



Formal Interpretations/ Interprétation formelle

This section lists questions that individuals have submitted about a particular standard. Each question has been reviewed and answered by the appropriate committee. If you would like to submit a question about a particular standard, please see the end notes in the preface of that standard.

Posted Dec 21, 2021

The following interpretation regarding Clause 4.3.3 and Table 4.1 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Must a sweet natural gas pipeline consider unrelated Sour Gas Facilities within the Class Location Assessment Area to determine the applicable Class Location?

Answer 1: Yes

Question 2: Does the presence of an unrelated Sour Gas Facility within the Class Location Assessment Area automatically require that this area of the pipeline be at least Class 2?

Answer 2: No

Question 3: If a release from the sweet natural gas pipeline, passing near an unrelated Sour Gas Facility, could create a dangerous or environmentally hazardous condition at the Sour Gas Facility, does this require that this area of the pipeline be at least Class 2?

Answer 3: Yes

Posted Dec 21, 2021

The following interpretation regarding Clause 5.1.3 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

As per CSA Z662-19 Oil and Gas Pipeline Systems Clause 5.1.3 materials for types of items for which no standard or specification is listed in the Standard may be used provided the company has determined such materials are suitable for the intended use as per Clause 5.8

Question: Could the engineering assessment provide a foundation for future inclusion in the Standard?



Answer: This is not part of the interpretation of the standard. Recommendations for future inclusion in the standard are addressed by the CSA Request for Change process.

Posted Dec 21, 2021

The following interpretation regarding Clause 10.13.2.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does Clause 10.13.2.2 impose “weld restraint level” as an essential change for qualification of in-service welding procedures?

Answer 1: No

Question 2: Does Clause 10.13.2.2 impose “weld cooling rates” as an essential change for qualification of in-service welding procedures?

Answer 2: Yes

Question 3: If “weld restraint level” was not measured or characterized in any way (quantitatively or qualitatively), or was not documented in the procedure qualification record at the time a welding procedure specification was qualified in accordance with Clause 7.17, does Clause 10.13.2.2 prohibit the use of that welding procedure for in-service welding?

Answer 3: No. However, application of external forces during in-service weld joint fit up should be considered.

Posted Dec 21, 2021

The following interpretation regarding Clauses 4.14.2.11.c) and 4.14.3.8.d) of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Regarding portions of compressor and pump stations piping systems designed in accordance with ASME B31.3 as permitted in Clause 4.14.2.11.c), 4.14.3.8.d) and related notes, is it intended that users would follow the requirements of ASME B31.3 “in its entirety”, without further supplementary requirements of any kind (including other than design) being imposed by other clauses in CSA Z662?

Answer: No, “in its entirety” only applies to design requirements for compressor and pump station piping.

Posted Dec 21, 2021

The following interpretation regarding Clause 4.3.18 and 4.3.19 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: In Table 4.6 Design of welded branch connections, the ratio of nominal branch diameter to nominal run diameter is calculated using the nominal diameter of the branch pipe or fitting (i.e., NPS) and not the exact outside diameter or the diameter of hole in the run pipe (D_o).

Answer 1: Agree.

Question 2: Can the area of reinforcement calculations in Clause 4.3.19 be used to demonstrate that reinforcement is not required to control stress levels within safe limits (not considering stresses that could be induced by other loads) despite the applicable items in Table 4.6 indicating that reinforcement shall be complete encirclement type, pad type, saddle type, or welding outlet fitting type.

Answer 2: Yes.

Posted Dec 21, 2021

The following interpretation regarding Clause 7.9.2 and Figure 7.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Can the maximum allowable offset of 1.6 mm referred to in Clause 7.9.2 be added to the nominal internal offset (bi) of 2.4 mm permitted in Figure 7.2 Note 2.a, thereby allowing for a total of up to 4.0 mm internal offset without requiring an internal taper transition or internal taper weld as otherwise required by Figure 7.2 Notes 2.b through 2.d?

Answer: No

Posted Dec 21, 2021

The following interpretation regarding Clause 4 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Can the Flexibility Characteristic and Flexibility Factor related to Table 4.8 Sketch C be used for complete encirclement type of reinforcement that are welded to the



branch piping but not welded to the run pipe?

Answer 1: No

Question 2: In the event that sketch C cannot be used, can the designer default to using sketch D instead?

Answer 2: Yes

Posted Dec 21, 2021

The following interpretation regarding Clauses 4.11.1 and 4.11.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1a: Would geohazard or unfavorable conditions that could create instability during the installation of the pipeline at the cover required in Table 4.9 be considered an adverse condition?

Answer 1a: Yes, provided it prevents installation with the required depth

Question 1b: Would impact to an adjacent infrastructure during the installation of the pipeline at the cover required in Table 4.9 be considered an adverse condition?

Answer 1b: No, unless it prevents installation with the required depth

Question 2: Would a utility already at the pipeline depth be considered an adverse condition that would allow reduced cover?

Answer 2: No, unless it prevents installation with the required depth

Question 3: Would a utility already at the pipeline depth that the pipeline could be routed beneath be considered an adverse condition that would allow reduced cover?

Answer 3: No

Posted Dec 21, 2021

The following interpretation regarding Clauses 13.3.8.1 and 13.3.9.4 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Circumstances

A Polyethylene pipeline is designed and constructed to CSA Z662 Clause 13.3. The design engineer wants a pipeline with a maximum operating pressure (MOP) of 100 psi.



He back calculates the required Standard Dimension Ratio (SDR) using the formula given in Clause 13.3.2.2. Due to standard sizes of polyethylene pipe and availability of materials, he selects an SDR with a thicker wall than the minimum calculated. Using that wall thickness, he back calculates an effective design pressure per the formula in Clause 13.3.2.2 of 150 psi, because the wall thickness is much more than required. Clause 13.3.8.1 requires a pressure test at least 1.25 x the design pressure

Question 1: In this situation, is the “design pressure” referenced in clause 13.3.8.1 intended to be the “intended MOP”, in that the minimum test pressure required is $1.25 \times 100\text{psi} = 125 \text{psi}$?

Answer 1: Yes

Question 2: In this situation, is the “design pressure” referenced in clause 13.3.8.1 intended to be the “effective” design pressure as back calculated from the equation given in clause 13.3.2.2 using the actual thicker wall used in the project, and that the minimum test pressure required is $1.25 \times 150 \text{psi} = 187.5 \text{psi}$?

Answer 2: No

Question 3: Should the reference to “design pressure” in Clause 13.3.8.1 actually be referencing “intended maximum operating pressure”?

Answer 3: Yes

Question 4: Similar situation as above, if this case was a repair piece of pipe with a higher thickness than required, is the “design pressure” referenced in clause 13.3.9.4 intended to be the “intended MOP”, in that the minimum test pressure required is $1.25 \times 100\text{psi} = 125 \text{psi}$?

Answer 4: Yes

Question 5: Should the reference to “design pressure” referenced in Clause 13.3.9.4 actually be referencing “intended maximum operating pressure”?

Answer 5: Yes

Posted Dec 21, 2021

The following interpretation regarding Table 4.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials* (Z662).



Question 1: Should concrete slab protected crossings be considered equally as good as “cased crossings”?

Answer 1: No

Question 2: Should concrete slab protected crossings have the same location factors as “cased crossings”?

Answer 2: No

Question 3: Does “All except uncased railway crossings” include concrete slab protected uncased railway crossings?

Answer 3: No

Posted Dec 21, 2021

The following interpretation regarding Table 7.3, 7.10, Clauses 7.8.1.5, 7.8.2.4, and 7.8.2.7 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Circumstances 1

A circumferential in-service sleeve welding procedure is qualified in accordance with Clause 7.17 and Table 7.10 with the run pipe in horizontal position. Welding is conducted using uphill progression.

Question 1a: Is this welding procedure qualified for pipe position with any inclination?

Answer 1a: Yes, as per Table 7.10

Question 1b: Or is it limited with pipe inclination up to 45 degree?

Answer 1b: No

Circumstances 2

A circumferential in-service sleeve welding procedure is qualified in accordance with Clause 7.17 and Table 7.10 with the run pipe in horizontal position. Welding is conducted using uphill progression.

Question 2: For a welder who made this test weld, or a welder who is tested with the run pipe in horizontal position, is the welder qualified for pipe position with inclination up to 45 degree?

Answer 2: Yes

Circumstances 3

As an alternative way to qualify the welder for in-service sleeve welding: If the welder is qualified on welding an in-service branch connection whose outside diameter is at least 50% of the outside diameter of the run pipe and the test weld was made with the branch on the side of the run pipe

Question 3a: In consideration of Clause 7.8.1.5 is the welder qualified for in-service sleeve welding?

Answer 3a: Yes

Question 3b: Does this testing qualify the welder for in-service sleeve welding on all positions and with no limitation on pipe inclination?

Answer 3b: Yes

Posted Dec 21, 2021

The following interpretation regarding Clauses 10.5, 10.6, and Figures 3 and 4 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*

Question 1: Can a counter-bore and taper be used as an end preparation to align materials of matching grade if the fitting wall thickness is greater than the matching pipe, this is not an explicit option in Figure 3, Recommended End Preparations?

Answer 1: Yes. Figure 3 is recommended but not exclusive.

Question 2: Is there a limit on the length of the transition region within a fitting, particularly for a counter bore and taper end preparation?

Answer 2: No, it is not addressed.

Question 3: Can a counter-bore and taper end preparation be used on a fitting if the grade is less than the matching pipe provided that the counterbore wall thickness is suitable for the material grade? Clause 10.6 and Figure 4 seem to prohibit it.

Answer 3: No.

Question 4: If 1) or 3) are yes, is it required that the fitting integrity, i.e. not impacting fitting pressure rating, is maintained when a counter-bore and taper end preparation is applied to a fitting be completed?

Answer 4: It is not addressed in the standard.

Posted Dec 21, 2021

The following interpretation regarding Clauses 1.2.3, 7.6.1.2, and 7.6.3.1 of CSA Standard Z245.1-18, Steel Pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: For the manufacture of CAT II pipe with OD <114.3 mm; is a Charpy test mandatory to prove pipe body notch toughness properties in the form of energy absorption and fracture appearance?

Answer 1: Yes, as per Clauses 1.2.3, 7.6.1.1, and 8.4.

Question 2: For the manufacture of CAT II pipe with OD <114.3 mm; is it acceptable for the manufacturer to certify material to CAT II without performing a Charpy test?

Answer 2: No, only materials with proven notch toughness as per Clause 1.2.3 may be certified as Catt II.

Question 3: Can the manufacturer prove pipe body notch toughness properties in the form of energy absorption and fracture appearance through other means? Clarification of 'other means': Other means to be defined by the manufacturer and shall guarantee the CAT II compliance of the material to the customer. An example of other means is a strict control on the chemical composition and steel making, forming and heat treatment process combined with Charpy tests formed on other, larger OD products, produced in the same conditions.

Answer 3: No, as per Clause 7.6.1.1 and 8.4

Posted Nov 22, 2021

The following interpretation regarding Clause 12.8.4.1 of CSA standard B139 Series, Installation code for oil-burning equipment, has been approved by the Members of the CSA Technical Committee on *Fuels and Appliances*.

Question: Are certified vent connectors complying with section 12.2 also subject to the requirements of section 12.8.4.1?

Answer: Yes

Note: Yes; however, a separate wall thimble is not required provided that the combustion venting product is certified to one of ULC-S604, ULC-S609 or ULC-S629 and includes the (otherwise optional) testing of a wall penetration unit for clearance to combustibles that meets the requirements of ULC-S641. For clarity, if the venting product is listed to one of those standards but was not evaluated for a wall penetration for clearance to combustibles, or is listed to ULC/ORD-C959, then a wall penetration device listed to ULC-S641 would still be required.

Posted Oct 28, 2021

The following interpretation regarding CSA C22.1:21, Canadian Electrical Code, Part I has been approved by the Members of the CSA Technical Committee on the *Canadian Electrical Code, Part I*.

Question: Is a storage-tank water heater considered a *heating device*?

Answer: Yes

Posted Jul 29, 2021

The following interpretation regarding Clause 11.2.4, of CSA Standard N393-13 has been approved by the Members of the CSA Technical Committee on *Fire protection for facilities that process, handle, or store nuclear substances (Z964)*

Question 1: Is it the intent of Subsection 11.2.4 to mandate that annual drill/response-exercises are performed onsite in order to test off site fire departments which may or may not fall under provincial regulations?

Answer 1: No

Question 2: Is the intent of Subsection 11.2.4 to perform annual drills of the onsite fire response team typically referred to as a fire brigade?

Answer 2: No

Note: The answer is “no” to both questions. The new edition wording will be updated to clarify these requirements. The annual drill is to test the nuclear facility’s overall fire response capability, whether it is an on-site fire brigade, off-site brigade or combination of them both.

Posted Jul 29, 2021

The following interpretation regarding Clause 7.10.1.3, of CSA Standard N393-13 has been approved by the Members of the CSA Technical Committee on *Fire protection for facilities that process, handle, or store nuclear substances (Z964)*

Question: CSA N393-13 Clause 7.10.1.3 states that ‘HEPA filters shall meet the combustibility requirements of ANSI/UL 586 and ANSI/UL 900.’ Nuclear facility ventilation systems usually require AG-1 (Section FC, HEPA Filters) compliant HEPA filters. AG-1 Compliant HEPA filters are available as compliant with combustibility rating of UL586, however not with UL900. AG-1 only accepts UL900 compliance for Medium Efficiency Filters (Section FB). Do HEPA filters that are compliant with AG-1 and UL586 meet the intent of CSA N393-13 Clause 7.10.1.3?



Answer: Yes. They meet the intent. The new edition clause will be updated to add clarification.

Posted Jul 29, 2021

The following interpretation regarding Clause 7.2.1.10.1 of CSA Standard N293-12 has been approved by the Members of the CSA Technical Committee on *Fire protection or Nuclear Power Plants (Z961)*

Question: CSAN293-12 Clause 7.2.1.10.1 overrides the requirement from CAN/ULC S527-11 Clause 4.11.2.1.C. Is this interpretation correct?

Answer: No.

Posted Jul 19, 2021

The following interpretation regarding Clause 6.2.6, Secondary Fuel Requirements, and Clause 6.2.7, Standby Fuel of CSA standard Z317.2, Special requirements for HVAC systems in health care facilities, has been approved by the Members of the CSA Technical Committee on Health Care Facilities (Z257.)

Question: Should electricity be subject to Article 6.2.6 when it is used as the primary source of heating?

Answer: No

Notes:

-There are other related clauses that speak to providing heat to a HCF in the event of failure. Please refer to the Clause 6.2.7 and the Note of Clause 6.2.6.

-Reliability from a supplier is not the intent of these clauses. The intent behind this clause is to ensure that in the event of unusually challenging conditions, the HCF can continue to operate. More specifically, clause 6.2.7 provides for the ability to operate a HCF as “an island” in the event of non-deliverable fuel. Depending on the situation (for example ice storms in Quebec), the only way for the HCF to provide heat to occupants would be by being self-reliant.

-Z317.2 stipulates conformance to back-up heating supplies and catastrophic events management as dictated by Z8000. - Therefore, conformance to the applicable sections of Z8000 is necessary in order to fully comply with Z317.2. That being said, conformance to Z317.2 requires conformance to clause 6.2.7, which in turn, dictates conformance with clause 7.9 of CSA Z8000.

-The answer is predicated on having two different energy sources (electricity and other fuel sources).

Posted Jul 19, 2021

The following interpretation regarding Clause L.4 of N285.0-08 Updates 1 & 2, has been approved by the Members of the CSA Technical Committee on CANDU Nuclear Power Plant Pressure-Retaining Systems and Components (Z953).



Question: Per CSAN285.0-08 Updates 1 & 2, Clause 7.8, for evaluating the as-built condition of Class 1, 1C, 2, 2C, 3, 3C or 4 components using Annex L, when there is no increase in the stresses but the total stresses remain above 80%, is a registration update/re-registration required?

Answer: Yes.

Posted Jul 19, 2021

The following interpretation regarding Clause 1.5, 2.2, 4.3.7.2 to 4.3.7.4, 10.3.7, 10.3.8, 10.7.1, 16.8.7, and Table 4.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

A pipeline is constructed to an earlier edition of CSA Z662 (e.g. 2015) and requires some instances of change as shown below (change in service, increase in MOP, resumption). The class location designation as assessed per Clause 10.7.1 has not changed since the 2019 edition has been released. The pipeline has also not had a new crossing per 10.8.1.

Question 1a: If the pipeline requires a change in service fluid (Clause 10.3.7) which modifies the application of the pipeline from one row in table 4.2 to another e.g. “Gas (non-sour service)” to “Sour service fluid”, or from “LVP liquid hydrocarbon (with low flammability)” to “LVP liquid hydrocarbon (with high flammability)” does the design thickness calculation have to use location factors and/or designations as determined by the 2019 edition?

