

## Appendix A: Technical and Engineering Pipeline Assessment Requirement Clauses per CSA Z662

Technical and engineering pipeline details are required for all known design specifications for the pipeline, and the start and end points of the pipeline. The start and end points are not just from lease to lease, but the exact start and end point of the pipeline. Requirements listed here reference Clauses, Tables and Figures in CSA Z662 available at the [Canadian Standards Association](http://www.csa.ca) website.

- Engineering assessment required by CSA Z662.
- Table 4.2: to support the use of a higher value being used for location factor on a gas pipeline.
- Clause 4.3.12.2 for pressure test design of components not listed in Z662-11.
- Clause 4.4.3 to determine spacing for isolating valves, unless spaced according to Table 4.7.
- Clause 5.1.3 for use of materials other than as specified in the standards.
- Clause 5.2.4/5.2.5.1 for use of materials other than Table 5.3.
- Clause 5.6.1 for reuse of materials in a different system than they were removed from.
- Clause 9.1.3 for exclusion of certain corrosion control practices.
- Clause 10.3.1.1 to confirm which sections are suitable for use where conditions which can lead to failure are discovered.
- Clause 10.3.1.2 to determine which portions may be susceptible to failure prior to operating at a higher pressure than the established operating pressure. This may include changes which are below MOP.
- Clause 10.3.7.1 prior to a change in service fluid. This is any change in service fluid.
- Clause 10.3.8 prior to upgrading to a higher MOP.
- Clause 10.3.9.1 prior to pressure testing existing piping to make sure the line will not be adversely affected and that the line can sustain the proposed pressure.
- Clause 10.7.1 where a change in class location occurs to allow for meeting anything other than the higher class location requirements.
- Clause 10.8.1 where an existing pipeline is crossed by a road or railway where not updating the design to accommodate.
- Clause 10.8.3 to confirm that a pipeline can sustain the anticipated surface load for any crossings other than road or rail.
- Clause 10.9.2.4 to return an above ground tank to service following a repair without a hydrostatic test.

- Clause 10.10.1.4 to determine suitable operating pressure where defects may make the pipeline unsuitable for normal operating pressure.
- Clause 10.10.2.1 to use a different maximum length and depth of corrosion limit than specified in Figure 10.1.
- Clause 10.10.2.7 to determine that a corroded area is acceptable which does not meet the criteria of other clauses in 10.10.2.
- Clause 10.10.4.2 to determine dents other than those listed are acceptable.
- Clause 10.10.5 to determine surface cracks to be acceptable.
- Clause 10.10.7 to determine weld defects to be acceptable.
- Clause 10.11.4.3 to support design and installation of repair sleeves.
- Clause 10.12.1.1 to support a temporary repair method (welding or non-welding).
- Clause 10.15.2.1 prior to reactivating a pipe.
- Clause 12.4.1.4 to support designs in gas distribution systems which use a weak link in the event of excessive pullout force.
- Clause 12.4.2.4 to determine the chemical factor for liquid hydrocarbons between 0.5 and 1 for polyethylene piping design pressure calculations.
- Clause 13.1.2.16 to demonstrate adequate corrosion resistance of some types of risers or couplings on composite lines for the life of the pipeline where cathodic protection will not be provided.
- Clause 13.2.2.12 to thermoplastically line previously in service pipes (unless a leak test is run).
- Clause 13.2.8.3 to support continued use of the pipeline following a liner breach on thermoplastically lined pipe.
- Clause 13.3.3.6 to demonstrate adequate corrosion resistance of some types of risers or couplings on Polyethylene lines for the life of the pipeline where cathodic protection will not be provided.
- Clause 16.8.7 for any sour lines where there is a possibility of a change in service fluid composition or operating conditions to determining whether the pipeline is suitable for the new conditions.
- Clause 16.10.3.2 for any gas pipelines being returned to service after an extended period of non-use prior to admission of sour fluids.
- Clause 17.4.7 for above ground installations on composite reinforced steel pipelines to ensure suitability.
- Clause 17.10.3 to determine that a corroded area is acceptable which does not meet the criteria of 10.10.2.

- Clause N.13.1 where inspection, testing, patrol or monitoring indicates conditions or imperfections which might lead to failure or damage incidents with significant consequences. To be performed to N.13.2.2.