marine (steam) certificate of competency may be issued a power engineer's certificate of qualification for the purposes of the Act of one class lower than the class for which the person holds the certificate of competency if
 - (a) the individual presents the certificate of competency to a provincial safety manager, and
 - (b) the individual provides evidence, acceptable to a provincial safety manager, of the work experience and other qualifications that are required to obtain a power engineer's certificate of qualification of that lower class.

When power engineers may work in a lower classification

- 10** The holder of any class of power engineer's certificate of qualification may perform the duties authorized for the holder of a power engineer's certificate of qualification of a lower classification.

Safety duties of power engineers, shift engineers, boiler operators or refrigeration operators

- 11** (1) A power engineer must thoroughly inspect every boiler, pressure vessel, pressure piping system, fuel system, fitting and ancillary equipment as soon as practical after the start of the shift.

- (2) While a plant is in operation, a power engineer, a boiler operator or a refrigeration operator who is authorized to be in charge of a shift for the type and size of plant as specified in the scope of each certificate of qualification, must be present
 - (a) in the plant boiler room, refrigeration machinery room or engine or turbine room, or
 - (b) in the immediate vicinity within the plant premises.

Restrictions on greenhouse boiler operator certificate of qualification

- 12 A greenhouse boiler operator certificate of qualification is valid only for the time that the individual named on the certificate of qualification is employed at the plant named on the certificate of qualification and for the plant capacity stated on the certificate of qualification.

Application for first class power engineer's certificate of qualification

- 13 (1) An applicant for a first class power engineer's certificate of qualification must hold a second class power engineer's certificate of qualification or a second class power engineer's standardized certificate of competency, and have been employed, while in possession of that certificate, for a period of not less than
 - (a) 36 months as chief engineer of a power plant that has a boiler capacity that exceeds 500 m²,
 - (b) 36 months as an assistant chief engineer of a power plant that has a boiler capacity that exceeds 1000 m²,
 - (c) 36 months as a safety officer for the purposes of this regulation,
 - (d) 48 months as a shift engineer of a power plant that has a boiler capacity that exceeds 500 m², or
 - (e) 48 months as an assistant shift engineer of a power plant that has a boiler capacity that exceeds 1 000 m².
- (2) If an applicant has successfully completed a first class power engineering course that has been approved by a provincial safety manager, the required periods of employment referred to in subsection (1) are reduced by 12 months.
- (3) If an applicant holds an engineering degree acceptable to a provincial safety manager the required period of employment for the positions and types of plants set out in subsection (1) is 24 months.

What a first class power engineer may do

- 14 A first class power engineer's certificate of qualification entitles the holder to be chief engineer of any plant.

Application for second class power engineer's certificate of qualification

- 15 (1) An applicant for a second class power engineer's certificate of qualification must
 - (a) hold a first class marine engineer (motor) certificate of competency, or
 - (b) hold a third class power engineer's certificate of qualification or a third class power engineer's standardized certificate of competency and have

been employed, while in possession of a third class power engineer's certificate of qualification, for a period of not less than

- (i) 30 months as a chief engineer of a power plant that has a boiler capacity that exceeds 250 m²,
 - (ii) 30 months as a chief engineer of a low pressure steam plant that has a boiler capacity that exceeds 500 m²,
 - (iii) 36 months as a shift engineer of a power plant that has a boiler capacity that exceeds 250 m²,
 - (iv) 48 months as an assistant shift engineer or maintenance engineer of a power plant that has a boiler capacity that exceeds 1 000 m²,
 - (v) 60 months as an assistant chief engineer of a power plant that has a boiler capacity that exceeds 1 000 m² performing duties approved by a provincial safety manager as providing suitable experience, or
 - (vi) one half of the period set out in subparagraph (i) or (ii) in the position and in the size and type of plant set out in that subparagraph, and have been employed for a period of not less than 48 months as a maintenance engineer.
- (2) If an applicant has successfully completed a second class power engineering course that has been approved by a provincial safety manager, the required periods of employment referred to in subsection (1) (b) (i) to (v) are reduced by 9 months.
- (3) If an applicant holds an engineering degree acceptable to a provincial safety manager, the required periods of employment for the positions and types of plants set out in subsection (1) (b) (i) to (v) are reduced by one half.

What a second class power engineer may do

- 16** A second class power engineer's certificate of qualification entitles the holder to be
- (a) chief engineer of a power plant that has a boiler capacity of 1 000 m² or less,
 - (b) chief engineer of any low pressure steam plant, fluid plant, low pressure thermal fluid plant or low temperature low pressure fluid plant, or
 - (c) shift engineer of any plant.

Application for third class power engineer's certificate of qualification

- 17** (1) An applicant for a third class power engineer's certificate of qualification must
- (a) hold a second class marine engineer (motor) certificate of competency, or
 - (b) hold a fourth class power engineer's certificate of qualification or a standardized fourth class power engineer's certificate of qualification and have been employed, while in possession of a fourth class power engineer's certificate of qualification, for a period of not less than
 - (i) 24 months as a power engineer in a position requiring a fourth class power engineer's certificate of qualification in a power plant that has a boiler capacity that exceeds 50 m²,

- (ii) 36 months as a shift engineer of a low pressure steam plant that has a boiler capacity that exceeds 300 m²,
 - (iii) 36 months as a chief engineer of a fluid plant or low pressure thermal fluid plant that exceeds 500 m² boiler capacity,
 - (iv) 36 months as a maintenance engineer of a power plant that has a boiler capacity that exceeds 50 m²,
 - (v) 36 months of relevant experience as an assistant chief engineer of a power plant that has a boiler capacity that exceeds 500 m², or
 - (vi) 48 months as a power engineer in a fluid plant, or a thermal fluid plant that has a boiler capacity that exceeds 500 m² of boiler capacity.
- (2) If an applicant has successfully completed a third class power engineering course that has been approved by a provincial safety manager, the required periods of employment referred to in subsection (1) (b) (i) to (v) are reduced by 6 months.
- (3) If an applicant holds an engineering degree acceptable to a provincial safety manager, the required periods of employment for the positions and types of plants set out in subsection (1) (b) (i) to (v) are reduced by one half.
- (4) Despite subsection (1) (b), an individual may apply for a third class power engineer's certificate of qualification if the individual
- (a) holds a diploma issued after completing a 2 year full time day program in third class power engineering that has been approved by a provincial safety manager, and
 - (b) has been employed for at least 6 months in a power plant that has a boiler capacity of not less than 100 m².
- (5) A one time 3 month credit towards the qualifying time requirement specified in subsection (4) (b) will be granted to candidates who have received boiler plant computer simulation training at an educational or vocational facility approved by a provincial safety manager.