Answer 1a: Yes

Question 1b: If the pipeline requires a change in service condition per clause 16.8.7, which does not change the application of the pipeline from one row in table 4.2 to another e.g. remains “sour service fluid” does the design thickness calculation have to use location factors and/or designations as determined by the 2019 edition.

Answer 1b: No

Question 2a: Is it the intent of the standard that, if the pipeline from the scenario in Q1a) requires a change in service fluid (Clause 10.3.7) from one type of LVP (other than fresh water), to another type of LVP (other than fresh water) e.g. from LVP multiphase to LVP liquid hydrocarbon (with high flammability) do the DGA requirements as specified in clauses 4.3.7.2 through 4.3.7.4 apply?

Answer 2a: No

Question 2b: Is it the intent of the standard that, if the pipeline requires a change in service fluid (Clause 10.3.7) from something other than LVP (e.g. Gas) to a type of LVP (other than fresh water), do the DGA requirements as specified in clauses 4.3.7.2 through 4.3.7.4 apply?

Answer 2b: Yes



Question 3: If the pipeline from the scenario in Q1a) requires upgrading to a higher maximum operating pressure (clause 10.3.8) does the design thickness calculation have to use class location factors and/or designations as determined by the 2019 edition?

Answer 3: Yes

The following interpretation regarding Clause 1.5, 2.2, 4.3.7.2 to 4.3.7.4, 10.7.1, 10.7.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

An LVP pipeline (other than freshwater) is constructed to an earlier edition of CSA Z662 (2015) and has been subject to a class location change as determined by clause 10.7.1 and 10.7.2 because of an increase in housing. This change in class location happens to have occurred by a river.

Question 1a: Does the company have to determine whether the river would be considered a DGA for this existing line per Clause 4.3.7.2?

Answer 1a: No

Question 1b: Does the company have to determine if a release from the pipeline can affect this river or other DGA's in the area that the company has previously designated as required by Clause 4.3.7.3?

Answer 1b: No

Question 1c: Would Clause 4.3.7.4 apply to the scenario in Question 1a?

Answer 1c: No

The following interpretation regarding Clause 1.5, 2.2, 10.7.1, 10.15.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

A pipeline is constructed to an earlier edition of CSA Z662 (e.g. 2015) and requires reactivation, per Clause 10.15.2, after a period of deactivation. Since the 2019 edition:

- The class location designation, as assessed per Clause 10.7.1, has not changed.
- The service fluid has not changed, as described in Clause 10.3.7
- There have been no new crossings per Clause 10.8.1.

Question 1a: Do the location factors and/or designations as determined by the 2019 edition now apply to the pipeline?

Answer 1a: No



Question 1b: Do the DGA requirements as specified in Clauses 4.3.7.2 through 4.3.7.4 of the 2019 edition now apply to the pipeline described in Question 1a?

Answer 1b: No

The following interpretation regarding Clause 1.5, 2.2, 4.3.7.2 to 4.3.7.4, 10.10.2.5.1, 10.10.2.5.2, 10.11.2.3.1, 10.11.2.3.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

An LVP pipeline (other than fresh water) is constructed to an earlier edition of CSA Z662 (e.g. 2015) and requires assessment of corroded areas per Clause 10.10.2.5.1 and assessment of grinding per Clause 10.11.2.3.1.

Question 1a: If the anomaly was in a location that could affect a DGA, do the limitations on location factor (Clause 4.3.7.4) apply to the equation in 10.10.2.5.1 or 10.11.2.3.1?

Answer 1a: No

Question 1b: If the pipeline was built to the 2019 edition and the anomaly was in a location that could affect a DGA, do the limitations on location factor (Clause 4.3.7.4) apply to the equation in 10.10.2.5.1 or 10.11.2.3.1?

Answer 1b: Yes

The following interpretation regarding Clause 1.5, 2.2, 10.7.1, 10.11.3 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Example scenario: A pipeline is constructed to an earlier edition of CSA Z662 (e.g. 2015) and requires permanent repair work per 10.11.3 (piping replacement). The class location designation, as assessed per Clause 10.7.1, has not changed since the 2019 edition has been released. The repaired sections of pipeline have also not been upgraded (had an increase in MOP) per clause 10.3.8, nor had a new crossing per 10.8.1.

Question 1: Does the design thickness calculation have to use class location factors and/or designations as determined by the 2019 edition?

Answer 1: No, provided the class location designation has not changed.

Question 2: Does the design thickness calculation have to consider DGA's as per Clauses 4.3.7.2 to 4.3.7.4?

Answer 2: No



The following interpretation regarding Clause 4 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: If a system is designed to ASME B31.3, per CSA Z662:19 Clauses 4.14.2.11 c) or 4.14.3.8 d), would the requirements of CSA Z662:19, Clauses 4.3.16 through 4.3.20 be applicable?

Answer 1: No

Question 2: Under 4.3.12.2 Is MSS-SP97 Integrally Reinforced Forged Branch Outlet Fittings—Socket Welding, Threaded and Buttwelding Ends considered an applicable component standard?

Answer 2: Yes

Question 3: Under 4.3.18 b), does the term “welding outlet fitting type” include fittings manufactured to MSS-SP97 Integrally Reinforced Forged Branch Outlet Fittings—Socket Welding, Threaded and Buttwelding Ends?

Answer 3: Yes

Question 4: Where permitted by Clause 4.3.18, can Clause 4.3.19 be used to establish the adequacy of the design for welding outlet fittings?

Answer 4: Yes

Question 5: CSA Z662:19, Clause 4.3.19, does not explicitly allow for proof testing as a viable option for determining the adequacy of the design of a branch connection. If a fitting is ordered to be in accordance with MSS SP-97 where the adequacy of the design is established by proof testing, are the calculations in CSA Z662:19, Clause 4.3.19 mandatory?

Answer 5: No

The following interpretation regarding Clause 4.1.10 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Is an Engineering assessment, as detailed in Clause 4.1.10, always required when designing a new pipeline

Answer 1: No

Question 2: Must the requirements of Clause 4.1.10 be applied to design focused engineering assessments, such as in 4.3.2.1 c)?

Answer 2: Yes



The following interpretation regarding Clause 4.3.14.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

In regard to the requirements of CSA Z662 4.3.14.2 to verify the maximum circumferential stress due to internal pressure at any location in wrought steel welding elbows and factory-made bends:

Question 1: Is this clause intended to apply to listed fittings, which have undergone successful analyses or proof testing?

Answer 1: Yes

Question 2: Is this clause intended to apply only to unlisted fittings and factory-made bends?

Answer 2: No

Question 3: If the answer to 1 above is yes, does this then override the Interpretation of Z245.11-17 Clause 5.1 posted on July 17, 2019 for design wall thickness for critical areas for fittings subject to successful burst testing?

Answer 3: No

Question 4: Does the actual measured wall thickness for critical areas need to comply with B31.3 304.2.1 for wrought steel welding elbows, if proof testing data indicates that it is unwarranted (proof testing indicates a lower wall thickness can be used)?

Answer 4: No

Question 5: Must the requirements of Clause 4.3.14.2 be satisfied in addition to any proof test results?

Answer 5: Yes

The following interpretation regarding Clause 4.7.1 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: May soil restraint, such as that provided by specified depth of cover or soil density, be considered as a “special design measure” per clause 4.7.1?

Answer: Yes

The following interpretation regarding Clause 4.14.2.1 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Clause 4.14.2.1 refers to individual “engine catwalks”. We seek the following clarification with respect to that term:

Question 1a: CSA Z662 offers no definition of “engine catwalk”. Is it correct to interpret that it is at the design engineer’s discretion how this definition is applied?

Answer 1a: Yes, see Clause 1.4

Question 1b: Does the term “engine catwalks” include catwalks providing access to all integral engine components, therefore two exits are not required?

Answer 1b: See answer to 1a

Question 1c: Does “engine catwalks” include catwalks providing access to the engine air intake for the main compressor driver, therefore two exits are not required?

Answer 1c: See answer to 1a

Question 1d: Does “engine catwalks” include catwalks providing access to the engine exhaust for the main compressor driver, therefore two exits are not required?

Answer 1d: See answer to 1a

Question 1e: Does “engine catwalks” include catwalks providing access to motors driving fans associated with building ventilation, therefore two exits are not required?

Answer 1e: See answer to 1a

Question 1f: Does “engine catwalks” include catwalks providing access to motors driving fans associated with heat exchanger equipment, therefore two exits are not required?

Answer 1f: See answer to 1a

Question 1g: Does “engine catwalks” include catwalks providing access to overhead cranes that service the main compressor driver, therefore two exits are not required?

Answer 1g: See answer to 1a

Clause 4.14.2.1 refers to “operating floor”. We seek the following clarification with respect to that term:

Question 2a: CSA Z662 offers no definition of “operating floor”. Is it correct to interpret that it is at the design engineer’s discretion how this definition is applied?

Answer 2a: Yes, see Clause 1.4

Question 2b: Is the term “operating floor” only applicable to the main floor area of a compressor building?

Answer 2b: No

Question 2c: Is the term “operating floor” only applicable to the situation when the compressor is in operating mode?

Answer 2c: No

Question 2d: For the purpose of “two exits” in design, does the term “operating floor” include catwalks designed to access specific elevated equipment for periodic maintenance purposes only?

Answer 2d: No

Clause 4.14.2.1 refers to “...elevated walkways or platforms 3m or more above ground...” We seek the following clarification with respect to that phrase:

Question 3a: Does the phrase “...elevated walkways or platforms 3m or more above ground...” include walkway(s) or platform(s) that are located outside of a “main compressor buildings”?

Answer 3a: No

Question 3b: In certain design situations, there could be practical limit for the size of a platform where two exits would be infeasible or pose additional risk due to congestion on the floor within main compressor buildings. Can the number of exits and allowable escape path length for elevated walkways or platforms 3m or more above ground or floor level be established by a site-specific risk/consequence analysis, performed by a competent engineering design professional?

Answer 3b: No

Question 4: The National Building Code of Canada has allowance for maximum areas and maximum egress lengths before two exits are required. Could the applicable building and fire codes be used to satisfy the requirements of CSA Z662 when determining the number of exits to be provided?

Answer 4: No

The following interpretation regarding Table 5.3 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does Note 18 to Table 5.3 apply to all sizes of ASTM A105 flanges?

Answer 1: Yes

Question 2: For the failures/incidents of ASTM A105 flanges that the addition of Note 18 to Table 5.3 is based on, what are the sizes of flanges involved? Do they involve any flanges of < NPS 4?

Answer 2: N/A



Question 3: Would the exemption of proven toughness requirement for components smaller than NPS 4 (and for valves of pressure class PN20), given in Clause 5.2.3.1, over-rule the Note 18 to Table 5.3 requirements, unless Note 18 is cited in the clause?

Answer 3: No, see answer to question 1

Question 4: Does Note 18 to Table 5.3 apply to ASTM A105 flange-ended valves also?

Answer 4: Yes

The following interpretation regarding Clause 5.3.5 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: In light of the changes to Clause 5.3.5 in Z662-19, and in consideration of stainless steel instrument and control tubing and piping specifically, are the design requirements of Z662-19 Clause 4.19 superseded by the design requirements of ASME B31.3?.

Answer 1: No, they are supplemental

Question 2: In light of the changes to Clause 5.3.5 in Z662-19, and in consideration of stainless steel instrument and control tubing and piping specifically, are the pressure testing requirements of Z662-19 Clause 8.4 superseded by the pressure testing requirements of ASME B31.3?.

Answer 2: Yes

The following interpretation regarding Clause 7.2.5 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Under the provision of CSA-Z662, scope Clause 1.8, is it permissible to perform field joining of pipelines (circumferential butt welds) with the fully automatic, autogenous welding process identified as Induction-Kinetic Welding (“IKW”), previously approved under ASME IX, Code Case #2799? This would be a logical extension of the scope already permitted under Clause 7.2.5.?

Answer: No, out of scope. Further clarification is provided in the commentary to Clause 1.8

The following interpretation regarding Clause 7.2.7, 14.4.2, Annex I of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it permissible to add a supplemental PQR to the WPS with partial testing only (e.g. impact testing only) to qualify an increase in carbon equivalent beyond that permitted in Clause 7.2.7?.

Answer: No, a full suite of testing is required per CSA Z662 Clause 14.4.2 (a) – (c)

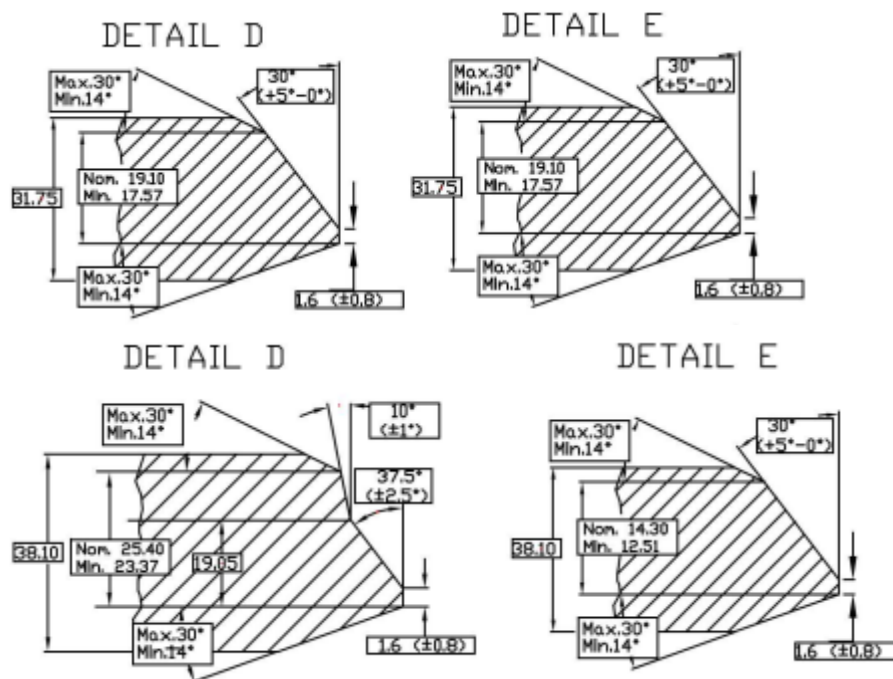
The following interpretation regarding Clause 7.7.8.3 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it the intent that acceptable “depth” measurement of a slag inclusion not exceed 1mm in any direction?

Answer: Yes

The following interpretation regarding Clause 7.9.15.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

NPS 36 and NPS 42 x 18, CSA Z245.11 Grade 483, Barred Tee, BW ends are being supplied by the manufacturer in quenched and tempered followed by PWHT condition (i.e., PWHT is completed after welding the scraper bars in Q&T tee) as per CSA Z245.11 clause 6.5.4 (b). These tees are fabricated from plates and are to be welded with CSA Z245.1 Grade 483 HQ (quench and tempered) pipe with nominal thickness of 22.1mm. The thicknesses of tees are 31.75mm and 38.1mm with a nominal thickness as shown below:



‘Detail D’ is for straight run end and ‘Detail E’ is for branch end

The tees are to be installed in Category II natural gas pipeline with MDMT -45 degree Celsius.



Question: Does Clause 7.9.15.2, mandate stress relieving for the girth welds between the above described pipe and trees to be completed at field using welding produce qualified under CSA Z662?

Answer: No

The following interpretation regarding Clause 8.7.7.4 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: When pressure testing in a controlled environment such as a heated shop is it acceptable to record the temperature of the testing fluid or pipe using a pressure/temperature recorder and record the ambient temperature using a thermometer?

Answer 1: No

Question 2: When pressure testing in a controlled environment such as a heated shop is it acceptable to record the ambient temperature one time during the testing period?

Answer 2: No

The following interpretation regarding Clause 10.6.1.1 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it the intent of Clause 10.6.1.1 i) to dictate that operating companies perform periodic depth of cover measurement, on every buried pipeline, even if pipeline patrolling has not indicated a change in ground condition or increased pipeline threat?

Answer: No

The following interpretation regarding Clause 10.11.4.3 a) i) of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: As stated in Clause 10.11.4.3 a) i), the sleeve system shall indicate an extrapolated sleeve system rated performance of at least 50 years. Given this requirement, does CSA consider 1000-hour survival testing as stated in Annex E.2.1 of ISO 24817, and Appendix V-2.1 of ASME PCC-2 Article 4.1, as adequate for determining long-term strains for the repair over a 50 year performance lifetime?

Answer: No



The following interpretation regarding Clause 10.13.1.1 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does the phrase “replacement of portions of pipeline systems” include replacement of piping as defined in clause 10.11.3?

Answer 1: Yes

Question 2: Does the phrase “replacement of portions of pipeline systems” in Clause 10.13.1.1 include abandoning existing piping in place and installing new pipe adjacent to the existing piping?

Answer 2: Yes

Question 3: If the answer to Question 2 is yes, does the standard specify a maximum allowable length for replacement?

Answer 3: No

Question 4: Does the phrase “replacement of portions of pipeline systems” in Clause 10.13.1.1 exclude removal of a section of existing piping and relocating the new piping to a different location to accommodate changes in surface land use?

