

Information Bulletin No. IB22-002

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**Interpretation
Pressure Equipment Safety Regulation Section 22
Changes to a Registered Design**

This Interpretation provides compliance guidance with respect to changes to a registered design that require submission for review and registration.

This Interpretation applies to changes of boiler, pressure vessel, fired-heater pressure coil or thermal liquid heating system designs that have previously been registered in accordance with the Pressure Equipment Safety Regulation.

This Interpretation applies only to design changes made prior to completion of construction.

Section 22 of the *Pressure Equipment Safety Regulation* states

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

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

Section 1 of this Interpretation provides examples of revisions that may be made to a previously registered design that are not required to be submitted for registration.

Section 2 of this Interpretation identifies changes to a design registered in Alberta that shall be submitted to ABSA for registration of a revision.

Section 3 of this Interpretation provides guidance on the submission requirements.

Section 1

Design changes that do not require review and registration:

- i. Reduction in pressure (internal or external) without any other design changes
- ii. Increase of examination requirements (e.g. from RT-3 to RT-1)
- iii. Replacement of component material with a material that has equal or higher allowable stresses and the same P-No, (e.g. SA-106B pipe with SA-106C)
- iv. Reduction of design temperature

- v. Increase of MDMT
- vi. Removal of nozzles except code required connections such as inspection opening, drains, vents, etc.
- vii. Reduction of CA
- viii. Replacement of heat exchanger tubes with tubes that have equal or better material properties and allowable stresses for U-tube and Floating Head HX
- ix. Gasket replacements that have same “m” and “y” values and same dimensions
- x. Bolts replacements where they have same dimensions and tensile stress

It is important to understand that a design having any of the changes listed above is not exempt from submission if the design change also includes any of the items listed in Section 2 below.

Section 2

Design changes that must be submitted for review and registration:

a) Changes made to any of the design conditions:

- i. Increase in the MAWP
- ii. Addition, or modification of external pressure
- iii. Modification of differential pressure
- iv. Modification of test pressure (increase or decrease)
- v. Increase of design temperature
- vi. Heat exchanger data that will be on U-5 form – design/operating pressures
- vii. metal temperatures (e.g. design, operating, mean) and axial differential thermal expansion rates
- viii. Increase of corrosion allowance
- ix. Decrease (colder) MDMT
- x. Addition of lethal service
- xi. Loadings that prompt UDR form to be submitted or revised as part of design submission in accordance with U-2(a)(2) of ASME Sec VIII Div.1

b) Changes made to any individual component of a pressure equipment:

- i. Material of construction, unless a substitution is specified on registered drawing, or permitted as per Section 1, item (iii) above
- ii. Dimensions (e.g. diameter, length, thickness, shape, tube pitch in tubesheet)
- iii. Type of heads (e.g. replacement of semi-elliptical with tori-spherical head)
- iv. Stays (e.g. number, pitch, location, type)
- v. Ligaments (e.g. pitch)
- vi. Quick opening closures - modifications
- vii. Modification of stiffening rings including the type of connections
- viii. Revision to gasket dimensions or properties for flanges that require calculations
- ix. Expansion joints
- x. Fire-tube modifications (e.g. type – corrugated vs. flat)

- xi. Boiler proper changes (e.g. addition of isolation valves between ECO and the rest of the boiler)
- xii. Boiler external piping changes
- xiii. Proof test report – modifications in design that invalidate the proof test report

c) Changes made to nozzles:

- i. Addition of a nozzle or connection that differs from nozzles or connections included in the original registered design
- ii. Addition of nozzle type included in original registration in proximity to other nozzle that requires reinforcement re-evaluation, or forms a cluster
- iii. Layout (i.e. radial, hillside, lateral)
- iv. Nozzle configuration (i.e. flange, nozzle barrel, reinforcement re-pads, internal projections)
- v. Attachment (weld) configuration
- vi. Nozzle elevation and orientation changes (e.g. to avoid nozzle reinforcement overlap or nozzle clusters)

d) Changes made to other construction details that impact the design calculations/validation such as:

- i. Post weld heat treatment (PWHT)
- ii. Weld joints configuration
- iii. Joint configurations (e.g. replacing threaded joint with welded or vice-versa)
- iv. Non-destructive examination (NDE, RT), including changes in level of examination that will impact calculations (e.g. reduction in joint efficiency or casting factor) and vessel marking (e.g. changes from RT-1 to RT-3)
- v. Impact testing requirements or exemptions
- vi. Vessel orientation (e.g. converting vertical vessel in horizontal - supports)
- vii. Addition or removal of Code Cases

e) Change in the applicable code or standard affecting a registered design:

Change in applicable code or standard that may render the design obsolete, such as changes that are affecting calculations, or pressure-containing capability of the equipment and requires design revalidation, or changes in the design to achieve conformity.

f) Special Consideration

Please contact Design Survey for guidance on submission requirements for design changes that are not listed above, and which affect the pressure-containing capability of pressure equipment.

Section 3

A submission required under Section 2 above must include sufficient information and details to allow the design surveyor to determine the revision is acceptable for registration.

Section 22 subsection (2) states that if a change to a design is sufficiently extensive, it may be required the same information to be submitted as if the submission were a first application for registration of the design.

Further clarifications and additional information can be found in the FAQ section on ABSA's website under design registration.

<original signed by>

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