What a third class power engineer may do

- 18** A third class power engineer's certificate of qualification entitles the holder to be
- (a) chief engineer of a power plant that has a boiler capacity of 500 m² or less,
 - (b) chief engineer of any low pressure steam plant, fluid plant, low pressure thermal fluid plant or low temperature low pressure fluid plant,
 - (c) chief engineer of any unfired plant, or
 - (d) shift engineer of a power plant or high pressure thermal fluid plant that has a boiler capacity of 1 000 m² or less.

Application for fourth class power engineer's certificate of qualification

- 19** (1) An applicant for a fourth class power engineer's certificate of qualification must
- (a) be the holder of a third class marine engineer (motor) certificate of competency, or

- (b) have been employed
 - (i) for a period of not less than 12 months as a power engineer in a fifth class plant in a position requiring a fifth class power engineer's certificate of qualification,
 - (ii) for a period of not less than 12 months as a power engineer trainee in a power plant that exceeds 10 m² of boiler capacity, or
 - (iii) for a period of at least 18 months in the operation, design, construction, repair or maintenance of equipment to which this regulation applies, and have successfully completed a fourth class power engineering course that has been approved by a provincial safety manager or provide proof of having an equivalent technical educational background that is approved by a provincial safety manager.
- (2) If an applicant has successfully completed a fourth class power engineering course that has been approved by a provincial safety manager, the required periods of employment referred to in subsection (1) (a) or (b) are reduced by 6 months.
- (3) If an applicant holds an engineering degree acceptable to a provincial safety manager, the required periods of employment for the positions and types of plants set out in subsection (1) (a) or (b) are reduced by one half.
- (4) Despite subsection (1) but subject to section 7 (2) and (3), a fourth class power engineer's certificate of qualification may be issued to a person who holds a diploma issued after completing a one year full time day program in fourth class power engineering that has been approved by a provincial safety manager.

What a fourth class power engineer may do

- 20** A fourth class power engineer's certificate of qualification entitles the holder to be
- (a) chief engineer of a power plant that has a boiler capacity of 150 m² or less,
 - (b) chief engineer of a low pressure steam plant that has a boiler capacity of 500 m² or less,
 - (c) chief engineer of a fluid plant or a low pressure thermal fluid plant that has a boiler capacity of 1 000 m² or less,
 - (d) chief engineer of a low temperature low pressure fluid plant,
 - (e) chief engineer of an unfired plant that has a boiler capacity of 1 000 m² or less,
 - (f) chief engineer of any refrigeration plant,
 - (g) shift engineer of a power plant that has a boiler capacity of 500 m² or less,
 - (h) shift engineer of any low pressure steam plant, or
 - (i) shift engineer of a low pressure fluid plant or a low pressure thermal fluid plant or low temperature low pressure fluid plant.

Fourth class or higher engineer may do limited electrical work

- 21** The holder of a valid power engineer's certificate of qualification of 4th class or higher issued under the Act may, while employed by a licensed boiler contractor or working under an operating permit and without requiring any additional authorization, do any of the following with respect to electrical equipment that is part of a boiler plant:
- (a) connect branch circuit wiring to the boiler equipment integral connection box from a junction box or disconnect mounted in close proximity to the boiler equipment;
 - (b) perform work on class 2 circuit wiring up to a rated output of 100 Volt amps;
 - (c) perform work on low voltage controls or 24 volt thermostats;
 - (d) perform work on three phase motors or controllers integral to the boiler equipment.

Limited regulated gas work by power engineers

- 22** (1) The chief power engineer of a first or second class plant may, for the purposes of carrying out maintenance and repairs on a boiler, shut off and place back into service the gas system of the plant including, but not limited to, downstream of the service meter up to and including the burners.
- (2) The chief power engineer of a third or fourth class plant may, for the purpose of carrying out maintenance on a boiler, disconnect the gas line to a boiler and reconnect the line once the maintenance is complete.

Fifth class power engineer's certificate of qualification (boiler endorsement)

- 23** (1) An applicant for a fifth class power engineer's certificate of qualification (boiler endorsement) must
- (a) have experience for a period of not less than 8 months as a power engineer trainee in a power plant that has a boiler capacity that exceeds 10 m²,
 - (b) have experience for a period of not less than 8 months as a power engineer trainee in a power plant that has a boiler capacity that exceeds 10 m², a low pressure steam plant that has a boiler capacity that exceeds 30 m², a low pressure thermal fluid plant that has a boiler capacity that exceeds 150 m² of boiler capacity or a fluid plant,
 - (c) have experience for a period of not less than 8 months in the design, construction, repair, operation or maintenance of equipment to which this regulation applies, and have successfully completed a fifth class power engineering course (with a boiler endorsement) that has been approved by a provincial safety manager or provide proof of having an equivalent technical educational background that has been approved by a provincial safety manager, or
 - (d) be the holder of a marine engineer (motor) certificate of competency.
- (2) If an applicant holds an engineering degree acceptable to a provincial safety manager or has successfully completed a fifth class power engineering course

that has been approved by a provincial safety manager, the required periods of employment referred to in subsection (1) (a) or (b) are reduced by 4 months.

What a fifth class power engineer (boiler endorsement) may do

- 24** A fifth class power engineer's certificate of qualification (boiler endorsement) entitles the holder to be
- (a) chief engineer of a
 - (i) power plant that has a boiler capacity that does not exceed 75 m², or
 - (ii) low pressure steam plant that has a boiler capacity that does not exceed 300 m²,
 - (b) chief engineer of a low pressure fluid plant or a low pressure thermal fluid plant that has a boiler capacity of 500 m² or less,
 - (c) chief engineer of a low temperature low pressure fluid plant that does not exceed 1 000 m² of boiler capacity,
 - (d) chief engineer of an unfired plant that does not exceed 500 m² of boiler capacity, or
 - (e) shift engineer of
 - (i) a power plant that has a boiler capacity of 150 m² or less,
 - (ii) a low pressure steam plant that has a boiler capacity of 500 m² or less,
 - (iii) a low pressure fluid plant or a low pressure thermal fluid plant that has a boiler capacity of 1 000 m² or less,
 - (iv) any low temperature low pressure fluid plant, or
 - (v) any unfired plant.