Answer 4: No

The following interpretation regarding Clause 12.4.3 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: When performing a pressure upgrade of distribution piping in accordance with Clause 12.10.12, is Clause 12.4.3.6 intended to apply to historical polyethylene piping where RCP S4 data is not available?

Answer: Yes

The following interpretation regarding Clause 12.7.4 – 12.7.5 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: When joining piping within the scope of Clause 12, can a company choose to apply the requirements of Clauses 7.10.1.2, 7.10.1.3, 7.10.3, and 8.1.9 in addition to the requirements of Clauses 12.7.4 and 12.7.5?

Answer: Yes



The following interpretation regarding Clause 12.7.5.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does Clause 12.7.5.2 include all welds that cannot be pressure tested?

Answer: Yes

The following interpretation regarding Clause 13.1.8.1, 13.1.8.4, 13.1.8.5 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does a liquid test consisting of a 4 hour strength test at 1.25 x intended maximum operating pressure (MOP) followed by a 4 hour leak test at 1.1 x intended MOP, completed after test pressure stabilization, satisfy the requirements CSA Z662-19 Clauses 13.1.8.1, 13.1.8.4, and 13.1.8.5 such that the system can be assigned the intended MOP.?

Answer 1: No, the minimum test pressure for the concurrent test is 1.25 times the intended maximum operating pressure for 8 hours, per Clause 13.1.8.4 and 13.1.8.5

Question 2: If the answer to Question 1 is “No”, would the test described in Question 1 satisfy the requirements of CSA Z662-19 Clauses 13.1.8.1, 13.1.8.4, and 13.1.8.5 such that the system can be assigned a MOP that is 80% of the lowest test pressure obtained during the 8 hr test period specified in Clause 13.1.8.5 for a liquid test

Answer 2: Yes, provided that the requirements of Clause 13.1.9.1 are met.

The following interpretation regarding Clause 14.4.2, 16.6.2, Annex I of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it permissible to add a supplemental PQR to the WPS with partial testing only (e.g. impact testing only) to qualify an increase in carbon equivalent beyond that permitted in Clause 16.6.2 (as applicable)?

Answer: No, a full suite of testing is required per CSA Z662 Clause 14.4.2 (a) – (c)

The following interpretation regarding Clause 14.4.2 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: With respect to the requirement that welders and welding operators be qualified as specified in the ASME Boiler and Pressure Vessel Code, Section IX; is it permissible to use



volumetric (radiographic or ultrasonic) nondestructive examination in lieu of mechanical bend testing, where permitted in accordance with ASME B&PVC Section IX QW-304 and QW-305?

Answer 1: Yes

Question 2: In addition to the visual acceptance criteria specified in QW-194 of the ASME B&PVC Section IX, is the test weld also required to meet the visual acceptance criteria of ASME B31.3 normal fluid service?

Answer 2: No

Question 3: With respect to the requirement that each test weld shall meet the normal fluid service acceptance criteria of ASME B31.3; is it permissible to solely use visual examination to verify conformance to this requirement?

Answer 3: No

Question 4: If the answer to question 3 is no; is volumetric (radiographic or ultrasonic) nondestructive examination required to verify conformance to the normal fluid service acceptance criteria of ASME B31.3

Answer 4: Yes

The following interpretation regarding Clause 14.4.2 b) of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: If a Welding procedure qualification test (PQR) is qualified using “Unlisted materials” as defined in Clause 14.1.5 b), but are listed with a P Number and Group Number in ASME Section IX, Table QW/QB-422; Can this PQR also be used to support a WPS written to weld materials listed in ASME Section IX, Table QW/QB-422 with the same P Number and Group Number that are defined as “Listed Materials” in Clause 14.1.5, a) in elevated temperature pipeline applications providing the same welding consumables are used in production as those used for the PQR as mentioned in Clause 14.4.2 b)?

Answer: Yes, provided the PQR tensile properties meet the requirements of B31.3 Table A-1 for the material to be welded.

The following interpretation regarding Clause 14.4.2 b) of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: If a Welding procedure qualification test (PQR) is qualified using two separate “Unlisted materials” as defined in Clause 14.1.5 b); Can this PQR be used to support a WPS written to weld one of the “Unlisted materials” but specified in ASME section IX QW/QB-422 and within the same group # to itself providing the same welding consumables are used in production as those used for the PQR as mentioned in Clause 14.4.2 b)?

Answer: Yes, provided that the tensile results of the weld tensile tests meet the minimum specified material tensile requirements of the material being joined.
(e.g. in the case of a WPS qualified using a PQR that documents a test weld between Gr.448 and Gr.550 material, the WPS may also be used for welding Gr.550 to Gr.550 provided that the PQR cross-weld tensile test fails at a stress not less than the specified minimum tensile strength of Gr.550. The WPS could also be used for welding Gr.448 to Gr.448.)

The following interpretation regarding Clause 14.4.3 of CSA Standard Z662:19, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: For Clause 14 design, does Clause 14.4.3 refer users to ASME B31.3-16 paragraph 328.4 Preparation for Welding?

Answer 1: Yes

Question 2: For Annex I design, does Clause 14.4.3 refer users to ASME B31.3-16 paragraph 328.4 Preparation for Welding?

Answer 2: Yes

Question 3: For Annex I design, does Clause 14.4.3 refer users to ASME B31.3-16 paragraph K328.4 Preparation for Welding (in B31.3 Chapter IX High Pressure Piping)?

Answer 3: No

The following interpretation regarding Clause Modifying Pretested Pipe of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: The pretested pipe requires an internal taper (as shown in figures 7.2 (b), (c) or (d)). The internal taper is completed after the pipe was pretested. Does the pipe require retesting in accordance with the requirements of clause 8?

Answer #1: No

Question #2: The pretested pipe requires an internal taper – made by a counter bore of a length of 100 mm for example, and an internal taper. The counter bore and internal taper is completed after the pipe was pretested. Does the pipe require retesting in accordance with the requirements of clause 8?

Answer #2: Yes



The following interpretation regarding Clause Pump stations of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Would every pump larger than 375kw used to pump oil industry fluids located within a pipeline tank farm be considered to be a pump station and therefore subject to the requirements in the CSA Z662 standard for pump stations?

Answer 1: No

Question #2: Would a tank farm containing oil industry fluids and pumps larger than 375 kW be expected to meet the requirements of a pump station?

Answer 2: Yes

The following interpretation regarding Table 4.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Can an engineering assessment per Clause 10.7 be used to continue operation of a pipeline at the original operating conditions after installation of a railway or other crossing per Clause 10.8?

Answer #1: Yes

Question #2: Is it possible to modify the location factor shown in Table 4.2 as a result of an engineering assessment except as permitted for gas pipelines in Table 4.2?

Answer #2: No

Question #3: Can an engineering assessment per Clause 10.7 include the use of an engineered concrete slab to allow continued operation of a pipeline at the original operating conditions after installation of a railway or other crossing per Clause 10.8?

Answer #3: Yes

Question #4: Would the applicable location factor in Table 4.2 change for a pipeline if the design includes the use of an engineered concrete slab except as permitted for gas pipelines per Table 4.2?

Answer #4: No

The following interpretation regarding Clause 4.2.3, 4.2.4 & 4.8.5 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is the frequency and duration of a load considered when categorizing a load as “other sustained force”?

Answer #1: No, other sustained forces do not have a frequency or duration.

Question #2: Is the intention of Clause 4.8.5 to limit longitudinal stresses in the pipe from sustained forces and wind loading only as defined by Clause 4.2.3, i.e. not other loading and dynamic effects as defined by Clause 4.2.4?

Answer #2: Yes

Question #3 a): Should all sustained forces from operations be included in 4.8.5? I.e. All loads identified under Clause 4.2.3?

Answer #3 a): Yes

Question #3 b): Should all dynamic loads from operations be included in 4.8.5? I.e. All loads identified in Clause 4.2.4?

Answer #3 b): No

Question #4: Should all loads other than temperature (per Clause 4.2.2) imposed on the system be classified in either Clause 4.2.3 or Clause 4.2.4?

Answer #4: Yes

Question #5: Are there any guiding document which can be used to establish an appropriate frequency / duration for a load to be considered “Other sustained force” or “Other loading and dynamic effects”?

Answer #5: Not Applicable, see Clause 1.4

Question #6: Are all loads resulting from either: pressure / temperature / fluid momentum to be considered “Other Sustained Force”?

Answer #6: See Answers to Question 3A and 3B

Question #7: What should be included in 4.8.5?

- 1) Axial Membrane Stresses:
 - a) End Cap Axial Force from Pressure:(comment: currently only axial membrane stress listed in 4.8.5 which is being approximated by $PD/4t$ or $0.5Sh$)
 - b) Should other axial membrane stresses be included?
- 2) Bending Stresses for Dead, Static, and Dynamic loading due to operations:
 - a) weight of pipe, components, contents, insulation cover: (currently how code reads)
 - b) wind loading: (currently how code reads)
 - c) water hammer
 - d) change in fluid momentum
 - e) Pressure relief devices / Pressure safety valves (regardless of frequency or duration...)
 - f) Gas thrust loads (regardless of frequency or duration...)

Answer #7: Clause 4.2.3 is sufficiently clear for Question 7.

Question #8: Any load listed from Clause 4.2.4 could be “upgraded” to be included as “Other Sustained Force” and evaluated to Clause 4.8.5 if desired?

Answer #8: Design is based on engineering judgment which may allow some loads to be reclassified, and documentation may be required.

Question #9: An operating load based on an analysis of its frequency and duration may be categorized as “Other loading and dynamic effect”?

Answer #9: Clause 4.2.4 is sufficiently clear for Question 9.

Question #10: Guidance is not specifically addressed in this Standard for “Other loading and dynamic effects” (4.2.4), another industry standard could be used as “Industry best practice” for a load categorized as “Other loading and dynamic effects”

Answer #10: True, but refer to the Authority having Jurisdiction.

Question #11: Other Standards which would be appropriate (not inclusive):

- 1) Boiler and pressure vessel standard
- 2) ASME B31.X
- 3) CSA Z662 Annex C Limit States Design
- 4) European Standards
- 5) ISO Standards
- 6) DNV Standards

Answer #11: Refer to the Authority having Jurisdiction.

Question #12: CSA Z662-15 Clause 4 does not list additional stress limits for “Other loading and dynamic effects”

Answer #12: There are no specific values given, but there are limits; but see Clauses 4.3.1.1 and 4.2.1.2.

Question #13: Adoption of section 4.0 of CSA Z662 means the following approach should be implemented from stress perspective:

- 1) “Other loading and dynamic effects” should be limited to the elastic stress region based on 4.6.1?
- 2) The effective stress should be calculated based on the TRESCA method (Shear Stress)
- 3) The effective stress should be calculated based on the VonMises method (Distortion Energy)
- 4) The designer must establish supplemental design criteria in addition to Clause 4.6-4.10 to ensure adequate safety levels for other loading and dynamic effects?

Answer #13: Not Applicable, see Clause 1.4



The following interpretation regarding Clause 4.3.1.1 & 4.12.1.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: May ASME Boiler and Pressure Vessel Code (Section VIII, Division 2) referenced in Clause 4.3.1.1 be used for designing a pipeline for excessive overburden that could be caused by frequent vehicle traffic at non-cased crossings?

Answer #1: Yes

Question #2: Does the Clause 4.3.1.1 Note 2) specifically refer to the Section 4.4.12 of ASME Boiler and Pressure Vessel Code (Section VIII, Division 2) 2015 for the purpose referenced in above question #1?

Answer #2: No

Question #3: May ASME Boiler and Pressure Vessel Code (Section VIII, Division 2) referenced in Clause 4.3.1.1 be used for designing a pipeline for the fatigue evaluation that could be caused by frequent vehicle traffic at non-cased crossings?

Answer #3: Yes

Question #4: Does the Clause 4.3.1.1 Note 2) specifically refer to Section 5.5 of the ASME Boiler and Pressure Vessel Code (Section VIII, Division 2) 2015 for the purpose referenced in above question #3?

Answer #4: No

Question #5: Does the Clause 4.12.1.1 Note apply to the “other crossings”?

Answer #5: No

Question #6: In Clause 4.12.1.1 are non-cased utilities, roads, railways, and water crossings considered “other crossings”?

Answer #6: No

Question #7: In Clause 4.12.1.1 Note, is the reference to Warman, Hart and Francini (2009) the same as the CEPA Final Report No. 05-44R1?

Answer #7: Yes

The following interpretation regarding Clause 4.3.5.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Pipeline pipe wall thicknesses that have been calculated and rounded can sometimes result in rounding down a calculated minimum wall thickness.



For example:

$P = 9930 \text{ kPa}$, $S = 483 \text{ MPa}$, $OD = 1067 \text{ mm}$, $F = 0.800$, $L = 0.550$

This combination of design parameters results in a calculated wall thickness of 24.928 mm.

Rounding as per the Note under Clause 4.3.5.1 in Z662-15, this wall thickness becomes 24.9 mm.

If the design pressure is back calculated using this wall thickness, the calculated value is 9919 kPa.

Question: Does the intended design pressure of 9,930 kPa still apply after rounding?

Answer: Yes

The following interpretation regarding Clause 4.3.8 & Table 4.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Would Spiral Welded Pipe have a joint factor of 1.0? If no, is there any joint factor to use?

Answer: Yes. Provided the pipe is SAW. Clause 4.3.8 refers to helical seam (i.e. spiral)

The following interpretation regarding Clause 4.3.12.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Confirmation that “strainer” as mentioned in Clause 4.3.12.3 applies to fabricated basket strainers as a fabricated assembly, where the basket strainer body may be perpendicular to the flow within the pipeline.

Question #1: Applies to fabricated carbon steel basket strainers regardless of size or pressure rating. Design as per Z662 for fabricated assembly.

Question #2: With reference to question #1, can be applied to fabricated carbon steel basket strainers with quick-opening closures, provided the closure is designed in accordance with Clause 4.3.13.

Question #3: Fabricated carbon steel basket strainers need not have independent pressure relieving devices (for example, as required by ASME Section 8 Div 1 UG-125), provided the basket strainer is always directly connected to a piping system that has overpressure protection in accordance with Clause 4.18 and has an appropriate MOP.

Question #4: Fabricated carbon steel basket strainers as defined above do NOT need to be designed as pressure vessels per the requirements of B51.

Answer #1: Yes

Answer #2: Yes



Answer #3: Yes

Answer #4: Yes

The following interpretation regarding Clause 4.4.4 & 4.4.5 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: In the case where an engineering assessment is not completed, is it appropriate to use the valve spacing's listed in Table 4.7 under Clause 4.4.5?

Question 2: In the case where a pipeline segment contains more than one class location, does the valve spacing in Table 4.7 for the higher class location apply to each individual length of that higher class location, regardless of length?

Question 3: In the case of a pipeline segment containing more than one class location, could an engineering assessment be used per Clause 4.4.4 to determine the number and location of sectionalizing valve which could result in spacing different from Table 4.7?

Answer 1: Yes

Answer 2: Yes, the distance between sectionalizing valves shall not exceed the distance stated in Table 4.7 for every length of the higher class location.

Answer 3: Yes

The following interpretation regarding Clause 4.5.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Other than for Sour Service, provided that conditions a, b, and d, of Clause 4.5.2 are not present, if the pipe is smaller than 60.3mm OD, and the pressure is larger than 3.5 MPa, can threaded connections be used?

Question #2: Other than joints for instrument piping, are there any other circumstances where threaded joints can be used in HVP?

Answer #1: Yes

Answer #2: No

The following interpretation regarding Clause Table 4.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: In table 4.1 Class 2 has a number of sub-sections including:

- d) an industrial installation (e.g., a chemical plant or a hazardous substance storage area) where release of the service fluid from the pipeline can cause the industrial installation to produce a dangerous or environmentally hazardous condition.

Can you please clarify if the application of the above clause is correct?

When routing a pipeline near an existing well pad does the “Area Classification” necessarily change from a Class 1 to a Class 2, due to Clause D if the well pad is classified as a Sour Service, compared to a non-sour service well pad? Note all other aspects satisfies a class I designation.

Answer: No, a designation of Class 2 location is not required solely due to sour service.

The following interpretation regarding Clause Table 4.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Would at least two components that are separated by a distance of less than 10 pipe diameters fabricated and tested in a shop prior to installation in a pipeline system be considered a fabricated assembly?

Question 2: Would at least two components that are separated by a distance of less than 10 pipe diameters fabricated on site, tested or not, prior to installation in a pipeline system be considered a fabricated assembly?

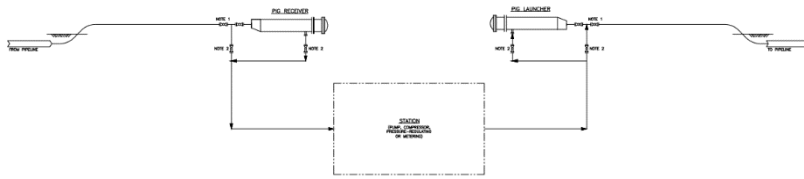
Question 3: Would at least two components that are separated by a distance of less than 10 pipe diameters that are directly joined into a pipeline system without any prefabrication be considered a fabricated assembly?

