

Document checklist: Pressure piping design registration

Required documentation

1. **Drawings** (flow diagrams, P&IDs) must include the following:
 - a) number and revision;
 - b) design code of construction information - edition and addenda (e.g. ASME B31.1-2010);
 - c) line identification that can be correlated with item 5 below; and
 - d) CRN's for boilers, pressure vessels and fittings in the system.

Note: Bridles shall be registered as 'Fitting' or 'Pressure Vessel', as applicable, and the CRN shall be included with the submittal.

2. **Line lists** showing the maximum design pressures, maximum and minimum design temperatures, and relevant specifications (as per item 3 below) for each line.

Note: All lines requiring registration should be highlighted on both the drawing and line lists.

3. Pipe specifications

Indicate the following:

- a) Maximum design pressure
- b) Maximum and minimum design requirements (MT, PT, RT, VT, UT, temperatures LT)
- c) Fluid service
- d) Dimensions
- e) ASME material specifications
- f) Flange, valve, and fitting standards
- g) Heat treatment section
- h) Non-destructive examination
- i) Corrosion allowance
- j) Impact testing
- k) Pressure test conditions, fluid
- l) Formulas used or reference to code
- m) Piping support restraint summary (include: maximum restraint loads on supports, maximum bending moments, maximum displacement)
- n) The Engineer of Record (EOR) is responsible to corroborate with the Structural Engineer where deemed necessary to ensure that the pipe reaction loads to the structure has adequate capacity and meets the appropriate ASME code requirements

4. Stress analysis calculations

Demonstrate the piping system can withstand or is isolated from all ambient influences, dynamic effects, weight effects, and interface loads, as defined in ASME B31-series code. If these conditions are unknown, clearly stated worst-case loading restrictions shall be included (e.g. seismic value $S_a(0.2)$ was chosen to be 0.095 as installation is in Fort St. John). You must demonstrate the following:

- a) The design can withstand the maximum pressure and maximum and minimum temperatures with an identified factor of safety.
- b) Identify all loads on the pressure piping system and worst-case loads.
- c) The design can withstand the loading environment described in 4 (b).

All of the effects must be considered. If a certain effect or load does not apply to your application, provide justification through statements or calculations (e.g. wind calculations do not apply as the installation will be indoors).

Note: Pressure piping registrations may have notes added to the registration letter that states limitations due to the designer's worst case loading conditions.

Modifications to existing lines

Calculations shall be provided for any existing lines that are modified to accommodate new lines to show:

1. there are no additional interface loads introduced between the new and existing lines; or
2. the existing lines are adapted to support any new loads as a result of the modification.

Legacy piping systems commissioned before April 1, 2009 may be subject to design registration when undergoing alterations. To find out more, please see our [information bulletin](#).

Used or altered pressure fittings

In addition to the detailed document checklist, please include the following:

- An internal /external visual inspection report;
- Maintenance records;
- Periodic inspection reports and repair/alteration reports;
- NDE surface/volumetric report and thickness evaluation report;
- A metallurgical assessment if there is evidence of wall loss due to operational or environmental considerations.