Fifth class power engineer's certificate of qualification (refrigeration endorsement)

- 25** (1) An applicant for a fifth class power engineer's certificate of qualification (refrigeration endorsement) must
- (a) have been employed for a period of not less than one year assisting in the operation of a refrigeration plant that uses
 - (i) group A3, B2 or B3 refrigerants and has a capacity of more than 25 kW of prime mover name plate rating, or
 - (ii) group A1, A2 or B1 refrigerants and has a capacity of more than 125 kW of prime mover name plate rating, or
 - (b) be a refrigeration mechanic.
- (2) If an applicant has successfully completed a fifth class power engineering (refrigeration endorsement) course that has been approved by a provincial safety manager, the required periods of employment referred to in subsection (1) (a) are reduced by 4 months.

What a fifth class power engineer (refrigeration endorsement) may do

- 26** A fifth class power engineer's certificate of qualification (refrigeration endorsement) or any other power engineer's certificate of qualification higher than fifth class entitles the holder to be a person in charge of any type and size of refrigeration plant.

Interim certificates of qualification

- 27** (1) A provincial safety manager may, subject to sections 28 and 29, issue an interim power engineer's certificate of qualification to a power engineer of any class.
- (2) A provincial safety manager, may, subject to sections 28 and 29, issue a fifth or fourth class interim power engineer's certificate of qualification to an individual with qualifications that are acceptable to a provincial safety manager.
- (3) An interim certificate of qualification issued under subsection (1) or (2) entitles the holder to perform duties for the limited period of time set out on the certificate.

Application for Category "A" Interim power engineer's certificate of qualification

- 28** (1) Subject to section 7 (2) and (3) of this regulation, the chief engineer of a plant, or, if there is no chief engineer, the owner of a plant, may apply for a category "A" interim power engineer certificate of qualification on behalf of a power engineer who holds a power engineer's certificate of qualification that is one class lower than that required for the relevant position and who has been employed in the plant or an equivalent plant for a period of at least 12 months if
- (a) the boiler capacity of the plant is increased, or
 - (b) the power engineer employed in the plant needs more time, because of a reason acceptable to a provincial safety manager, to prepare for any required examinations.
- (2) A category "A" interim power engineer's certificate of qualification is in force for not more than 12 months from the date of issue.
- (3) Despite subsection (2), on application by the owner or chief engineer of a plant, a category "A" interim power engineer's certificate of qualification issued to a power engineer in that plant, who has attempted to pass an examination during the time the interim certificate is in force, may be renewed by a provincial safety manager once only, for a period that does not exceed 12 months.

Application for Category "B" interim power engineer's certificate of qualification

- 29** (1) The chief engineer of a plant, or, if there is no chief engineer, the owner of a plant, may apply for a category "B" interim power engineer's certificate of qualification on behalf of a power engineer who has been employed in the plant or an equivalent plant for a period of at least 12 months if there are special circumstances in the plant such as illness, extended vacations or emergencies.
- (2) The power engineer referred to in subsection (1) must hold a certificate of qualification one class lower than the interim certificate applied for and the application must be approved by a provincial safety manager.

- (3) A category “B” interim power engineer’s certificate of qualification is in force for no more than 60 days from the date of issue.
- (4) Despite subsection (3), on application by the owner or chief engineer of a plant, a category “B” interim power engineer’s certificate of qualification issued to a power engineer in that plant may be renewed by a provincial safety manager once only, for a period that does not exceed 30 days.

Application for greenhouse boiler operator’s certificate of qualification

- 30** An applicant for a greenhouse boiler operator certificate of qualification must
- (a) be employed at, and have experience in the operation of, a greenhouse plant for a period of not less than 30 days,
 - (b) have successfully completed a greenhouse boiler operator’s course that has been approved by a provincial safety manager,
 - (c) have passed the greenhouse boiler operator certificate of qualification examination, and
 - (d) demonstrate to a safety officer a thorough knowledge of the
 - (i) operation of the plant in which the applicant is employed, and
 - (ii) duties and responsibilities of a plant operator.

Application procedure for an oil well boiler operator’s certificate of qualification

- 31** An applicant for an oil well boiler operator certificate must
- (a) be employed at, and have experience in the operation of, an oil well plant for a period of not less than 30 days,
 - (b) have successfully completed an oil well boiler operator’s course that has been approved by a provincial safety manager, and
 - (c) have passed the oil well boiler operator certificate of qualification examination.

What an oil well boiler operator may do

- 32** The holder of an oil well boiler operator certificate of qualification may operate an oil well boiler for the holder of a boiler operating permit.

Application for antique show boiler operator’s certificate of qualification

- 33** An applicant for an antique show boiler operator’s certificate of qualification must
- (a) be the owner of, or be designated in writing by the owner to be responsible for the operation and maintenance of, an antique show boiler,
 - (b) provide evidence, satisfactory to a provincial safety manager, that the applicant has experience with the construction, repair, operation and maintenance of antique show boilers, and
 - (c) satisfy a safety officer that the applicant has a thorough knowledge of the
 - (i) operation of the plant for which the applicant is responsible, and
 - (ii) duties and responsibilities of a plant operator.

What an antique show boiler operator may do

- 34** An antique show boiler operator's certificate of qualification entitles the holder to operate the traction engine, threshing machine, donkey boiler or other demonstration or show boiler named on the certificate.

Application for ice facility operator's certificate of qualification

- 35** An applicant for an ice facility operator's certificate of qualification must
- (a) be employed at, and have experience in the operation of, an ice facility plant for a period of not less than 30 days,
 - (b) have successfully completed an ice facility operator's course that has been approved by a provincial safety manager, and
 - (c) have passed the ice facility operator's certificate of qualification examination.

What an ice facility operator may do

- 36** An ice facility operator's certificate of qualification entitles the holder to operate an ice facility plant that
- (a) does not exceed 1 000 kW prime mover nameplate rating, and
 - (b) has a fifth class power engineer (refrigeration endorsement) or a fourth class power engineer as the chief engineer of the plant.

Application for boiler safety awareness certificate of qualification

- 37** An applicant for a boiler safety awareness certificate of qualification must
- (a) have passed the boiler safety awareness certificate examination,
 - (b) have completed a basic boiler plant safety program or other technical course approved by a provincial safety manager, and
 - (c) provide evidence, acceptable to a provincial safety manager, that the applicant has been instructed in safety procedures for the plant that the applicant wishes to work in.

What the holder of a boiler safety awareness certificate of qualification may do

- 38** (1) A boiler safety awareness certificate of qualification entitles the holder to monitor a boiler in any of the following kinds of plants named in the certificate:
- (a) a power plant that has a boiler capacity that does not exceed 30 m²;
 - (b) a low pressure steam plant that does not exceed 200 m² boiler capacity;
 - (c) a low pressure fluid plant or low pressure thermal fluid plant that does not exceed 500 m² boiler capacity;
 - (d) a low temperature low pressure fluid plant that does not exceed 2 000 m² of boiler capacity;
 - (e) an unfired plant that does not exceed 1 000 m² boiler capacity.
- (2) For the purposes of subsection (1), the holder of a boiler safety awareness certificate of qualification must be in attendance at the plant in order to monitor the boiler.