Question 4: If pipe and components are to be installed in a location that can be classified as multiple location factors listed in Table 4.2 such as a fabricated assembly in a station, does the most stringent location factor apply?

Question 5: Is a pig trap considered a fabricated assembly if assembled prior to being joined into the pipeline system?

Question 6: For traps located at a station (compressor, metering, pump or pressure regulating), could the mainline valves on the pipeline side of the pig traps labeled Note 1 be considered station isolation valves in the sketch below?

Question 7: For traps located at a station (compressor, metering, pump or pressure regulating), could the valves adjacent to the pig trap (side valve and kicker valve) labeled Note 2 be considered station isolation valves in the sketch below providing all four valves are closed?



Question 8: Must all fabricated assemblies (e.g., pig traps) installed outside of a station’s isolation valves be considered "other" when selecting the applicable location factor?

Answer 1: Yes, in accordance with the Clause 2 definition of “fabricated assembly”

Answer 2: Yes, in accordance with the Clause 2 definition of “fabricated assembly”

Answer 3: No, in accordance with the Clause 2 definition of “fabricated assembly”

Answer 4: Yes

Answer 5: Yes, in accordance with the Clause 2 definition of “fabricated assembly”

Answer 6: Yes

Answer 7: Yes

Answer 8: No, the most stringent applicable location factor in Table 4.2 applies

The following interpretation regarding Clause Table 4.8 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: CSA Z662 table 4.8 provided SIF calculation for welding tee per CSA Z245.11. Code CSA Z245.11 covers extruded fittings. Does Table 4.8 in CSA Z662-11 provide SIF calculation for extruded tees per CSA Z245.11?

Answer: Yes

The following interpretation regarding Clause 4.10 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Does the term “designed to operate at ...” mean normal operating pressure of the piping system i.e. not design pressure of the system?

Question #2: Does the term “designed to operate at ...” mean design pressure of the piping system?

Answer #1: No



Answer #2: Yes

The following interpretation regarding Clause Table 4.10 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is the minimum wall thickness given in Table 4.10 to be maintained over the life of the pipeline?

Answer: No

The following interpretation regarding Clause 4.14.2.11 b) & 4.14.3.8 c) of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1 a): Does CSA Z662 require the company to define an identification system that is suitable for the facility?

Question 1 b): Does CSA Z662 permit the “function” of the aboveground piping based on the company-defined identification system referring to:

- | | | |
|----|---|------|
| 1) | Product type (e.g., natural gas, steam, oil, H ₂ S)? | Prod |
| 2) | direction? | Flow |
| 3) | temperature? | Tem |
| 4) | additional characteristics? | Any |

Question 1 c): If yes to 1) b) iv) above, does CSA Z662 permit the terms describing the function of the piping such as “suction”, “discharge”, “vent”, “drain” be used to identify the function?

Question 2 a): Does CSA Z662 permit that a label, a sign or a color code on the piping satisfy the requirement for clear identification of function of the piping?

Question 2 b): Is a diagram posted inside the station (without physical identification of the piping) sufficient to clearly identify the function of the piping?

Question 2 c): Is a diagram posted inside the station, in addition to some form of identification of the piping, sufficient to clearly identify the function of the piping?

Question 3: Does CSA Z662 require above ground piping at a given station to be identified for its function?



Question 4: Does CSA Z662 require identification of the function of the above ground station piping as a whole? E.g.: compressor station X or pump station Y?

Answer 1 a): Yes

Answer 1 b) i): Yes

Answer 1 b) ii): Yes

Answer 1 b) iii): Yes

Answer 1 b) iv): Yes

Answer 1 c): Yes

Answer 2 a): Yes

Answer 2 b): No

Answer 2 c): Yes

Answer 3: Yes

Answer 4: No

The following interpretation regarding Clause 4.14.3.2 & 4.18.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Are paragraphs 4.18.3 and 4.14.3.2 against each other?

Question #1: Paragraph 4.18.3 addresses pressure relieving and allows relief into air. Can HVP product be discharged to air through discharge stack?

Question #2: Paragraph 4.14.3.2: Flare and drain systems shall be subject to the following requirements:

- a) _____ Pipin
g systems that handle HVP liquids shall blowdown or relieve to a flare system or to pressure retaining storage.

Is “blowdown” always intended to be a deliberate act of relieving pressure?

Question #3: Is “Relieve” always intended to be the release of pressure by some safety device?

Answer #1: No

Answer #2: No

Answer #3: No

The following interpretation regarding Clause 4.18 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Do you agree or disagree with the following statements:

- a) "other causes" listed in 4.18.1.2 include thermal expansion case (liquid pipelines).
- b) "other causes" listed in 4.18.1.2 does not include fire-case considerations.
- c) It is not permissible to consider the point at which "chattering/simmering" of a pressure relieving device occurs as the set point.
- d) Overpressure protection specified in 4.18.1.2 must be set at or below the maximum operating pressure of the pipeline system it is protecting.
- e) Where surges or other transient events as listed in 4.18.1.3 are expected to occur and result in pressures exceeding the maximum operating pressure of the pipeline system, overpressure protection will be required.
- f) Pressure relieving system parameters shall be considered in order to confirm the maximum operating pressure is not exceeded by 10% or 35kPa, whichever is greater, as specified in 4.18.1.2. Such parameters include device sizing, device location, response time, fluid compatibility and discharge piping size/configuration.

Answer a): Agree

Answer b): Disagree

Answer c): N/A

Answer d): Disagree. Overpressure protection shall meet the requirements of Clause 4.18.1.2

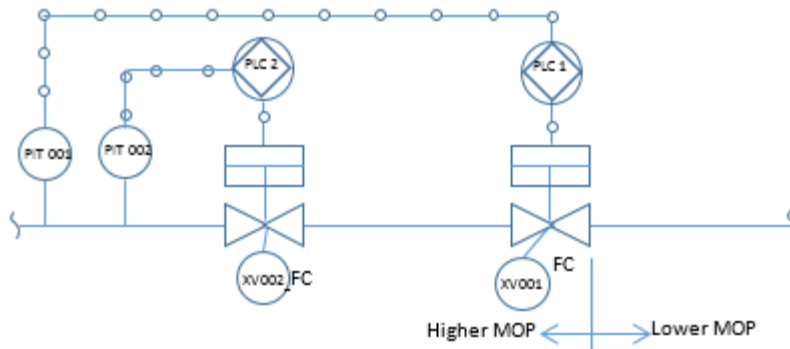
Answer e): Agree

Answer f): Agree, other parameters may be considered

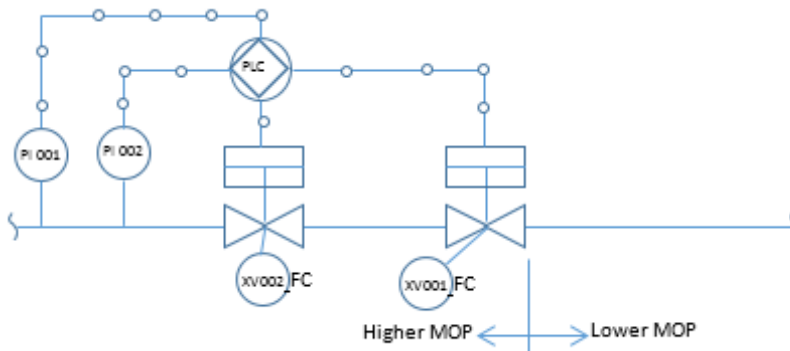
The following interpretation regarding Clause 4.18.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: The pressure control and overpressure protection for a pipeline as required by Clause 4.18.2 is accomplished by a local control system as described in Annex M.5 and inspected, assessed and tested in accordance with Clause 10.9.5.2. The local control system incorporates

programmable logic controllers (PLCs). Does Clause 4.18.2 a) require two completely separate PLCs to be provided as shown below?



Question 2: If the answer to Question 1 is “no”, would two separate and independent control loops within a single PLC as shown below, satisfy the requirements of Clause 4.18.2; provided that failure of one system cannot lead to failure of the other system?



Answer 1: No

Answer 2: Yes

The following interpretation regarding Clause 4.21.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: In Clause 4.21.1 there is a requirement for all gas concentration in the atmosphere in excess of one-fifth of the lower explosive limit to be “readily detectable”. Does this mean detectable by an olfactory senses only (sniff/odometer test) to confirm presents of gas in air?

Answer: Yes



The following interpretation regarding Clause Table 5.2 & 5.3 (Z662-19 Table 5.3) of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Do Z662-15, Z662-19 or Z245.1-18 include minimum Charpy absorbed energy requirements for Cat I pipe?

Answer: No

The following interpretation regarding Clause 5 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does CSA Z662 permit the use of ASTM A516 Gr. 70 used for the fabrication of bleed rings/spacers/line blanks/spectacles?

Answer: Yes. Provided the provisions of Clause 5.1.3 are met.

The following interpretation regarding Clause 5.2.6.4 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Where a branch connection terminates with a valve and a blind flange, is it permissible to drill and tap the blind flange to a size of NPS 1 for the purpose of adding a vent valve, where the vent valve would be used for confirmation that the branch connection valve is not leaking, prior to removal of the blind flange for a future connection?

Answer: Yes

The following interpretation regarding Clause 5.2.6.4 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Do the words “instrumentation and pressure testing” include tapping a flange up to NPS 1

- a) instrumentation piping connections (pressure gages, sensors, etc.)? for
- b) fluid sampling and testing (dew point, composition, etc.) purposes? for
- c) ensure no pressurized fluid is trapped (pressure testing)? to
- d) a section of piping (e.g., between a valve and a blind flange)? vent



Answer a): Yes

Answer b): Yes (while this is not covered by the literal meaning this is the intent of the Clause).

Answer c): Yes (while it isn't clear in the clause, this is the intent as this would be required for instrumentation purposes).

Answer d): Yes (while this is not covered by the literal meaning this is the intent of the Clause).

The following interpretation regarding Clause 5.2.6.4 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: If the blind flange is drilled and a weld connection (flat socket-weld-olet) is used (in lieu of a threaded connection) specifically for a drain connection, is this acceptable?

Answer: Not applicable, this clause does not address welded connections.

The following interpretation regarding Clause 7.2.4 – 7.2.5 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: If Welding Procedures that have been qualified in accordance with ASME B&PV Code Section IX are used (in accordance with either Clause 7.2.4 or 7.2.5 as applicable) does the Procedure need to address, or is the procedure limited to, the Essential Variables specified in Clause 7.6.5/Table 7.3 of CSA Z662?

Question #2: If Welding Procedures that have been qualified in accordance with ASME B&PV Code Section IX are used (in accordance with either Clause 7.2.4 or 7.2.5 as applicable) does the Procedure only need to address the Essential/Supplementary/Non-Essential Variables specified in ASME B&PV Code Section IX?

Question #3: If Welders that have been qualified in accordance with ASME B&PV Code Section IX are used (in accordance with either Clause 7.2.4 or 7.2.5 as applicable) does the Welder Qualification need to address, or is the welder limited to, the requirements and qualification range specified in Clause 7.8 of CSA Z662?

Question #4: If Welders that have been qualified in accordance with ASME B&PV Code Section IX are used (in accordance with either Clause 7.2.4 or 7.2.5 as applicable) does the Welder Qualification only need to address the Essential Variables specified in ASME B&PV Code Section IX?

Answer #1: No

Answer #2: Yes. Provided the requirements of Clauses 7.2.4 or 7.2.5 are met.



Answer #3: No

Answer #4: Yes

The following interpretation regarding Clause 7.2.6 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Does Clause 7.2.5 of CSA Z662 permit the use of CSA type materials (which do not have P-numbers and group numbers assigned by ASME Section IX) to be given corresponding P-numbers and group numbers based on Table 7.1?

Question #2: May these materials be used to qualify welding procedure specifications according to the rules of ASME Section IX, for sole use in CSA Z662 construction when the additional requirements of Clause 7.2.5 are met?

Question #3: Can the completed procedure (developed with materials specified in question 1 and 2) then be used to weld CSA type materials and/or ASME type materials within the requirements of Z662?

Answer #1: Yes, as per Clause 7.2.5 c) and the reference to Clause 7.2.6

Answer #2: Yes, as per Clause 7.2.5 c) and the reference to Clause 7.2.6

Answer #3: Yes

The following interpretation regarding Clause 7.6.4.4 c) of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Does 7.6.4.4 c) require that a welding procedure specification have a minimum yield strength specified for the base metal such that the welding procedure specification would only apply to base materials with a yield strength equal to or greater than that specified minimum value?

Question #2: Does 7.6.4.4 c) mean that in addition to the specifying the grade of the base material in 7.6.4.4 b), the welding procedure specification requires the specified minimum yield strength of that base material to also be specified?

Answer #1: No

Answer #2: Yes



The following interpretation regarding Clause 7.9.16.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Does the 31.8 mm effective throat thickness apply to split tee hot tap fittings that are being installed in the field?

Question #2: When utilizing clause 7.2.5 for maintenance in-service welding to utilize ASME IX qualified welding procedures in conjunction with Table 7.10 Part 2, does ASME B31.3 thickness limitations for PWHT apply instead of CSA Z662 Clause 7.9.16.1?

Question #3: Does the CSA Z662 code permit alternatives to PWHT such as those listed in the NBIC NB-23?

Answer #1: Yes

Answer #2: No

Answer #3: No

The following interpretation regarding Clause 7.10.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: If a pipeline is located under the paved shoulder of a road, but follows the road in parallel for several kilometers before actually crossing it, are 100% non-destructive inspections required on all joint welds for the full length of the pipe?

Answer: Yes

The following interpretation regarding Clause 7.10.3.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: If an individual spool piece has been fabricated and pressure tested (strength/leak testing per Clause 8 of CSA Z662) in a shop or another location remote from site (location of installation) and the spool will not be pressure tested again once installed at site (e.g. – “pre-tested” piping), is it acceptable for only 15% of the welds made each day on this spool be non-destructively examined in accordance with Clause 7.10.3.1?

Question #2: If an individual spool piece has been fabricated and pressure tested (strength/leak testing per Clause 8 of CSA Z662) in a shop or another location remote from site (location of installation) and the spool will not be pressure tested again once installed at site (e.g. – “pre-tested” piping), must 100% of the welds on this spool be non-destructively examined in accordance with Clause 7.10.3.1?

Answer #1: No

Answer #2: Yes

The following interpretation regarding Clause 7.11.11 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is the intention of Clause 7.11.11.2 and &.11.11.3 that, if a burn-through indication is greater than the dimension specified and the density within this indication does not exceed the density of the thinnest adjacent parent material, that the indication is acceptable?

Answer: No

The following interpretation regarding Clause 7.14.9 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: To satisfy the radiographic film retention requirements as specified in CSA Z662-15 Section 7.14.9, provided the original film has been interpreted per CSA Z662-15 Section 7.11, would an unaltered digitalized version of the code compliant film viewed on a high resolution monitor where the essential wire is visible be an acceptable substitution in the event the original is lost or destroyed?

Answer: No

The following interpretation regarding Clause 7.15.6 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Clause 7.15.6 addresses the qualification requirements for ultrasonic technicians, but does not address the qualifications required for ultrasonic technicians performing Phased Array (PA) and Time of Flight Diffraction (TOFD) examinations. The qualification/certification document for ultrasonic technicians, CAN/CGSB-48.9712/ISO 9712, does not include the qualification of PA or TOFD technicians.

Is it a requirement that the technician be certified to another ISO 9712 standard that does include a PA or TOFD certification, e.g. PCN or CSWIP?

Question 2: Is an in-house PA or TOFD certification, e.g. SNT-TC-1A, an acceptable certification provided the technician has a CGSB UT certification?

Answer 1: No

Answer 2: Outside the scope of Z662



The following interpretation regarding Clause 7.15.6 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: I am inquiring to clarify the intended meaning of the “/” between the, CAN/CGSB-48.9712 “/” ISO 9712 under clause 7.15.6 of CSA Z662. As several other certification schemes are recognized as being ISO 9712 compliant is it the intention of “CAN/CGSB-48-9712/ISO 9712” to be meant as

- a) an “or” which indicates a choice of certification?
- b) an “and” indicating that both (CGSB and ISO) schemes are required for compliance?

Question #2: Does qualification of personnel to only CAN/CGSB 48-9712 meet the requirements of Clause 7.15.6 of CSA Z662-15?

Question #3: Does qualification of personnel to only an ISO-9712 scheme meet the requirements of Clause 7.15.6 of CSA Z662-15?

Question #4: Does qualification of personnel to a company initiated in house certification scheme based on the requirements of CAN/CGSB-48-9712 or ISO-9712 meet the requirements of Clause 7.15.6 of CSA Z662-15?

Question #5: Does the punctuation placement of the forward slash indicate a minimum accreditation requirement being equal to CGSB-48-9712 or ISO 9712 is required for compliance to 7.15.6 of CSA Z662-15?

Question #6: The commentary for clause 7.15.6;

“Although certification by CGSB is an acceptable verification of the radiographer’s qualifications, certification is considered to be an administrative requirement and therefore it is not permitted to be included as a requirement in the Standard.”

A.) Does
this imply that qualification schemes (CAN/CGSB-48-9712 or ISO-9712) are not enforceable as a requirement by CSA but that this responsibility falls on the specifications built by companies for contractors to follow? Meaning an in house certification scheme would be sufficient with or without a CAN/CGSB-48-9712 or ISO-9712 qualification?

B.) Does
the above statement imply that qualification to CAN/CGSB-48-9712 or ISO-9712 is required as well as company certification to the specific system or ultrasonic technique in use?

Question #7: Where Radiographers are discussed in the commentary section for clause 7.15.6 is Radiographer intended to mean Ultrasonic technician?

Question #8: What is CSA’s official definition of a technicians qualification vs a technicians certification?

Answer #1 a): No, this is a single document reference



Answer 1 b): No, this is a single document reference

Answer #2: Refer to the answer to question 1

Answer #3: Refer to the answer to question 1

Answer #4: No

Answer #5: Refer to the answer to question 1

Answer #6: CSA does not provide interpretations on non-consensus documents. The Commentary is not part of the Standard and has not been formally reviewed or approved by the Technical Committee. Please refer to the first page of the Commentary

Answer #7: CSA does not provide interpretations on non-consensus documents. The Commentary is not part of the Standard and has not been formally reviewed or approved by the Technical Committee. Please refer to the first page of the Commentary

Answer #8: N/A, not within the scope of the Standard

The following interpretation regarding Clause 7.15.10.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: If a girth weld AUT scan shows several indications within a 300 mm cumulative length (as determined by their signal exceeding 40% screen height), is it necessary to include the portion between the indications with a signal below 40% of screen height as part of the indication length?

Question 2: If a girth weld AUT scan shows a weld indication (as determined by its signal exceeding 40% screen height) that is less than 300 mm in length, is it required that the ultrasonic signal from both before and after be examined to determine if the indication might extend beyond the length where the signal exceeds 40% screen height?

Question 3: If the indication described in question 2 does display an ultrasonic signal below 40% of screen height, does it have to be included as part of the total length?

Question 4: If a girth weld AUT scan shows a signal that is less than 40% screen height, does the signal from both adjacent AUT channels have to be examined to determine if an indication exceeding 40% signal height lies across two adjacent AUT channels, and then its length be assessed as a single indication?

Answer 1: No, in accordance with the Standard, a signal with less than 40% screen height is not an indication

Answer 2: No

Answer 3: Not Applicable

Answer 4: The question is not relevant

The following interpretation regarding Clause 8.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does a valve (with flanged end connections) that has been manufactured and pressure tested in accordance with a recognized standard (e.g. CSA Z245.15, API 600, ASME B16.34, etc.), and the pressure testing requirements of that standard are less onerous than the requirements in Clause 8 of CSA Z662, also required to be pressure tested in accordance with Clause 8 of CSA Z662 before or after being assembled (bolted) in the piping system?

Answer: Yes

The following interpretation regarding Clause 8.5 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does a Valve Manifold Assembly (typically made of small diameter ASTM pipe & fittings and used for fill, vent & test instrument connections during Pressure Testing – see schematic below) fall under the definition of “Test Header” as described in Clause 8.5 of CSA Z662?

Answer: Yes, a Valve Manifold Assembly falls under the definition of a Test-head Assembly.

The following interpretation regarding Clause 8.7.3.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: If an NPS 4 Gr 359 HVP pipeline with a design pressure of 4960 kPa in a Class 2 location that has a minimum strength test pressure of 7440 kPa and uses Class 300 fittings which have a maximum allowable test pressure of 7665 kPa. The note to clause 8.7.3.1 suggests that the test pressure should be increased to produce the stress level in the pipe after removal of the specified 1.6 mm corrosion allowance, which would be recomputed to 12,400kPa. Is it mandatory that the higher test pressure be used, upgrading fittings as required to achieve?

Question 2: If two pipes that are designed to the same pressure and corrosion allowance are tested would calculate different minimum test pressures to achieve the design stresses after removal of all design allowances, i.e. corrosion, is it required that the piping be tested separately to achieve the target test pressures?

Answer 1: No, see Clause 1.9

Answer 2: No, see Clause 1.9

The following interpretation regarding Clause 8.7.7.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is a dead-weight tester required to be used on a Strength or Leak Test for the purposes of verifying the accuracy of the pressure & temperature chart recorders used (in-place) during testing?

Question #2: As written in the CSA Z662 commentary, can any appropriate calibrated measuring device (e.g., a calibrated pressure gauge or temperature measuring device) be used to verify the accuracy of the chart recorders?

Answer #1: No. Any appropriate calibrated instrument may be used to verify pressure and temperature chart recorders.

Answer #2: CSA does not provide interpretations on non-consensus documents. The Commentary is not part of the Standard and has not been formally reviewed or approved by the Technical Committee. Please refer to the first page of the Commentary.

The following interpretation regarding Clause 9.2.5 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does installation mean application of the coating to the pipe?

Answer: No

The following interpretation regarding Clause 9.8.3 & 9.8.7 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: In Clause 9.8.3 it states that thermite welding is used to attach copper electrical conductors to the pipe. According to Clause 9.8.7 can pin brazing be used to attach copper electrical conductors across flanges as they are not on the pipe surface?

Answer: No

The following interpretation regarding Clause 10.3.3 & 10.3.5 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: A “condensate” line carries 900 m³/d of raw liquid condensate and 250 m³/d water. The gas was separated out at a gas wellsite through a tank (<110kpa absolute); the condensate and water were metered then recombined for pipeline transport.

- a) Would the pipeline fall under the requirements of Clause 10.3.5?
- b) Is the standard silent on leak detection requirements for this type of pipeline?

Question #2: The same “condensate” line carries 900 m³/d of liquid condensate, 250 m³/d water, and contains some free gas which is not expected to be fully dissolved in the liquids at pipeline pressure (e.g. most of the gas was separated out through a separator, but not all – separator operates much > 110kPa absolute).

- a) Would the pipeline fall under the requirements of Clause 10.3.5?
- b) Is the standard silent on leak detection requirements for this type of pipeline?

Answer #1a: Yes

Answer # 1b: No

Answer #2a: Yes

Answer #2b: No

The following interpretation regarding Clause 10.5.3.7 b) of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does CSA defer to:

- a) the Transport Canada definition of “commercial” with respect to 10.5.3.7 b)?
- b) the Navigable Water Act definition of “navigable water” with respect to 10.5.3.7 b)?

Answer a) & b): No, as per CSA Directives “Definitions provided in the standard shall be limited to technical, ambiguous, and often used terms. Terms used in accordance with a standard dictionary need not be defined.”

The following interpretation regarding Clause 10.7.3, 10.11.4 & 4.3.5.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Would it be acceptable to use a steel or composite reinforcement repair sleeve in accordance with the requirements of Clause 10.11.4 as a permanent correction and considering a larger design wall thickness (t) in the design pressure formula in Clause 4.3.5.1 in order to increase the design pressure of this portion of pipeline and then to be able to keep the existing operating pressure?

Question #2: If the above response to Question #1 is no, then:
Is it acceptable to use the same sleeves as part of a solution provided that an Engineering Assessment determines that the pipeline system is suitable for continued service?

Answer #1: No



Answer #2: Yes

The following interpretation regarding Clause 10.9.5.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is the intent of the Clause 10.9.5.2 that the frequency of inspection must be:

a): at least once per year (e.g. 2015, 2016, 2017, etc.) not to exceed 18 months between inspections

b): ideally 12 months between inspections not to exceed 18 months

Answer a): Yes

Answer b): No

The following interpretation regarding Clause 10.10.4.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is a dent that interacts with a mill or field weld that exceeds a depth of 6 mm in pipe 323.9 mm OD or smaller, and has a measured curvature strain less than 4% and the interacting portion of the weld passes non-destructive inspection with no imperfections considered to be a defect unless determined by an engineering assessment to be acceptable?

Question #2: Does Clause 10.10.4.2 take precedence over the flow chart in Figure 10.2?

Answer #1: Yes

Answer #2: Yes, Figure 10.2 is referenced only through a note in Clause 10.10.4.2 therefore Figure 10.2 is considered informative only (see Clause 1.9)

The following interpretation regarding Clause 10.11.1.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it still a requirement to employ the bonding and grounding procedures even if there is a known conductive parallel path?

Answer: Yes, appropriate procedures are required. It may or may not include additional grounding or bonding depending on the specific situation.



The following interpretation regarding Clause 12.4.11.4 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is the intent of the Clause 12.4.11.4 b) to have the pilot-loaded back-pressure regulator, used as a relief valve, fail in the open position?

Answer: Yes

The following interpretation regarding Clause 12.10.8 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Is it the intent of Clause 12.10.8 to allow the use of ASME BPVC.IX welding procedure specifications for maintenance welding of in-service distribution piping, in accordance with Clause 7.2.5 as applicable?

Question 2: If the answer to Q1 is “yes”, would a welding procedure developed in accordance with ASME BPVC.IX overlaid with the additional Clause 12 in-service welding requirements (i.e. for wall thickness less than 6.4 mm, using a welding procedure that controls the potential for burn through) be permissible for maintenance welding of in-service distribution piping?

Answer 1: Yes

Answer 2: Yes

The following interpretation regarding Clause 13.1.1.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: #1: Is the omission of gas transmission pipelines from the wording of CSA Z 662-15 Clause 13.1.1.3 a reflection of an intentional categorical ban on the use of reinforced composite pipe in gas transmission applications?

Question: #2: If not, would it be acceptable to adopt the requirements of Clause 12.4.6.3 of CSA Z 662-15 for gas transmission service up to 4” size and 1440 psi pressure?

Answer #1: N/A. Clause 13 excludes gas transmission applications (see Clause 13.1.1.3)

Answer #2: N/A. Clause 13 excludes gas transmission applications (see Clause 13.1.1.3)

The following interpretation regarding Clause 13.1.10.1 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Does Clause 13.1.10.1 intend for adhesive bonded collars, repair couplings, or flanges to be pretested?

Question #2: With respect to Clause 13.1.10.1, does a short-term pressure test cycle completed by the pipe manufacturer fulfill the requirements of ‘pretested pipe that meets the design requirements’?

Question #3: With respect to Clause 13.1.10.1, does a 1-hour pressure test (Clause 8.7.5.2) at a minimum pressure of 1.25 x intended MOP, with full visual inspection aligning with CSA Z662-15 Clause 8.7, fulfill the requirements of ‘pretested pipe that meets the design requirements’?

Question #4: With respect to Clause 13.1.10.1, does an 8-hour pressure test at a minimum pressure of 1.25 x intended MOP, aligning with CSA Z662-15 Clause 13.1.8, fulfill the requirements of ‘pretested pipe that meets the design requirements’?

Answer #1: No

Answer #2: No

Answer #3: Yes

Answer #4: Yes

The following interpretation regarding Clause 14 & Annex I of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1 a): In Clause 14.4.2(e), if radiography acceptance and frequency shall be in accordance with the requirements of ASME B31.3, is it mandatory that the technical setup/technique requirements of ASME Sec. V, article 2 be used?

Question 1 b): As per Clause 14.4.2(e), is it permissible to use the technical setup/technique requirements for radiography as per CSA Z662, Clause 7.11?

Question 2 a): In Clause I.4.2, is the radiography and ultrasonic acceptance criteria as per ASME B31.3 NS?

Question 2 b): If the radiography and ultrasonic testing acceptance criteria for Clause I.4.2 is ASME B31.3 NS, does this require the technical setup/technique requirements of ASME Sec. V, article 2 for radiography and article 5 for ultrasonic testing, to be used?

Question 2 c): If the radiography and ultrasonic testing acceptance criteria for Clause I.4.2 is ASME B31.3 NS, is it permissible to use the technical setup/technique requirements for radiography and ultrasonic testing as per CSA Z662?

Question 3: Does a Welding Specification Procedure developed and qualified in accordance with Clause 14.4.2(a) have to meet the requirements of Clause 7.2.7?



Question 4: Does a Welding Specification Procedure developed and qualified in accordance with Clause I.4.1(a) have to meet the requirements of Clause 7.2.7?

Answer 1 a): Yes

Answer 1 b): No

Answer 2 a): No

Answer 2 b): N/A

Answer 2 c): N/A

Answer 3: Yes, refer to Clause 14.1.2

Answer 4: Yes, refer to Clause 14.1.2 and Annex I.1.1

The following interpretation regarding Clause 14.4.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is the use of a “transition piece” (including the subsequent requirements of Clause 14.3.7 and 14.4.3 (a) and (b)) considered “necessary” by the text in clause 14.4.3, if conformance to the joint preparation requirements of ASME B31.3 is achieved when joining higher grade materials to lower grade materials of unequal thickness?

Answer: No

The following interpretation regarding Clause 16.3.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Can a transition piece be considered as a piece of pipe?

Question #2: Is a transition piece allowed to be welded directly to existing pipe in the case of a tie-in weld?

Answer #1: Yes, if made from pipe

Answer #2: Yes, provided that the transition piece is a pipe and is not part of, or adjacent to, a riser.

The following interpretation regarding Clause 16.6.3 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: 219.1 mm OD, 11.1 mm WT, CSA Z245.1 Grade 359 sour service line pipe must be butt welded to 219.1 mm OD, 12.7 mm WT, CSA Z245.11 Grade 359 sour service induction bends. Joint dimensions, as designed, comply with CSA Z662 Clause 16.6.3(a). During installation, small manufacturing dimensional variations (within the limits of CSA Z245.1 and CSA Z245.11), have resulted in nominal internal offset (bi) exceeding the 1.6 mm limit of Clause 16.6.3(a), at isolated locations around the circumference.

- a) Considering installation Clause 6.2.4.2 and joining Clause 7.9.2, is it permissible to selectively remove metal by light grinding or sanding (while maintaining the required design thickness, and complying with the taper angle restrictions of Figure 7.2), and bring the fit-up into compliance with dimension bi in Clause 16.6.3(a)?
- b) Considering installation Clause 6.2.4.2 and joining Clause 7.9.2, is it permissible to re-finish the end of the induction bend by light grinding or sanding (while maintaining with the required design thickness, and complying with the taper angle restrictions of Figure 7.2), so that the induction bend root face matches that of the line pipe?

Question #2: Given the definitions of pipe and component under Clause 2.2, does the specific reference to pipe in Clause 6.2.4.2 exclude components?

Question #3: Figure 7.2 commentary states, at the beginning of the opening paragraph: “All of the sketches depict the joining of items where the thicknesses are unequal because the two items have unequal specified minimum yield strengths...”.

- a) Does Figure 7.2 apply to butt welds between items of unequal thickness, where both items have the same specified minimum yield strength?
- b) Does Figure 7.2 apply to butt welds between items of unequal thickness, where the thickness differences result from manufacturing requirements (e.g., the use of thicker material during fitting manufacture to accommodate localized thinning during forming operations)?
- c) Does Figure 7.2 apply to butt welds between items of unequal thickness, where the thickness differences result from ordering butt welding fittings to commonly available pipe schedules?

Question #4: Clause 16.6.3 does not refer to Figure 7.2, Items (b), (c), (d), or (g). Does this mean that Figure 7.2 Items (b),(c),(d), and (g) are not acceptable for sour service applications?

Question #5: A 406.4 mm by 219.1 mm, Sch. 40 (12.7 mm WT), CSA Z245.11 Grade 359 sour service butt welding barred reducing tee must be welded to 406.4 mm OD, 10.3 mm WT, CSA Z245.1 Grade 359 sour service run pipe and 219.1 mm OD, 11.1 mm WT CSA Grade 359 sour service branch pipe. For the 406.4 mm OD tee-to-run pipe joints, the requirements of CSA Z662 Clauses 16.6.3(a) and 16.6.3(b) are not satisfied.

- a) Can the tee be used if it is re-beveled (shop or field) to satisfy the requirements of Figure 7.2, Items (b) or (c), provided the nominal internal offset at the weld joint (dimension bi) does not exceed 1.6 mm?
- b) As an alternate to the use of a machined transition piece, can the tee be used if a transition (counter-bore and taper) is machined into the run ends of the tee, so that the dimensional and strength requirements of Clause 16.6.3(c) and Figure 7.2 are satisfied?

Question #6: Do the phrases “machined transition piece” and “transition piece” as used in Clause 16.6.3(c) preclude the use of fittings containing machined transitions, provided dimensional and strength requirements of Clause 16.6.3, Figure 7.2, and the engineering design are satisfied?

Question #7: Two 406.4 mm OD, Schedule 40 (12.7 mm WT), CSA Z245.11 Grade 359, sour service, 90 degree elbows were purchased for an above ground fabricated assembly. One elbow, from Manufacturer “A”, was formed from 14.3mm nominal WT seamless pipe. The other elbow, from Manufacturer “B”, was formed from 15.9 mm nominal WT seamless pipe. The ends of each elbow were prepared to match 12.7 mm Grade 359 pipe, and comply with CSA Z245.11-13 Figure 3.