- (3) The holder of a boiler safety awareness certificate of qualification is permitted to shut down the plant or initiate safety procedures only if specifically trained and assigned to perform those tasks.

Application for refrigeration safety awareness certificate of qualification

- 39** An applicant for a refrigeration safety awareness certificate of qualification must
- (a) provide proof acceptable to a provincial safety manager of instruction in safety procedures for the applicant's plant,
 - (b) successfully complete a basic refrigeration plant safety program or other technical course approved by a provincial safety manager, and
 - (c) have passed the refrigeration safety awareness certificate of qualification examination.

What a refrigeration safety awareness certificate of qualification holder may do

- 40**
- (1) A refrigeration safety awareness certificate of qualification entitles the holder to be in attendance to monitor the refrigeration plant named on the refrigeration safety awareness certificate of qualification in a general supervision or risk assessed status refrigeration plant with a total plant capacity of 1 000 kW or less prime mover nameplate rating.
 - (2) The holder of a refrigeration safety awareness certificate of qualification is not permitted to operate or perform any repairs to the refrigeration plant but is permitted to shut down the plant or initiate safety procedures when specifically trained and assigned to perform such tasks.

Application procedure for a pressure welder's certificate of qualification

- 41** An applicant for a pressure welder's certificate must have successfully completed a performance qualification test that conforms to the requirements of CSA B51.

Requirements for the holder of a pressure welder's certificate of qualification

- 42**
- (1) An applicant for a pressure welder's certificate of qualification must provide to a provincial safety manager evidence that the applicant has successfully passed a performance qualification test administered by a person recognized by the provincial safety manager as competent to administer the test.
 - (2) An individual who holds a certificate of qualification issued under subsection (1) must renew the certificate every 6 months by providing proof to a provincial safety manager that they have worked at the appropriate skill level.

Posting of certificates

- 43** When the holder of a certificate of qualification issued under this regulation is employed in a plant, the original certificate must be posted in a conspicuous, clean and safe place in the plant premises.

Division 3 – Plant Classifications

Plant classifications

- 44** (1) A plant classification referred to in sections 47 to 51 requires a power engineer with a corresponding class of certificate of qualification to be appointed as chief engineer of that plant.
- (2) For the purposes of subsection (1), a plant is classified by the type and total capacity of the boiler or refrigeration equipment that is connected to the same header or refrigeration system, as the case may be, as detailed in sections 47 to 51.
- (3) An individual who holds a power engineer's certificate of qualification that is one class lower than that required for
- (a) chief engineer of a plant, may act as an assistant chief engineer of the plant, or
 - (b) shift engineer of a plant, may act as an assistant shift engineer of the plant.
- (4) An individual who holds any class of power engineer's certificate of qualification may act as an assistant engineer.

Continuous supervision status plant operation

- 45** Unless a plant is registered under section 54 or is exempted under section 6, a power engineer or boiler operator with the appropriate class of certificate of qualification must be present at all times in the plant boiler room, refrigeration machinery room, engine turbine room or in the immediate vicinity within the plant premises while the plant is in operation.

Determination of boiler capacity

- 46** (1) In this section, "extended surface" does not include the area of a superheater.
- (2) The heat receiving surface area of a boiler must be stated in square metres (m²), must include the extended surface and the heating surface must be computed as follows:
- (a) a heating surface, as part of a circulating system in contact on one side with water or wet steam being heated and on the other side with gas or refractory being cooled, must be measured on the side receiving heat;
 - (b) a boiler heating surface and other equivalent surface outside the furnace must be measured circumferentially plus any extended surface;
 - (c) a waterwall heating surface and other equivalent surface within the furnace must be measured as the projected tube area (diameter x length) plus any extended surface on the furnace side, but in computing the heating surface for this purpose only the tubes, fireboxes, shells, tubesheets and the projected area of headers need to be considered, except that for vertical firetube steam boilers only that portion of the tube surface up to the middle of the gauge glass is to be computed.
- (3) The heat receiving surface area in square metres (m²) of an electric boiler is the number obtained by dividing the maximum kilowatt input by 10.

- (4) The heat receiving surface area of a coiltube or a fintube boiler includes the extended surfaces.
- (5) For the purposes of sections 51 (f), 55 (1) (b) (iv), 56 (1) (d) and 88, if two or more refrigeration systems are interconnected on the refrigerant side, the refrigeration plant capacity is the sum of the prime mover name plate rating capacities of each of the systems.

First class plant

47 A first class plant is a power plant that exceeds 1 000 m² of boiler capacity.

Second class plant

48 A second class plant is a power plant that exceeds 500 m² of boiler capacity but does not exceed 1 000 m² of boiler capacity.

Third class plant

49 A third class plant is

- (a) a power plant that exceeds 150 m² of boiler capacity but does not exceed 500 m² of boiler capacity,
- (b) a low pressure steam plant that exceeds 500 m² of boiler capacity,
- (c) a low pressure fluid plant, or a low pressure thermal fluid plant, that exceeds 1 000 m² of boiler capacity, or
- (d) an unfired plant that exceeds 1 000 m² of boiler capacity.

Fourth class plant

50 A fourth class plant is

- (a) a power plant that exceeds 75 m² of boiler capacity but does not exceed 150 m² of boiler capacity,
- (b) a low pressure steam plant that exceeds 300 m² of boiler capacity but does not exceed 500 m² of boiler capacity,
- (c) a low pressure fluid plant, or a low pressure thermal fluid plant, that exceeds 500 m² of boiler capacity but does not exceed 1 000 m² of boiler capacity,
- (d) a low temperature low pressure fluid plant that exceeds 1 000 m² of boiler capacity, or
- (e) an unfired plant that exceeds 500 m² of boiler capacity but does not exceed 1 000 m² of boiler capacity.

Fifth class plant

51 A fifth class plant is

- (a) a power plant that exceeds 10 m² of boiler capacity but does not exceed 75 m² of boiler capacity,

- (b) a low pressure steam plant that exceeds 30 m² of boiler capacity but does not exceed 300 m² of boiler capacity,
- (c) a low pressure fluid plant, or a low pressure thermal fluid plant, that exceeds 150 m² of boiler capacity but does not exceed 500 m² of boiler capacity,
- (d) a low temperature low pressure fluid plant that exceeds 300 m² of boiler capacity but does not exceed 1 000 m² of boiler capacity,
- (e) an unfired plant that exceeds 150 m² of boiler capacity but does not exceed 500 m² of boiler capacity, or
- (f) a refrigeration plant
 - (i) with refrigerant groups A1, A2 or B1, as defined in CSA B52, that exceeds a total plant capacity of 200 kW prime mover nameplate rating, or
 - (ii) with refrigerant groups A3, B2 or B3, as defined in CSA B52, that exceeds a total plant capacity of 50 kW prime mover nameplate rating.

Greenhouse plant

52 A greenhouse plant is

- (a) a plant named on a greenhouse boiler operator's certificate of qualification, and
- (b) a low temperature low pressure fluid plant that operates at a temperature not exceeding 100oC at a maximum gauge pressure of 206 kPa and does not exceed 1 000 m² of boiler capacity.

Oil well plant

53 An oil well plant is

- (a) a plant named on an oil well boiler operator's certificate of qualification, and
- (b) a power plant operating on a portable oil rig or drilling site that does not exceed 100 m² of boiler capacity.

Special plant registration and operation

54 (1) Two categories of special plant are established:

- (a) a general supervision status plant, and
- (b) a risk assessed status plant.

(2) Every owner seeking registration of a plant under subsection (1) must

- (a) apply to a provincial safety manager in the required form,
- (b) submit any required fee with the application, and
- (c) satisfy any of the technical requirements established by a provincial safety manager for that type of plant.

- (3) Before registration of a general supervision status plant or a risk assessed status plant, a provincial safety manager may direct administrative and technical specifications for that plant to be met.

General supervision status plant registration and operation

- 55** (1) A provincial safety manager may register a plant as a general supervision status plant operation if the plant
- (a) is not located in an institution or public assembly occupancy premises,
 - (b) is
 - (i) a power plant that does not exceed 30 m² of boiler capacity,
 - (ii) a low pressure steam plant that does not exceed 200 m² of boiler capacity,
 - (iii) a low pressure fluid or low pressure thermal fluid plant that does not exceed 500 m² of boiler capacity,
 - (iv) a low temperature low pressure fluid plant that does not exceed 2 000 m² of boiler capacity,
 - (v) an unfired plant that does not exceed 1 000 m² of boiler capacity, or
 - (vi) a refrigeration plant that does not exceed a total plant capacity of 1 000 kW prime mover nameplate rating,
 - (c) has every boiler in the plant equipped with a low water fuel cut-off device that
 - (i) has a manual reset that is in addition to, and independent of, any other low water fuel cut-off device required under the Act or this regulation, and
 - (ii) is tested weekly or as required by a provincial safety manager and for which the results are recorded by the person in charge of the plant, and
 - (d) meets all the administrative and technical specifications issued by a provincial safety manager after a successful review.
- (2) A general supervision status plant operation requires the presence of a power engineer with the appropriate class of certificate of qualification as determined by a plant safety audit inspection and as required by a provincial safety manager.
- (3) A plant operating as a general supervision status plant must, as a minimum, have a power engineer with the appropriate class of certificate of qualification who must inspect the plant in accordance with conditions established by a provincial safety manager.

Risk assessed status plant registration and operation

- 56** (1) A provincial safety manager may register a plant as a risk assessed status plant if the plant
- (a) is a low pressure fluid plant or low pressure thermal fluid plant not exceeding 500 m² of boiler capacity,

- (b) is a low temperature low pressure fluid plant that does not exceed 2 000 m² of boiler capacity,
 - (c) is an unfired plant not exceeding 1 000 m² of boiler capacity,
 - (d) is a refrigeration plant not exceeding a total plant capacity of 1 000 kW prime mover nameplate rating, or
 - (e) meets all the administrative and technical specifications issued by a provincial safety manager after a successful review.
- (2) A plant operating under the risk assessed status plant category must, as a minimum, have a power engineer with the appropriate certificate of qualification who
- (a) is on the premises of the plant not less than 7 hours per day or such greater time as may be required by a provincial safety manager, and
 - (b) inspects the plant in accordance with conditions established by a provincial safety manager as part of the registration under section 55.

Division 4 – Contractor’s Licence

Contractor’s licence required to perform regulated work under installation permit

- 57** A person must hold a contractor’s licence in order to perform regulated work under an installation permit.

Bond not required for contractor’s licence

- 58** A bond is not required to obtain or renew a contractor’s licence.

Field safety representative not required for boiler contractor’s licence

- 59** Section 6 (a) of the Safety Standards General Regulation does not apply to an application for a boiler contractor’s licence under this Division.

Application for contractor’s licence

- 60** The following classes of contractor’s licence are established:
- (a) pressure retaining equipment:
 - (i) class “A”, boiler, pressure vessel and pressure piping;
 - (ii) class “Au”, pressure vessel and pressure piping;
 - (iii) class “Ap”, pressure piping;
 - (iv) class “B”, limited capacity boiler, pressure vessel and pressure piping;
 - (b) class “REF”, refrigeration;
 - (c) class “SRV”, safety valve and relief valve service;
 - (d) class “MA”, CSA or ASME or fitting manufacturing shop.

General duties of a licensed contractor

- 61** (1) Every licensed contractor must, before the commencement of any work,

- (a) give notice to a provincial safety manager respecting every construction, installation, repair or alteration of equipment to which the Act applies that the contractor performs, and
 - (b) provide evidence satisfactory to a provincial safety manager that the work to be performed falls within the scope of the contractor's licence.
- (2) On the completion of work, a contractor must
- (a) notify a safety manager whether the construction, installation, repair or alteration has been completed in accordance with this regulation, and
 - (b) submit to a safety officer
 - (i) data reports, as defined in CSA B51 or the National Board Inspection Code ANSI/NB-23, or both, for every installation, repair or alteration of equipment to which this regulation applies, and
 - (ii) a repair or alteration report in the case of a repair or alteration of equipment to which this regulation applies.
- (3) On completion of work under a permit on a refrigeration plant using a Group A1, A2 or B1 refrigerant and having a capacity of 125 kW or more prime mover nameplate rating or using a Group A3, B2 or B3 refrigerant and having a capacity of 25 kW or more prime mover nameplate rating, the licensed contractor must, before testing is done, request an inspection from a provincial safety officer.