- a) Considering Clause 16.6.3, can these two elbows be joined directly to each other using a butt weld, without any adjustment of the end preparations or use of a transition piece?
- b) Considering Clause 16.6.3, can the elbow from Manufacturer “A” be joined directly to 12.7 mm WT Grade 359 pipe?
- c) Considering Clause 16.6.3, can the elbow from Manufacturer “B” be joined directly to 12.7 mm WT Grade 359 pipe?

Question #8: Are the requirements of Clause 16.6.3 only applicable to below ground applications?

Answer #1a): Yes

Answer #1b): Yes, provided it is Figure 7.2 (a)

Answer #2): Yes

Answer #3a): Yes, see note 1 e)

Answer #3b): Yes

Answer #3c): Yes

Answer #4): Yes

Answer #5a): No

Answer #5b): Yes

Answer #6): No

Answer #7a): No, CSA Z245.11-13 Figure 3 does not meet the requirements of CSA Z662-15 Clause 16.6.3

Answer #7b): No, CSA Z245.11-13 Figure 3 does not meet the requirements of CSA Z662-15 Clause 16.6.3

Answer #7c): No, CSA Z245.11-13 Figure 3 does not meet the requirements of CSA Z662-15 Clause 16.6.3

Answer #8): No

The following interpretation regarding Clause 16.6.4 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Weld hardness measurement by Brinell method (HBW): is it acceptable according to Clause 16.6.4 of Z662-15?

Answer: No

The following interpretation regarding Clause Annex I, I.4.2 of CSA Standard Z662:15, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: If ASME B31.3 Table K341.3.2 standards of acceptability for production welds apply to visual examination of all welds in the scope of Annex I, are weld surface finish requirements only applicable to weld surfaces that are accessible for visual examination?

Question #2: If ASME B31.3 Table K341.3.2 standards acceptable for production welds apply to visual examination of all welds, are welder and welding operator performance qualification welds described by Clause I.4.1 (b) required to satisfy the visual examination requirements of ASME B31.3 Table K341.3.2, in addition to the required volumetric nondestructive examination, and visual examination requirements of ASME Section IX?

Answer #1: Yes

Answer #2: No, only volumetric requirements apply

The following interpretation regarding Clause Hydrostatic test of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: I would like to know if a company can use diesel to conduct a pressure test on their pipeline instead of using water.

Answer: Yes

The following interpretation regarding Clause Pressure-control system of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question: In a case where you have piping at higher MOP to a lower MOP, does having continuous monitoring of pressure (i.e., pressure transmitter) through SCADA with in situ intervention by the Operator upon alarm comply with the intent of “manual intervention” as referenced in the definition for “pressure control system”?

Answer: Yes. However, see definition of “overpressure protection” and the overpressure protection requirements in Clause 4.18.1.

The following interpretation regarding Clause 4 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. Within Clause 4 of CSA Z662-11, is there a distinction between design and operating temperatures?

Q.2 Does CSA Z662-11 recommend require designers to use operating temperatures for piping flexibility analysis specified in 4.8.3 and 4.8.4?

Q.3 Are Max/Min operating temperatures for flexibility analysis as required in Clause 4.8.3 and 4.8.4 determined under normal operating conditions?

Q.4 Is it the designer’s responsibility to consider special conditions such as hot purging and loss of coolant?

Response 1: Yes. See Clause 4.2.2.4 for requirements.

Response 2: Yes. See Clause 4.2.2.4 for requirements.

Response 3: Yes. See Clause 4.2.2.4 for requirements.

Response 4: Yes. See Clause 4.2.4 for requirements.

The following interpretation regarding Clause 4 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Clause 4.18.3 addresses pressure relieving and allows relief into air. Can HVP product be discharged to air through discharge stack?

Question #2: Clause 4.14.3.2 (a), is “blowdown” always intended to be a deliberate act of relieving pressure?

Question #3: Clause 4.14.3.2 (a), is “relieve” always intended to be the release of pressure by some safety device?

Answer 1: No



Answer 2: No

Answer 3: No

The following interpretation regarding Clause 4.11 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: If we follow the Standard in appropriately protecting the pipelines, can reduced clearance be used?

Question 2: If not, what is the minimum clearance that can be achieved?

Question 3: Does CSA Z662 address application and approval processes?

Answer 1: Yes. See Clauses 4.11.2 and 4.11.3.

Answer 2: Not applicable.

Answer 3: No.

The following interpretation regarding Clause 4.3.7, Table 4.2 - Note (3) of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. Is it the intent that the location factors (L) referenced in Clause 4.3.7 and specified in Table 4.2 modify the overall factor of safety utilization factor ($F \times L \times J \times T$):

- a) for facilities in accordance with the service fluid and class location?
- b) in higher potential consequence areas based on class location?
- c) in higher potential consequence areas based on potential environmental consequence?
- d) at a station location as there is a higher potential for a worker related consequence than the “General” application category?
- e) at a station location to compensate for stresses and strains that could be found in station piping?

Q.2 Would the station location factors (L) referenced in Clause 4.3.7 and specified in Table 4.2 apply to:

- a) station piping conducting the service fluid that is located between station isolation valves (see the attached diagram Figure 1)?
- b) a mainline pipeline segment that is connected upstream or downstream of any station isolation valve(s) that is located:
 - a. within the station fencing but outside of the station area (see mainline pipeline “X” in Figure 1); or
 - b. within the station area (see mainline pipeline “X” in Figure 2).
- c) a pipeline segment that is connected upstream of a station isolation valve that traverses:
 - a. station piping, facilities, buildings or equipment (see pipeline “Y” in Figure 3); or



- b. a station area.
- d) a pipeline that traverses a station area but is not connected to the station piping or facilities, and is also operated to the CSA Z662-11 standard (see pipeline “Y” in Figure 4):
 - a. where pipeline X and Y are owned by the same company; or
 - b. where pipeline X and Y are owned by separate companies.

Response: No response provided as question was withdrawn by the submitter.

Response 2(a): Yes.

Response 2(b): No.

Response 2(c)a: No.

Response 2(c)b: No.

Response 2(d)a: No.

Response 2(d)b: No.

The following interpretation regarding Clause 4.11.2 and Table 4.9 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. Is installing multiple pipelines in a single HDD borehole, as referenced in CAP-2004-0022, prohibited by CSA Z662-11?

Q.2. Do the minimum clearance requirements listed in Table 4.9 apply to this type of installation?

Q.3. Is it acceptable to use a reduced clearance, as referenced in Clause 4.11.2, provided that the pipelines are appropriately protected from damage?

Response 1: No.

Response 2: Yes.

Response 3: Yes.

The following interpretation regarding Clause 4.14.2.7 (b) of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. Is this clause just intended for the main process piping within the compressor building?

Q.2. Can fuel gas piping to the compressor engine in the compressor building remain pressurized?



Q.3. Can utility fuel piping to space heaters in the compressor building remain pressurized?

Response 1: No.

Response 2: No.

Response 3: Yes, provided the requirements in clause 4.14.2.7 are met.

The following interpretation regarding Clause 4.21.1 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Answer: Yes Does the process of natural gas liquefaction constitute “further processing” under Clause 4.21.1 of the CSA Z662?

Answer: Yes

The following interpretation regarding Clause Table 5.3 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it permissible to use MSS SP-44 flanges manufactured using ASTM A694 or A707 material?

Answer: No.

The following interpretation regarding Clause 5.1.2, 5.1.3, 5.2.5, Table 5.3 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Is it permissible to install Category I butt welding fittings manufactured to the requirements of ASME B16.9-2007, with the materials being in accordance with either of the following material specifications:

- i. ASTM A 234 WPB
- ii. ASTM A 420 WPL6

Question 2: If the answer to the question 1 is no, is it permissible to install the fittings described in question 1 if an engineering assessment as described in CSA Z662 clause 5.1.3 is performed and the assessment shows that the fitting is suitable for its proposed use?

Question 3: Is it permissible to install Category I forged fittings, socket welding and threaded, manufactured to the requirements of ASTM A105 or ASTM A350, with the dimensions and pressure ratings being in accordance ASME B16.11 if an engineering assessment as described in



clause 5.1.3 is performed and the assessment shows that the fitting is suitable for its proposed use?

Answer 1: Yes. Note limitations 10, 11 and 19.

Answer 2: Not applicable.

Answer 3: Yes. Other aspects of Z662 must also be taken into consideration.

The following interpretation regarding Clause 7.13.1 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: May radiographic images obtained through conventional film techniques be digitized and weld evaluation be made using these digitized files?

Question 2: May radiographic images obtained through conventional film techniques be digitized and digitally manipulated to correct for noncompliance, e.g. incorrect density or inadequate sensitivity?

Question 3: Is the intent that the digital radiography procedure be compliant with the requirements ASME V Article 2 Mandatory Appendix 3?

Answer 1: No.

Answer 2: No.

Answer 3: No. See Clause 7.13.2.

The following interpretation regarding Clause 7 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1(a): Are welding inspector(s) required where piping is being arc or gas welded assuming that the welding is:

- not in service;
 - 100% of the welds are non destructively tested by radiographers qualified in accordance with 7.14.8.1 or ultrasonic inspectors qualified as required in 7.15.6;
- and
- the non destructive testing method used is capable of detecting any imperfections on the outside surface of the piping?

Question 1(b): Is it permissible, for a contractor's crew, who has a person competent in visual inspection and whose qualifications are approved by the company, to perform any visual inspection required by clause 7.10.2.1 or clause 6.5?

Answer 1(a): No

Answer 1(b): Yes

The following interpretation regarding Clause 7.2.5 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1:

- (a) In clause 7.2.5 (a) if radiography examination is the NDT method used to qualify welders as specified in ASME IX is the acceptance criteria Section IX QW-191?
- (b) Is it permissible in 7.2.5 (a) to use the acceptance standards of CSA-Z662 clause 7.11 for welder qualification using radiography on ASME qualified welds?
- (c) Is it allowable in 7.2.5 (a) to use the technical setup requirements for radiography as specified in CSA-Z662 for welder qualifications on ASME qualified welds?
- (d) Does 7.2.5 (a) make it mandatory that the requirements of ASME V Article 2 be met concerning all aspects of radio-graphic technical technique for welder qualification on ASME qualified welds?

Question #2:

- (a) In clause 7.2.5 (b) does radiography have to meet the technical technique requirements of ASME V Article 2?
- (b) Does clause 7.2.5 (b) allow radiography to be performed to the technical techniques as outlined in CSA-Z662?
- (c) Does clause 7.2.5 (b) allow radiography to be performed to the technical techniques as outline in CSA-Z662 and still used the acceptance criteria as listed in ASME B 31.3 Table 341.3.2?
- (d) does clause 7.2.5 (b) specify that radiography must be performed to the technical requirements of ASME V Article2 and use the acceptance criteria as listed in ASME B 31.3 Table 341.3.2?

Answer 1 (a): Yes

Answer 1 (b): No

Answer 1 (c): No

Answer 1 (d): Yes

Answer 2 (a): Yes

Answer 2 (b): No

Answer 2 (c): No

Answer 2 (d): Yes

The following interpretation regarding Clause Table 7.3 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question #1: Is Table 7.3 applicable to in-service welding procedures when the essential changes are not addressed in the applicable part of Table 7.10?

Question #2: Does Table 7.3 have any applicability to in-service welding procedures?

Answer 1: No

Answer 2: No

The following interpretation regarding Clause 8.1.2 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1(a): Could Clause 8.1.2 be interpreted to mean that the system must be tested in place and could only be tested otherwise under the conditions specified in Clause 8.4?

Question 1(b): If the response to question 1 a) is no, is the intent of Clauses 8.1.2 and 8.4 to allow testing in a fabrication shop where it is not “practicable” to do it in the field?

Answer 1(a): No

Answer 1(b): Yes

The following interpretation regarding Clause 8.1.2, 8.1.3 & 8.1.7 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: (Note: The following question assumes Clause 8.4 is not applicable)

(a) Often during initial testing of piping not in place, when moving the piping to its final location it is “broken up” into smaller spools at flanged connections. Also, during maintenance activities flanged pretested spool pieces are often installed. It is the practice at some companies to replace the gaskets. Do the new gaskets associated with these spool pieces require a pressure test?

(b) Regarding Clause 8.1.7, if the applicable manufacturing and design standard or specification contains requirements for pressure testing that are less onerous than clause 8 with respect to test pressure or duration, is the manufacturing pressure test acceptable?

(c) Regarding Clause 8.1.7, if the applicable manufacturing and design standard or specification does not contain requirements for pressure testing, is a pressure test required?

(d) If there is no applicable manufacturing and design standard or specification for the component to be installed, does the fabricated item require pressure testing?

(e) Would the following items (i through vii) be considered fabricated items for the purposes of clause 8.1.7?

i. Regulators



- ii. Control valves
- iii. Relief valves
- iv. Filters
- v. Scrubbers
- vi. Spacer plates
- vii. Gaskets
- viii. Compressors/pumps

Answer 1a: No. See Clause 8.12.2.

Answer 1b: Yes.

Answer 1c: Yes.

Answer 1d: Yes.

Answer 1e i: No.

Answer 1e ii: No.

Answer 1e iii: No.

Answer 1e iv: No response. The answer is dependent on filter type.

Answer 1e v: Yes.

Answer 1e vi: No.

Answer 1e vii: No.

Answer 1e viii: No.

The following interpretation regarding Clause 8.8.5 & 12.8.1 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Would it be acceptable to use pressure gauge plots as an “appropriate leak detection” method, for very small test volumes?

Question 2: If the above response to Question #1 is no, then:

(a) Is it CSA’s point of view that all gas utility service lines (above and below 700 kPa), which are typically ½ – ¾”, shall be pressure tested using water?

(b) And where water is impractical to remove or may cause issues with corrosion, shall they be pneumatically pressure tested for 24 hours?

Question 3: Is the designer expected to refer back to Section 8.8 for gas distribution piping operating below 700 kPa?

Answer 1: Yes, pressure gauge plots are acceptable if it is determined that the Company’s



testing procedure is effective in determining a leak in the defined time and documented as stated in Clause 8.8.7.

Answer 2a: Not applicable. See response to Question #1.

Answer 2b: Not applicable. See response to Question 1.

Answer 3: Yes.

The following interpretation regarding Clause 10 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Clauses 10.10.2.7, 10.10.4.2, 10.10.5, 10.10.6 and 10.10.7 allow for the applicable defect to be accepted on the basis of an engineering assessment. Is it permissible to complete the engineering assessment using only the imperfection size, shape, etc provided by the ILI tool?

Answer: No

The following interpretation regarding Clause 10.5.3.1 & 10.5.3.7 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is it the intent of these clauses that Industry may risk-manage the need for signage, such that it may not be required at all water crossings based on the potential hazard of public activity?

Question #2: Is signage required at all water crossings regardless of potential hazard to the pipeline?

Question #3: Is it the intent of Clause 10.5.3.7 that Industry may risk-manage the need for signage at navigable water crossings, based on the hazard to the pipeline?

Question 4: Is it the intent of Clause 10.5.3.7(a) that “periodic” apply to both “dredging” and “other construction activity”?

Question 5: Is signage required at wetland crossings?

Question 6: Does the correct interpretation of “drainage systems” in Clause 10.5.3.1(b)(iv) include natural features such as swales, gullies, creeks and wetlands?

Answer 1: Yes. Except as required by Clause 10.5.3.7

Answer 2: No

Answer 3: Yes. Except as required by Clause 10.5.3.7 a) & b)



Answer 4: No

Answer 5: No. Except as required by Clause 10.5.3.2

Answer 6: No

The following interpretation regarding Clause 14.3.4 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Per Clause 14.3.4.3, is it the intent that only fittings manufactured to ASME B16.9 and ASME B16.11 are permitted as the clause does not list an option for fittings manufactured to other component standards?

Question 2: Per Clause 14.3.4, are fittings manufactured to another standard such as CSA Z245.11, MSS SP-75, or MSS SP-97 permitted provided these are either listed component standards in ASME B31.3 and/or CSA Z662 with listed material properties in ASME B31.3 at the design temperature, or qualified in accordance with Clause 14.3.2.1.

Question 3a: In Clause 14.3.4.2, is it intended that only “fittings other than bends” require registration as specified in CSA B51

Question 3b: Is it intended that “Flanges”, “Valves”, “Transition Pieces”, and “Bends” do not require such registration since the registration requirement only appears in Clause 14.3.4 and not in any of these other parallel clauses (or as a more general requirement in Clause 14.3.1)?

Answer 1: No

Answer 2: Yes

Answer 3a: Yes

Answer 3b: Yes

The following interpretation regarding Clause 14.3.5 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Is it the intent of this clause to prohibit the use of CSA Z245.12 flanges in Clause 14 pipelines since the corresponding CSA materials are not listed in ASME B16.5 and do not fall within any of the defined materials groups in ASME B16.5?

Question 2: Is it permissible to use a CSA Z245.12 flange in Clause 14 pipeline system at a temperature in excess of 120 C?