PART 2 – REQUIREMENTS FOR PERMITS, REGULATED PRODUCTS AND INSPECTIONS BY SAFETY OFFICERS

Division 1 – Permit Requirements

Permits

- 62**
- (1) A person must have an installation permit to install or alter any of the following:
 - (a) a boiler;
 - (b) a refrigeration system or part of a refrigeration system.
 - (2) A person must hold an operating permit for each boiler, pressure vessel or refrigeration system.
 - (3) If a person holds an operating permit under subsection (2), the permit holder or an employee of the permit holder may perform routine maintenance or minor repairs to that equipment without holding a boiler or refrigeration contractor's licence.
 - (4) A provincial safety manager may, in a particular case, determine what constitutes routine maintenance or minor repairs for the purpose of subsection (3).
 - (5) An owner may apply for an installation permit to perform an installation or repair of equipment to which this regulation applies that would otherwise require a licensed contractor to apply for the permit if
 - (a) the owner submits a written application to a provincial safety manager specifying the work to be done in the plant and the equipment and components to be used, and

- (b) the owner provides the name and qualifications of the individual who will perform the work under the permit.
- (6) A person who applies for a permit for a refrigeration plant using a Group A1, A2 or B1 refrigerant and having a capacity of 125 kW or more prime mover nameplate rating, or using a Group A3, B2 or B3 refrigerant and having a capacity of 25 kW or more prime mover nameplate rating, must submit piping design drawing with the permit application.
- (7) An installation permit issued under this regulation is not required to name a field safety representative.

When permit not required for regulated work

- 63**
- (1) An installation permit is not required to install any of the following:
 - (a) a pressure vessel;
 - (b) a refrigeration plant of up to 5 kW prime mover nameplate rating.
 - (2) In respect of refrigeration equipment, a refrigeration mechanic may, without an installation permit,
 - (a) replace valves, controls, piping, refrigerant or relief devices with components of a similar type that have been approved by a provincial safety manager or a similar regulatory authority in another province, and
 - (b) maintain or overhaul refrigeration system components.

Division 2 – Inspections by Safety Officers

Preparation of equipment for inspection

- 64**
- To prepare equipment for inspection, the owner, chief engineer or a person designated by the chief engineer must do all of the following:
- (a) if a hydrostatic test or other pressure test is considered necessary by a safety officer, prepare the boiler, pressure vessel, refrigeration system or pressure piping system for the required test;
 - (b) at the request of a safety officer, remove all jackets, coverings and casings from the equipment being inspected;
 - (c) perform non-destructive tests as required by a safety officer to carry out inspections;
 - (d) open and have thoroughly cleaned and ventilated every boiler or pressure vessel;
 - (e) remove manhole and handhole covers;
 - (f) clean the flues and other parts of a furnace that are to be inspected;
 - (g) ensure that safety procedures are implemented, so that steam, gases, hot water and other liquids cannot enter the area being inspected;
 - (h) if a hydrostatic test is to be performed on any equipment or system, ensure that no components of the equipment or system will be exposed to pressures or temperatures that would induce maximum primary stresses exceeding 90% of the yield stress of that component's material of manufacture, and that all materials comply with the notch toughness requirements for the

specified test fluid and metal temperatures, as required by the applicable codes adopted in the Schedule;

- (i) ensure that for internal inspections of vessels, confined space entry and isolation requirements are in accordance with Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation.

PART 3 – SAFETY OFFICERS

Requirements for a certificate of qualification as a safety officer

- 65**
- (1) A provincial safety manager may issue a certificate of qualification as a safety officer for the purposes of this regulation to an individual who
 - (a) holds a certificate of qualification as a first class power engineer, or
 - (b) subject to subsection (2), holds a certificate of qualification as a second class power engineer.
 - (2) An individual who is issued a certificate of qualification under subsection (1) (b) must, as a condition of maintaining the certificate of qualification as a safety officer, obtain a certificate of qualification as a first class power engineer within 2 years of being issued a certificate of qualification as a safety officer.

PART 4 – INCIDENT REPORTING

Duty to report incidents in plants

- 66**
- (1) If an incident occurs in a plant and an injury or death has occurred as a result of the incident, the owner must isolate the equipment and prohibit any further use of the equipment until its use is approved by a provincial safety manager.
 - (2) The owner must conduct, or cause to be conducted, an investigation of the incident and submit a written report of the findings to a provincial safety manager within 30 days of the incident.

PART 5 – TECHNICAL REQUIREMENTS

Division 1 – Person in Charge of Plant

General requirements for person in charge of a plant

- 67**
- (1) The person in charge of a plant must have a valid power engineer's certificate of qualification as required under the Act.
 - (2) The person in charge of the plant must ensure that the plant is adequately supervised and has appropriately qualified persons working in it.
 - (3) Any changes to approved staffing levels must be approved in writing by a provincial safety manager.
 - (4) A plant that employs more than 24 power engineers in the operation of the plant is required to have at least one assistant chief engineer.

- (5) An individual must not be in charge of more than one plant at any time except with the approval of a provincial safety manager.
- (6) If regulated plant equipment is not under the continuous attendance of a power engineer and is operating under the general supervision status plant or risk assessed status plant classification,
 - (a) the plant must meet all the administrative and technical specifications issued by a provincial safety manager,
 - (b) an individual with the appropriate safety awareness certificate of qualification issued under the Act must be in attendance on the premises of a plant when the plant is in operation and the power engineer is not on the plant premises, and
 - (c) in the case of a refrigeration plant, an individual with the basic safety awareness certificate of qualification issued under the Act is required to be on the plant premises while the plant is in operation, the premises are occupied and the power engineer is not on the plant premises.
- (7) The chief engineer or the person in charge of the plant who assumes or vacates a position of employment in a plant to which this regulation applies must notify a provincial safety manager in writing of that fact.

Chief engineer requirements

- 68** (1) If a power engineer has the written permission of a provincial safety manager, that power engineer may, at any one time, be the chief engineer of not more than three low pressure steam, low pressure fluid or low pressure thermal fluid plants.
- (2) If 2 or more power engineers are employed in a plant, the owner, or the person who is in charge of the plant, must designate one of the power engineers as chief engineer.

Person in charge to give permission before work can begin

- 69** A person must not perform any work on a boiler, pressure vessel or pressure piping system connected to it, instrumentation and control system, fuel system or fuel burning equipment or refrigeration plant equipment that may affect the operation and safety of the plant except with the prior approval of the chief engineer, assistant chief engineer or the person in charge of the plant.

Division 2 – Obligations of Owners and Licensed Contractors

Owner to designate shift engineer during temporary absence of chief engineer

- 70** When the chief engineer is away from the plant, the owner must ensure that a power engineer who holds a certificate of qualification of not less than one class lower than that required for chief engineer is designated to act as a shift engineer.

Owner not to require power engineers to perform dangerous work

- 71** The owner of a plant must not require a power engineer to perform a duty not related to the operation of the plant if a safety officer considers that the performance of that duty may endanger the safety of the plant or the people in the plant or both.

Owners and licensed contractors to maintain records

- 72** The owner of a plant or a licensed contractor must maintain or cause to be maintained, for a period of at least 7 years, any documentation required by a provincial safety manager.

Duty to ensure sufficient combustion air supply to boilers

- 73**
- (1) An owner or licensed contractor who installs a boiler must ensure that sufficient air is capable of being supplied to every boiler in the plant to permit complete combustion of the fuel.
 - (2) The owner of a plant may use a mechanical system to supply air for the combustion of the fuel in a boiler if the mechanical system
 - (a) is interlocked with the burner controls of the boiler, and
 - (b) ensures that adequate air is provided before any fuel is admitted into the combustion chamber or the furnace of the boiler.

Owner responsible for safety in a plant

- 74**
- (1) The owner of a plant must ensure that there is compliance with all of the following:
 - (a) floors, pits and sumps in the plant have adequate drainage;
 - (b) the plant or equipment in the plant prevents oil or other liquids harmful to a boiler from being introduced into boiler feedwater;
 - (c) there is adequate drainage to prevent accumulation of condensate in any piping.
 - (2) If regulated work is being performed on a pressure piping system in a plant, the owner of the plant must ensure that the portion of the pressure piping system where the regulated work is performed is safe for the activity being performed.
 - (3) If steam from a boiler in a plant exceeds 103 kPa gauge pressure and will be used for services at a lower pressure, the owner of the plant must ensure that, in association with the pressure reducing device,
 - (a) one or more relief devices or safety valves are provided on the low pressure side of the system, or
 - (b) the piping and equipment on the low pressure side of the system is designed to withstand the upstream design pressure.
 - (4) The relief or safety devices referred to in subsection (3) (a) must be located adjoining, or as close as possible to, the reducing valve.
 - (5) To provide for servicing of the pressure reducing device, hand controlled bypass valves having a capacity no greater than the reducing device may be installed around the pressure reducing device if
 - (a) the downstream piping is adequately protected by relief or safety devices of proper capacity, or
 - (b) the design pressure of the downstream piping equipment is at least as high as the design pressure of the upstream piping equipment.

Duties of owners of steam driven engines

- 75** (1) The owner of a steam driven engine must ensure that the steam driven engine has a quick closing emergency shut off valve that is
- (a) located in the steam pipe to the engine,
 - (b) arranged so it can be shut from a remote location, and
 - (c) tested regularly and the results of the tests recorded and kept by the owner in a form acceptable to a provincial safety manager.
- (2) All steam driven engines must be inspected annually and the connected boiler must have a hydrostatic test performed annually that is witnessed by a safety officer.

Duties of owners of chemical recovery boilers

- 76** (1) The owner of a plant must ensure that every chemical recovery boiler in the plant is operated in accordance with the applicable provisions of the codes and standards set out in the Schedule to this regulation.
- (2) The owner of a plant must ensure that the instruments and controls that are necessary for the safe operation and emergency shut down of a chemical recovery boiler are located in the control room of the plant.
- (3) The owner of a plant must not permit the operation of a chemical recovery boiler in the plant unless there is compliance with all of the following:
- (a) procedures that will ensure the safe evacuation of all plant employees and the safe shutdown of the plant during an emergency have been
 - (i) sent to a provincial safety manager at least one month before the boiler is used, and
 - (ii) posted as near as possible to the operating panel of the chemical recovery boiler;
 - (b) the chemical recovery boiler has a rapid drain system that has worked during tests that were conducted in the manner required by a safety officer;
 - (c) a device that continuously monitors and records the firing concentration of the black liquor in the chemical recovery boiler has been installed
 - (i) after the last connection if contamination by a substance that would dilute the black liquor could occur, and
 - (ii) before the burner spray nozzles;
 - (d) equipment has been installed that is separate from and that tests the device referred to in paragraph (c);
 - (e) an audible boiler low water level alarm is fitted to the chemical recovery boiler, which alarm can only be cancelled after the condition that caused the alarm to sound has been acknowledged and, if not corrected within 60 seconds, will sound again until corrected;
 - (f) a communication system between personnel in the plant and the power engineer in the control room is functioning;
 - (g) the dissolving tanks of the chemical recovery boiler are

- (i) constructed in accordance with industry recommended safe design practices, and
 - (ii) vented with explosive relief devices that, when used, ensure that the dissolving tanks are safe;
 - (h) an emergency spout-cooling water make-up is installed on water cooled spouts.
- (4) The owner of a chemical recovery boiler must ensure that the power engineer who is placed in immediate charge of the chemical recovery boiler, and who is responsible to the shift engineer for the safe and efficient operation of the chemical recovery boiler, is the holder of a first, second or third class power engineer's certificate of qualification.

Duties of owners of boilers and pressure vessels

- 77** (1) The owner must inform a provincial safety manager before the owner or a licensed contractor installs any new boiler or pressure vessel and the provincial safety manager may stipulate any documentation requirements.
- (2) The owner of a plant must not install a previously used boiler or previously used pressure vessel unless the owner provides to a provincial safety officer
- (a) the manufacturer's data report,
 - (b) the latest inspection report for that boiler or pressure vessel from the previous inspecting authority, and
 - (c) any other documentation required by the provincial safety officer.

Welding and brazing procedures must be to code and registered

- 78** (1) The owner of a plant that has a person perform regulated work on equipment and systems to which this regulation applies must ensure that all welding and brazing is done in accordance with the welding and brazing procedures set out in CSA B51.
- (2) All welding and brazing procedures used in British Columbia must be registered with a provincial safety manager.

Duties of owners of pressure vessel plants

- 79** The owner of a pressure vessel plant must designate individuals employed by the owner to be responsible for the operation and maintenance of the plant in a safe working condition.

Boiler safety awareness certificate and annual service report requirement

- 80** The owner of a plant in respect of which a boiler safety awareness certificate of qualification has been issued to a person employed at the premises must provide the safety officer with an annual service report from a licensed boiler contractor stating that any work that has been carried out has been done in accordance with the manufacturers' specifications and as required under this regulation.

Refrigeration safety awareness certificate and annual service report requirement

- 81** The owner of a plant in respect of which a refrigeration safety awareness certificate of qualification has been issued to a person employed at the premises must provide the safety officer with an annual service report from a licensed refrigeration contractor stating that any work that has been carried out has been done in accordance with the manufacturers' specifications and as required under this regulation.