Question 3: Is it permissible to use ASME B16.5 Appendix A “A Method used for Establishing Pressure Temperature Ratings” to determine the ASME B16.5 pressure temperature ratings for flange materials not currently listed in any materials group in ASME B16.5?

Question 4: Is it permissible to use the established pressure temperature ratings for a given materials group in ASME B16.5 for a CSA Z245.12 flange when it can be established that the Selected Stress “S1” (as specified in Appendix A of ASME B16.5) for that CSA flange material exceeds the Selected Stress upon which other listed materials (e.g., ASTM A105) have been added to the materials group proposed for use?

Question 5: MSS SP-44 is an established flange manufacturing standard listed in Table 326.1 of ASME B31.3. This standard includes published pressure ratings to a maximum temperature of 232 C, which are accepted under ASME B31.3. Is it permissible to use an MSS SP-44 flange, manufactured using ASTM material listed in Table 5.3 of CSA Z662, in a CSA Z662 Clause 14 pipeline in accordance with the materials requirements, and pressure temperature ratings, of MSS SP-44 and the applicable ASTM standard?

Answer 1: Yes.

Answer 2: No.

Answer 3: CSA’s policy does not allow for the interpretation of non-CSA standards.

Answer 4: CSA’s policy does not allow for the interpretation of non-CSA standards.

Answer 5: No.

The following interpretation regarding Clause 16.6.4 of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1a: Is 100% hardness testing required?

Question 1b: Is the frequency of testing, along with the locations and test patterns, up to the company?

Answer 1a: No

Answer 1b: Yes

The following interpretation regarding Clause Annex I of CSA Standard Z662:11, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. For the purposes of welder performance qualification testing, is the intent of Annex I to permit the substitution of similar P-Number materials (listed in Table 7.1 and QW-422) as provided in ASME?



Response: Yes.

The following interpretation regarding Clause 4.3.12.4, 5.2.5.1 and Table 5.3 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question#1: Can ASME B16.5 and B16.36 flanges now be used at elevated temperatures when used under CSA Z662 without regard to ASME temperature de-rating requirements below 120°C?

Question#2: For materials shown in Table 5.3 as having “No Limitations” for the applicable material Category, are these materials considered completely equivalent to the applicable CSA Z245 material standards?

Question#3: If yes to Question 2 above, does this mean that ASME temperature derating factors (above 38 °C) for B16.34 valves can also be ignored in lieu of CSA Z662-07 temperature factor requirements as stated in clause 4.3.12.4?

Question#4: If yes to Question 3 above, does this mean that NPS 1.5 valves and smaller (for which there is no applicable CSA Z245 material spec) would also be subject to the CSA Z662-07 temperature factor requirements as stated in clause 4.3.12.4 rather than the ASME temperature derating requirements (above 38 °C)?

Answer 1: No

Answer 2: No

Answer 3: Not applicable

Answer 4: Not applicable

The following interpretation regarding Clause 4.3.13 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: With our Pigging Valve, we use an “Entry Plug” on the top of a ball valve to facilitate access to the valve ball for insertion and removal of pipeline pigs. Would this be deemed as “Quick-Opening Closure”?

Answer: Yes



The following interpretation regarding Clause 4.18.1.2 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: In the case of a major pipeline damage to a natural gas distribution system or extreme cold operating conditions (defined as ambient temperatures in excess of the operating Companies maximum design day degree day forecast), where we need to operate the downstream system at a pressure higher than its MOP in order to save a large number of customers, can this situation be considered an “other cause” thereby allowing the system to operate temporarily over its’ MOP? In this case the pressure control system is still in place and would function at a 10% overage in MOP pressure, but the system is operating only slightly higher than MOP to save customers and for a short duration of time only.

Response: No

The following interpretation regarding Clause 4.18.1 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: If a pipeline licensed for an MOP of 9930 kPa is being connected to a pipeline licensed for an MOP of 9650 kPa, is pressure control required for the lower pressure segment?

Question #2: If a pipeline licensed for an MOP of 9930 kPa is being connected to a pipeline licensed for an MOP of 9650 kPa, is overpressure protection required for the lower pressure segment?

Answer 1: Yes

Answer 2: Yes

The following interpretation regarding Clause 4.14.2.11 and 4.14.3.8 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. As per Clause 4.14.2.11 and 4.14.3.8 of Z662-07, if ASME B31.3 has been used for a type of piping system in a compressor or pump building within a compressor or pump station, does it then mean that the piping in other associated buildings shall be according to ASME B31.3?”

Q.2 As per Clause 4.14.2.11 and 4.14.3.8 of Z662-07, if ASME B31.3 has been chosen for a type of piping system in various compressor or pump buildings within a compressor or pump station, does it then mean that the interconnecting piping between the buildings shall be according to ASME B31.3?”

Q.3 As per Clause 4.14.2.11 and 4.14.3.8 of Z662-07, if CSA-Z662 has been chosen for a type of piping system in various compressor or pump buildings within a compressor or pump station, does it then mean that the interconnecting piping between the buildings shall be according to CSA-Z662?”

Response 1: Yes, if it is part of the same type of piping system.

Response 2: Yes, if it is part of the same type of piping system.

Response 3: Yes, if it is part of the same type of piping system.

The following interpretation regarding Clause 5.2.3.2 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question

- 1) Is notch toughness required in a NPS 4 or larger branch connection when
 - a) the run pipe requires notch toughness, but the branch pipe does not;
 - b) both the run pipe and branch pipe require notch toughness;
 - c) neither the run pipe or the branch pipe require notch toughness;
 - d) the branch pipe requires notch toughness but the run pipe does not?
- 2) When welding branch connections on an existing pipe, where notch toughness properties were not a requirement when installed (i.e. the pipeline was installed prior to the standard containing notch toughness requirements), if the answer to question 1(a) above is yes, then is notch toughness required in the branch connection?
- 3) Is notch toughness required in a NPS 4 or larger pressure containing repair sleeve welded to the pipe with the run pipe requiring notch toughness if
 - a) The pressure containing repair sleeve is not tapped to pressurize the annulus;
 - b) The pressure containing repair sleeve is tapped to pressurize the annulus?

Answer 1 (a): Yes

Answer 1 (b): Yes

Answer 1 (c): No

Answer 1 (d): Yes

Answer 2: Yes

Answer 3(a): Yes

Answer 3(b): Yes

The following interpretation regarding Clause 7.6.4.5 and Table 7.3 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does a change from an EXXXX-G electrode to either an EXXXX-A1 or EXXXX-P1 electrode, or from either an EXXXX-A1 or EXXXX-P1 to an EXXXX-G electrode, constitute a change in essential variable for qualification of welding procedure specifications?

Answer: Yes, you must re-qualify your procedure.

The following interpretation regarding Clause 7.10.3.1 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: According to the official Z662 Commentary, the phrase “a minimum of 15% of all field welds done each day shall be radiographed” was revised in the 1999 edition of the Z662 code to read “a minimum of 15% of all production welds made each day shall be radiographed”. Is it the intent of clause 7.10.3.1 in the 2007 edition of the Z662 code that only a minimum of 15% of all production welds completed in the field (e.g. – on the pipeline site or right-of-way) are to be radiographed each day?

Question #2a: When pre-construction piping fabrication work is being performed in a fabrication shop using welding procedure specifications that have been established and qualified as specified in the ASME B&P Code Section IX (as permitted and in accordance with the requirements of Clause 7.2.5) and the engineering design does not require 100% radiography of all welds, do the requirements of Clause 7.10.3.1 for radiography (e.g. – a minimum of 15% of all production welds made each day shall be radiographed) still apply?

Question #2b: Is it permissible to use the requirements for random radiography listed in Chapter VI of ASME B31.3 (e.g. – designated lot sizes for quantities of piping welds to be randomly radiographed shall be established and agreed upon between the contractor and owner) in lieu of the requirements shown in Clause 7.10.3.1 of Z662 (e.g. – 15% per day)?

Question #3a: When pre-construction piping fabrication work joining pipe to components or components to components is being performed on site using welding procedure specifications that have been established and qualified as specified in the ASME B&P Code section IX (as permitted in Clause 7.2.5) and the engineering design does not require 100% radiography of all welds, do the requirements of Clause 7.10.3.1 for radiography (e.g. – a minimum of 15% of all production welds made each day shall be radiographed) still apply?

Question #3b: Is it permissible to use the requirements for random radiography listed in Chapter VI of ASME B31.3 (e.g. designated lot sizes for quantities of piping welds to be randomly radiographed shall be established and agreed upon between the manufacturer and owner) in lieu of the requirements shown in Clause 7.10.3.1 of Z662 (e.g. – 15% per day)?

Answer #1: No

Answer #2a: Yes

Answer #2b: No

Answer #3a: Yes

Answer #3b: No



The following interpretation regarding Clause 8.2.1.1.1, 8.2.3.1.2, and 8.2.6 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: #1

Clause 8.2.1

Is it the intent that for piping operating at pressures greater than 700 kPa and successfully undergoing a strength test followed by a leak test, using a liquid medium, that these tests are to be conducted separately?

i.e. when the strength test is completed for the required duration (hold time), the pressure be brought down to zero (0) and then re-pressured to the required leak test pressure.

Question: #2

Clause 8.2.3

For piping that is to be tested with a gaseous medium, concurrent strength and leak tests may be conducted, provided that the pressure does not exceed a pressure corresponding to 100% of the SMYS of the pipe, and provided that an appropriate method for detecting leaks is used.

Is it the intent that for piping that is to be tested with a liquid medium, to allow concurrent strength and leak tests as well?

Question: #3a

Clause 8.10.1

Can doing a strength test to the required minimum test pressure and held for 4 hours in accordance with 8.10.1, when not fully exposed, be counted as satisfying the leak test requirement of 4 hours also?

Question: #3b

Is an 8 hour test required to satisfy both strength and leak test durations?

Answer 1: Yes. The tests are to be conducted separately as the minimum pressures and durations are distinct. However, there is no requirement in the standard to lower the pressure to zero prior to conducting a leak test.

Answer 2: No

Answer 3a: No

Answer 3b: Yes, a minimum of 4 hour strength test followed by a minimum of 4 hour leak test for a total duration of a minimum of 8 hours for a liquid medium.

The following interpretation regarding Clause 14.2.2.1 and I.2.1.1 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is it acceptable to use the pressure design formula and procedures specified in ASME B31.3-2006 Paragraph 304.1.2 (in particular formula 3a) instead of the equations provided



in CSA Z662 Paragraph 14.2.2.1 for the determination of the required pressure design thickness (t) and minimum required thickness (tm) for straight pipe under internal pressure?

Question 2: Is it acceptable to use the pressure design formula and procedures specified in ASME B31.3-2006 Chapter IX "High Pressure Piping" (in particular formula 34a) instead of the equation provided in Paragraph I.2.1.1 of Annex I of CSA Z662?

Answer 1: No

Answer 2: No

The following interpretation regarding Clause 16.2 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is the intent of Clause 16.2 (b) to only apply to multiphase gas-free pipeline systems, such as for example oil emulsions in gathering lines?

Question #2: To expand upon question (A) above, is the intent of Clause 16.2 (b) not to apply to those systems containing a single liquid phase, such as LVP condensate and crude oil blends typical of downstream large transmission lines with minimal water content (S&W often specified below 0.5% vol.)?

Answer 1: No

Answer 2: No. Clause 16.2 (b) does apply to these systems.

The following interpretation regarding Clause 16.6.4 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: In Clause 16.6.4, does the word "any location" mean that all the fabricated welds for sour pipelines will have to be hardness tested (100%) to meet the requirement?

Answer: No

Note: CSA Z662-07 does not specify what hardness testing is required on fabricated welds to meet the stated hardness requirements of Clause 16.6.4 and leaves it to the user to determine what is required to demonstrate compliance to the performance requirement stipulated.

The following interpretation regarding Clause 16.6.4 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is hardness testing of "production welds" that will be subjected to sour service required when the CSA Z662-07 standard is being used?

Question #2: Is production weld hardness testing mandatory for sour service?

Answer 1: No.

Note: CSA Z662-07 does not specify what hardness testing is required on "production welds" to meet the stated hardness requirements of Clause 16.6.4 and leaves it to the user to determine what is required to demonstrate compliance to the performance requirement stipulated.

Answer 2: No.

Note: CSA Z662-07 does not specify that hardness testing is mandatory on "production welds" to meet the stated hardness requirements of Clause 16.6.4 and leaves it to the user to determine what is required to demonstrate compliance to the performance requirement stipulated.

The following interpretation regarding Clause 17.3 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does the definition in Clause 17.3 apply to pipe consisting of a steel pipe and a dry-wrapped-glass-fiber reinforcement, i.e. no resin is used in conjunction with the glass fibres?

Answer: No

The following interpretation regarding Clause Annex I Clause I.4 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it permissible to perform full transverse tensile tests of the PQR weld at both room temperature and the maximum operating temperature to demonstrate the suitability of the aggregate weld in lieu of the Section II Part C all weld metal tensile tests prescribed in Annex I, Clause I.4.1 (a)?

Answer: No.

The following interpretation regarding Clause Annex I of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: For girth welding of pressure-retaining pipe and components, recognizing that the cellulosic SMAW root pass comprises a minimal portion of the aggregate production weldment and that there are currently no cellulosic SMAW electrodes that will meet the elevated temperature yield strength for Grade 483 or higher, is it the intent of the standard to require each individual welding electrode classification to be tested separately as indicated in Clause I.3.2.2 and that each electrode classification meet the elevated temperature properties of the base metal?

Question #2: Is it permissible to perform an aggregate all weld metal elevated temperature tensile test as indicated in Clause I.4 (a) (iii) and (iv) to demonstrate acceptable welding electrode properties for the root pass providing that all remaining welding electrodes used for the completion of the girth weld are tested as per Clause I.3.2.2?

Answer 1: Not applicable

Note: Clause I.3.2.2 does not apply to girth welding, the requirements specified in Clause I.4 apply for girth welding. The requirements of Clause I.3.2.2 are intended to apply to the manufacturer of pipe and components for the longitudinal seam welds.

Answer 2: Not applicable

Note: The reference to Clause I.3.2.2 is not applicable in this case. Clause I.3.2.2 is intended to apply to the manufacturer of pipe and components for the longitudinal seam welds.

The following interpretation regarding Clause I.4.1 of CSA Standard Z662:07, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is it the intent of Clause I.4.1 in Annex I that the all weld metal test be done by testing the entire composite completed weld?

Question #2: Is it the intent of Clause I.4.1 in Annex I that each weld consumable used in completing the weld is to be tested independently in the all weld metal test?

Answer 1: Yes

Answer 2: No

The following interpretation regarding Clause 4.8.3.1, 13.3.2.7 and 13.3.4.2 of CSA Standard Z662:03, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Clause 4.8.3.1 of standard Z662-03 states, “It shall be permissible to install uncased steel pipelines with”

Question #1: Is the intention of the wording in Clause 4.8.3.1 of standard Z662-03 that the clause covers only steel pipe?

Question #2: Is the intention of the wording in Clause 4.8.3.1 of standard Z662-03 that only steel pipe may be uncased at road crossings?

Answer 1: Yes. The scope of Clause 4.8.3.1 is specific to requirements for uncased steel pipe crossings only.

Answer 2: No. Clause 4.8.3.1 does not limit uncased crossings to only steel pipe. The choice of cased or uncased crossings for polyethylene pipe is left to the designer to address.



The following interpretation regarding Clause 4.14 of CSA Standard Z662:03, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Where piping is connected to downstream piping that could operate at a higher maximum operating pressure than the connecting piping, can a check valve be used as a pressure control system to satisfy the intent of Clause 4.14.1.1? The attached Figure 1 illustrates two cases. The first is a linear connection, the second a branched connection. Please answer for both cases.

Question #2: Where piping is connected to downstream piping that could operate at higher maximum operating pressure than the connecting piping, can a check valve be used for over pressure protection to satisfy the intent of clause 4.14.1.2? The attached Figure 1 illustrates two cases. The first is a liner connection, the second a branched connection. Please answer for both cases.

Answer 1: No

Answer 2: No

The following interpretation regarding Clause 5.2.2.1 and 5.2.3.2 of CSA Standard Z662:03, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

1. Clause 5.2.2.1:

Question #1: Is it saying that any item (A, B, or C) if true will permit Category I materials?

Question #2: Is it saying that item A must be true, plus either B or C must be true in order to use Category I materials?

2. Clause 5.2.3.2

Question #3: Is it saying that the pipe specifications set the requirements for piping components, i.e. if pipe runs shorter than 50 meters, can be Category I material, then pipe components (elbows, flanges etc.) attached to that pipe can be Category I?

Answer 1: Yes. If A, or B, or C is true, one can use Category I pipe.

Answer 2: No.

Answer 3: Yes. (For guidance, refer to the corresponding clauses in the commentary, CSA Z662.1-2003, on Oil & Gas Pipeline Systems and Note #6 to Table 5.1 in Z662-2003).