Division 3 – Registration, Approvals and Notification of Purchase or Disposition

Design registration and inspection requirements

- 82** A person must not perform regulated work on a boiler, a pressure vessel, a pressure piping system, a fitting, a plant or refrigeration equipment for use in British Columbia unless
- (a) the original design and the altered design, if any, have been registered by a provincial safety manager,
 - (b) the regulated work is done in accordance with that design, and
 - (c) it is inspected, investigated and tested during construction and after completion.

Notification of purchase or disposal of regulated products

- 83** A person who purchases or disposes of a boiler, pressure vessel or refrigeration equipment must, within 30 days after the date of the purchase or disposition, give a provincial safety manager written notice of the purchase or disposition stating the information required by the provincial safety manager.

Registration of boiler, pressure vessel, fitting and pressure piping design

- 84**
- (1) For this section, "pressure retaining equipment" means a boiler or pressure vessel, or pressure piping system.
 - (2) The design of all boilers, pressure vessels, fittings and pressure piping, to which this regulation applies, must be registered with a provincial safety manager.
 - (3) Subsection (2) does not apply to pressure piping that is
 - (a) NPS 3 or less, or
 - (b) in a fluid plant.
 - (4) To register a design, the owner, licensed contractor, consulting engineer, manufacturer or designer of the pressure retaining equipment must submit, for review by a provincial safety manager, an application containing all drawings, design specifications, calculations and codes of conformance as required by a provincial safety manager.
 - (5) Registration of pressure retaining equipment must be obtained before construction is commenced.
 - (6) If, in the opinion of a provincial safety manager, a design registered under subsection (2) is subsequently found to be defective in any detail, the design must be revised by the person who submitted the design and those revisions must be approved by the provincial safety manager.

- (7) The registration of a pressure retaining equipment design does not relieve the equipment manufacturer of liability for the design and construction of the pressure retaining equipment.
- (8) A provincial safety manager may exempt fitting designs from registration under subsection (2).

Boiler fuel systems to be registered

- 85** The manufacturer or designer of the fuel system for a boiler must
- (a) submit to a provincial safety manager information respecting the safeguards, controls and interlocks of the fuel system, including a listing of the codes and standards to which the system conforms, and
 - (b) ensure that schematic drawings and logic data are made available to a provincial safety manager on request.

No repairs to boilers or pressure vessels unless approved

- 86** Except in an emergency and as authorized under section 12 (2) of the Safety Standards General Regulation, a person must not repair a boiler or pressure vessel unless the person has notified a safety officer and received approval from the safety officer for the repair procedures to be used.

No alterations to boilers or pressure vessels unless registered

- 87**
- (1) A person must not perform an alteration to a boiler or pressure vessel unless that person has registered the alteration with a provincial safety manager.
 - (2) The registration submission for an altered boiler or pressure vessel must include all of the following:
 - (a) proof that the boiler or pressure vessel was manufactured in accordance with the design registered under section 84 (1);
 - (b) non-destructive examination reports that confirm suitability for further operation;
 - (c) calculations based on both the original code of construction and the current edition and addenda of the applicable ASME Boiler and Pressure Vessel Code, whichever is more appropriate.
 - (3) A provincial safety manager may assign a new Canadian Registration Number to a boiler or pressure vessel following a successful review of a registration submission under subsection (2).

Division 4 – Refrigeration Machinery Rooms and Systems

Refrigeration plant installations

- 88**
- (1) For this section, “Canadian Registration Number” has the same meaning as in CSA B51.
 - (2) If a refrigeration plant
 - (a) has a capacity of 125 kW prime mover nameplate rating or more and uses Group A1, A2 or B1 refrigerants, or

- (b) has a capacity of 25 kW prime mover nameplate rating or more and uses Group A3, B2 or B3 refrigerants,
a licensed contractor must, before performing an installation, provide a registration number for the pressure piping to a provincial safety manager.

SCHEDULE

ADOPTED CODES AND STANDARDS

Adopted Codes

- 1** The following codes, standards or parts of a code or standard of the American Society of Mechanical Engineers and the American National Standards Institute (ASME/ANSI) are adopted:
 - (a) ASME B31.1 Power Piping;
 - (b) ASME B31.3 Process Piping;
 - (c) ASME B31.5 Refrigeration Piping;
 - (d) ASME B31.9 Building Services Piping;
 - (e) ASME B31.11 Slurry Transportation Piping System;
 - (f) ASME/ANSI K61.1 Safety Requirements for the Storage and Handling of Anhydrous Ammonia;
 - (g) ASME PTC25 Safety and Safety Relief Valves Performance Test Code.
- 2** The following codes, standards or parts of a code or standard of the American National Standards Institute and National Board of Boiler and Pressure Vessel Inspectors (ANSI/NB) are adopted:
 - (a) ANSI/NB 23 National Board Inspection Code.
- 3** The following codes, standards or parts of a code or standard of the American Petroleum Institute (API) are adopted:
 - (a) API STD 530 Calculation of Heat Tube Thickness in Petroleum Refineries.
- 4** The following codes, standards or parts of a code or standard of the American Society of Mechanical Engineers and American National Standards Institute (ASME/ANSI) are adopted:
 - (a) ASME Section I – Rules for Construction of Power Boilers;
 - (b) ASME Section IV – Rules for Construction of Heating Boilers;
 - (c) ASME Section VIII:
 - (i) Division 1 – Rules for Construction of Pressure Vessels;
 - (ii) Division 2 – Alternative Rules;
 - (iii) Division 3 – Alternative Rules for Construction of High Pressure Vessels;
 - (d) ASME Section X – Fibre Glass Reinforced Plastic Pressure Vessels;
 - (e) ASME Section XI – Rules for Inservice Inspection of Nuclear Power Plant Components;
 - (f) ASME CSD-1 Controls and Safety Devices for Automatically Fired Boilers;

- (g) ASME/ANSI PVHO-1 Safety Standard for Pressure Vessels for Human Occupancy;
 - (h) ASME/ANSI QAI-1 Qualifications for Authorised Inspection Agencies.
- 5** The following codes, standards or parts of a code or standard of the Canadian Standards Association (CSA) are adopted:
- (a) CSA B51 Boiler, Pressure Vessel, and Pressure Piping Code;
 - (b) CSA B52 The Mechanical Refrigeration Code;
 - (c) CSA N285 – Series Pressure Retaining Components and Supports in CANDU Nuclear Power Plants.
- 6** The following codes, standards or parts of a code or standard of the National Fire Protection Association (NFPA) are adopted:
- (a) NFPA 85 Boiler and Combustion Systems Hazards Code.
- 7** The standards or parts of the standard of the Tubular Exchangers Manufacturers Association (TEMA) are adopted.