The following interpretation regarding Clause 7.2.5 of CSA Standard Z662:03, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question: Is the term "standards of acceptability" intended to include all inspection, examination and testing as required by chapter VI in B31.3?

Answer: No

The following interpretation regarding Clause Table 4.3 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: For the existing above ground pipeline a new design temperature of 237 C is proposed. Pipe material is CSA Grade 359 Cat. 1. Table 4.3: Temperature Factor for Steel does not give values of T for temperature greater than 230 C. We have performed a straight extrapolation of Table 4.3 to arrive at a temperature factor of 0.86. Is this acceptable?

Answer: No. The pipeline design described in the request for interpretation is outside the scope of CSA standard Z662.

The following interpretation regarding Clause Table 4.8.3 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Could you please provide an interpretation of CSA Z662-99 as it applies to parallel railways? Specifically, does Clause 4.8.3, Crossing of Roads and Railways, apply to a natural gas pipeline which parallels (but does not cross) a railway within 7 metre of the outside track?

Answer: No. Clause 4.8.3 does not apply to a pipe that parallels (but does not cross) a road or railway; however it should be noted that Table 4.1 contains requirements for pipe that is in parallel alignment within 7 metres of a road or railway.

The following interpretation regarding Clause 4.14.1, 4.14.2 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does the following meet the definition of a pressure-control system as required by Clause 4.14?

During the "flowback" operation of a wellhead, after steaming and soaking the wellbore, the reservoir has sufficient pressure to flowback to surface without artificial lift. The pressure is allowed to flow through satellite facilities (designed to ASME B31.3) and into a production pipeline (designed to CSA Z662). A manual choke valve located at the wellhead controls pressure. Pressure transmitters communicating to the Operations control room continuously monitor the performance of the choke valve. Well casing pressure transmitters are automatically monitored by the pad control system, and a rising casing pressure alarms through the Operations



control room/field DCS system which initiates a field Operator response. The Operator will return to the satellite facility and manually adjust the choke valve to achieve the desired pressure.

Please note that because of the large pipeline system volume, and the multiphase characteristics of the production fluid, there is a significant length of time required to “pressure-up the pipeline” to 110% MOP. This length of time has been calculated to be at least 2 hours.

Question 2: Does the following meet the overpressure requirements of Clause 4.14.2?

Under normal operation of the pipeline system, for both flow back and pumping production phases, the pipelines are protected by an ESD valve (PV-410) at each satellite (i.e. the pressure source) and at its downstream end by a PSV at the central plant. The only time this is not the case would be in the rare instance of a plant emergency when the central plant ESD valve could close, isolating the PSV from the central system. In the event that the central plant ESD valve closes, the central plant operator is able to shut down the wellheads (the source of pressure), close the satellite ESD valves (PV-410's) if not already closed, and also confirm their closing.

Question 3: Does the following meet the general design requirements of Clause 4.14.2 – item (a)?

For the rare instances, when the central plant PSV is temporarily isolated from the pipeline system, as described above, the following system controls are in place:

During production operations, when down-hole pumps are used, the pipeline is protected by two pressure-limiting systems. A high-pressure switch communicating with the pump motor will shut down the down-hole pump. The second system is the satellite ESV valve (PV-410), which will close in response to three transmitters located along the production piping: PT410, PSH410 and PT420. The open/closed status of the ESD valve (PV-410) can be monitored by the Operations control room.

During flow-back production operations, when the down-hole pumps are not in operation, and the wells are producing from formation pressure, the pressure allowed from the wellheads is controlled by the manual choke valve continuously monitored by the Operations control room. The field Operator responds to the monitoring of pressure by manually re-adjusting the choke valve. In this operation mode PV-410 is also fully operational as a pressure-limiting system.

During emergency flow-back conditions, the field operator, who in this operating mode is continuously on-site, locally blocks PV-410 open. If the pressure rises above allowable, the operator will locally operate PV-410 and/or the manual choke valve, and shut-in flowing pressure using wellhead isolation valves if required.

Answer 1: Yes

Answer 2: Yes

Answer 3: Yes



The following interpretation regarding Clause 5.2.1.2 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: With regard to the low temperature materials requirements of this piping, which is used primarily for steam injection purposes, but is being used for this occasional injection of nitrogen – are we correct in referring to CSA Z662 Clause 5.2.1.2 for the low temperature materials requirements?

Answer: Yes

The following interpretation regarding Clause 5.2.5.4.2 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Can a PN 20 spiral wound metal gasket made in accordance with ASME 16.20 be used in a flanged connection with PN 20 flanges in applications below 120 C?

Answer: No.

The following interpretation regarding Clause 7.2.4.2.2.2 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does this mean that all basic electrodes may only be removed from a rod oven for 1 hour?

Question 2: And, then they must return to the rod oven?

Answer 1: Yes

Answer 2: No. The re-drying requirement, prior to use, shall be in accordance with the applicable manufacturer's recommendation.

The following interpretation regarding Clause 8 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is the following interpretation of CSA Z662 correct?

“Instrumentation piping and tubing operating at less than 20% SMYS does not need to be pressure tested in accordance with Section 8 of CSA Z662. Therefore, each operating company shall be responsible for establishing appropriate testing procedures for each instrumentation piping and tubing installation and any maintenance or upgrade work, to provide adequate assurance of integrity.”



Answer: No. The Committee refers you to CSA Standard Z662, Clause 3.1 – Definition of “Piping, instrument” – and to Clause 8.1, which deals with the requirements for pressure testing of piping.

The following interpretation regarding Clause 11 and Table 11.1 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Is the von Mises stress in Clause 11 the only check carried out for the various load combinations for offshore risers?

Question 2: Other than the design factor in Table 11.1, is there a location factor that needs to be considered in the design of offshore risers?

Answer 1: No. See Clauses 11.2.3.2 and 11.2.4.2.3.3, and Tables 11.1 and 11.2.4.5.

Answer 2: No. In addition, see Note (2) in Table 11.1.

The following interpretation regarding Clause Table 7.4 of CSA Standard Z662:99, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is Table 7.4 to be viewed as an essential variable for diameter qualification based on the requirement of Tension Tests on 114.3 mm diameter pipe?

Answer: No. Essential changes are give in Table 7.3.

The following interpretation regarding Clause 4.14.1.1 of CSA Standard Z662:96, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does a manual choke valve fall within the definition of a “pressure-control device”?

Question 2: Does an automatic choke valve fall within the definition of a “pressure-control device”?

Question 3: Does an emergency shutdown valve (ESD valve) fall within the definition of a “pressure-control device”?

Question 4: Is a “pressure-limiting device” considered by the CSA Z662 committee to provide an equivalent level of protection against overpressure as a “pressure-control device”?

Question 5: Where in Clause 4.14.1.1 it refers to “devices” (e.g. plural), is it the intent of the CSA Z662 committee that this means multiple devices must be installed?



Question 6: If the answer to Question 4 is “yes” and the answer to Question 5 is “no”, then is the use of a “pressure-limiting device” as an alternative to a “pressure-control device” acceptable.

Answer 1: No

Answer 2: Yes, provided that it is set to control pressure rather than to control flow.

Answer 3: Yes

Answer 4: No applicable. A pressure-control device is not by definition a pressure-limiting device; each device serves its own purpose.

Answer 5: No. Refer to Note 1 in the Preface in CSA Standard Z662.

Answer 6: Not applicable.

The following interpretation regarding Clause 5.2.2.2 of CSA Standard Z662:96, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does a welded valve separate pipe runs if the pipe on either side is the same diameter, wall thickness and design temperature?

Question 2: Does a flange connection separate pipe runs if the pipe on either side is the same diameter, wall thickness and design temperature?

Question 3: Do fittings that have a thicker nominal wall (beveled to match the adjoining pipe), and the same design temperature, separate pipe runs?

Question 4: For a gas pipeline system, does a change from a minimum design temperature of minus 30°C or over to a minimum design temperature of under minus 30°C separate a pipe run?

Answer 1: No

Answer 2: No

Answer 3: No

Answer 4: Yes

NOTE: The definition of a pipe run in the Z662-99 has changed and the answers to questions 1, 2 and 3 are now yes.

The following interpretation regarding Clause 6.2.5.1.1 of CSA Standard Z662:96, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question: Can ASME B16.5 flanges be used at elevated temperatures when used under CSA Z662 without regard to temperature de-rating requirements below 120°C?

Answer: No

The following interpretation regarding Clause 7.2.13 of CSA Standard Z662:96, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: What do the words “suitably trained” mean?

Question 2: In Alberta and British Columbia, is there a minimum qualification or certification required, such as CSA W178-96, for the inspection of small and medium sized pipe?

Answer 1: Base on consideration of a previous interpretation by the Technical Committee, that there is no definition of “suitably trained” and it is a company’s responsibility to determine the appropriate level and type of training.

Answer 2: The question of requirements for minimum qualification or certification is not applicable to the Technical Committee and should be directed to the Province(s).

The following interpretation regarding Clause 8.9 of CSA Standard Z662:96, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Consider a pipe run consisting of pipe, fittings and caps at the end of the pipe run. The pipe, fittings and caps are designed to the same pressure and are to be pressure tested. An NPS 2 threadolet is welded six inches from the pipe cap weld on the top and bottom pipe at either end of the pipe run as drain and vent connections (a nipple, valve and plug will be attached to each threadolet). After the pressure test, the caps and threadolet will be cut off with 2 metres of pipe and the remaining pipe run will be installed in a pipeline system. Are the cap, pipe and threadolet considered a test head assembly and Clause 8.9 applicable?

Question 2: If yes, does the test head assembly end at the last field weld?

Question 3: Consider the exact same scenario as above, except there are no threadolets welded near the caps. Are the pipe and cap (which are to be cut off) considered a test head assembly?

Question 4: If yes to above, does the test head assembly end at the last field weld?

Answer 1: Yes, the cap, pipe and threadolet are considered a test head assembly and Clause 8.9 applies. Test head assembly is defined as an assembly of pipe and components that form a temporary facility used for pressure testing of pipe.

Answer 2: Yes, all of the pipe from the last field weld must be in accordance with the requirements for a test head assembly.

Answer 3: Yes, the pipe and cap are considered a test head assembly.

Answer 4: Yes, all of the pipe from the last field weld must be in accordance with the requirements for a test head assembly.

The following interpretation regarding Clause 4.10.2.8.1 and 4.10.3.6.1 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it correct by interpreting Clause 4.10.2.8.1 and 4.10.3.6.1 of Z662 to mean that an underground utility gas system at a compressor station or pumping station cannot be made from CSA B137.4 material (Polyethylene Piping Systems for Gas Services) in the following scenarios?

a) The compressor stations in question typically have a low pressure (less than 550 kPa) utility gas system to distribute odourized natural gas to office and workshop buildings for fuel to boilers and furnaces. In some instances, the quantity of buildings and distance between them is enough to make an underground polyethylene gas distribution system attractive.

b) Natural gas service is provided to the pumping or compressor stations in question. These stations are typically located in rural areas where the distribution system is constructed of polyethylene material.

Answer: Yes, it is correct, if the source of the gas for the utility gas system is from the compressor piping (scenario A). No, it is not correct, if the source of the gas for the utility gas system is from a distribution system other than the compressor station (scenario B).

The following interpretation regarding Clause 5.2.4.(c) of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: A new, NPS 3, thin walled, natural gas pipeline might terminate in a transition piece, a sch. 40 ell, a sch. 40 riser, a sch. 40 flange and a flanged valve. Assuming a properly design riser could utilize 88.9 mm O.D. x 5.49 mm wall CSA Z245.1 Category 1, Gr. 241, sweet pipe, then an acceptable non-CSA substitute would be 88.9 mm O.D. x 5.49 mm wall ASTM A106 Gr. B, seamless pipe. Because short lengths (e.g. 4 metres) of small diameter CSA pipe are often impractical to obtain in the required wall thickness, A106 Gr. B pipe would be the preferred choice. Is this substitution acceptable under CSA Z662-95 Clause 5.2.4 (c), regardless of whether the hoop stress is greater than or equal to 30% SMYS.

Answer: The proposed substitution is acceptable under Z662 provided CSA material is not available.



The following interpretation regarding Clause 5.2.4 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: In Clause 5.2.4 of Z662: When is Z245.1 material deemed to be “not available”?

- i) when it is “not readily available” in local supply stores and may cause delays? Or
- ii) when it would require special order for manufacturing?

Answer: Z662 does not address how to decide when CSA material is available or not. The use of alternative CSA materials is being reviewed by CSA Z662 Committee.

The following interpretation regarding Clause 6.2.3 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Is buckling a condition separate from wave shapes which blend into the pipe surface in a gradual manner?

Question 2: Is buckling a condition where wave shapes or ripples do not blend into the pipe surface in a gradual manner?

Question 3: Is the specific tolerance limit of acceptable wave shapes which blend into the pipe surface in a gradual manner within the scope of CSA Z662-94?

Answer 1: Wave shapes buckling are not specifically covered by Z662.

Answer 2: Wave shapes buckling are not specifically covered by Z662.

Answer 3: It is considered that the subject of specifying tolerance limits for acceptable wave shapes that blend into the pipe surface in a gradual manner is within the scope of Z662; however, in the 1994 edition, no such tolerance limits have been stated. As stated in Clause 1.4, this Standard is not a design handbook and is intended to establish essential requirements and minimum standards. A work team has been established to determine what, if any, clarifications are necessary for buckles and waviness as field bends. (Note that factory-produced bends are within the scope of CSA Standard Z245.11.)

The following interpretation regarding Clause 7.2.8.2 and Upgrading of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Do the specific requirements stated in CSA Z662-94 for sour service pipelines (in particular, the 100% radiographic inspection per Clause 7.2.8.2.2) also apply to converting an existing sweet gas pipeline to sour service?

Question 2: Is the conversion of an existing non-sour service pipeline to sour service considered an “upgrade” as defined in CSA Z662-94?



Answer 1: CSA Z662-94 does not specifically address the requirements for a change from sweet to sour service. The change from sweet to sour service is one of the issues being studied by CSA committees.

Answer 2: No, “upgrading” as defined in CSA Z662-94 only covers the increase of maximum operating pressure or change of class location. A change of service (e.g. From sweet gas service to sour service) is not considered as “upgrading”.

The following interpretation regarding Clause 7.2.5.3 and Table 7.3 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Interpretation of Clause 7.2.5.3, Table 7.3 of Z662, welding position. Is a change from vertical to horizontal welding considered an essential change?

Question 2: If not, then can a weld procedure specification be qualified for all positions by welding a pipe coupon fixed in the horizontal position (vertical weld)?

Question 3: Interpretation of Clause 7.2.6.1.1 of Z662, welding position. Can a welder be qualified for all positions by welding a pipe coupon fixed in the horizontal position (vertical weld)?

Answer 1: No

Answer 2: Yes

Answer 3: No. Clause 7.2.6.1.1 states “Welders shall qualify... for the particular configuration involved”.

The following interpretation regarding Clause 8.4.1 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: For liquid pipelines with internal coatings and mechanical Interference Fit Joints (MIF), does Clause 8.4.1 of Z662 apply to tie-in welds?

Question 2: If the tie-in joint is not welded, does 8.4.1 apply?

Answer 1: Yes, tie-in welds must be in accordance with the applicable requirements of Clause 7.2.8.

Answer 2: Yes. Since MIF joint is not a weld, the requirements for tie-in welds are not relevant to this situation.



The following interpretation regarding Clause 10.10.1.2 and 4.3.4.9.3 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Was it intended that the requirements of Clause 4.3.4.9.3 for tapering of the ends of the full encirclement sleeves, to be applicable to Stopple and Hot Tap type fittings as indicated in Clause 10.10.1.2?

Answer: Yes

The following interpretation regarding Clause 10.6.4.1.1 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Do pressure control valve have to be “bench” tested similar to relief valves for the following applications:

1. If they provide protection for down stream devices that are equipped with a relief valve?
2. If they provide pressure control for operational purposes only?

Question 2: My interpretation is that the pressure control devices only have to be checked in the operating mode to ensure that they function at the correct pressure and are in good operating condition. Is this the correct interpretation?

Answer 1:

1. No
2. No. bench testing is not a CSA requirement for any of the devices mentioned in Clause 10.6.4.1.1.

Answer 2: Yes. Testing in the operating mode is an acceptable approach to meeting the requirements of Clause 10.6.4.1.1 (a) and 10.6.4.1.1. (c). Inspection of pressure control devices is also required to meet the requirements of 10.6.4.1.1 (b) and 10.6.4.1.1 (d). Please note that these requirements appear in Clause 10.6.4.2 of CSA Standard Z662-96.

The following interpretation regarding Clause 10.11.3.3 of CSA Standard Z662:94, Oil and gas pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Under Clause 10.11, is it allowable to re-pressure test a line to higher pressure with natural gas when it is not allowable to do so in the initial test?

Answer: No

The following interpretation regarding Clause 1.2.3 of CSA Standard Z245.1-18, Steel Pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question: Do Z662-15, Z662-19 or Z245.1-18 include minimum Charpy absorbed energy requirements for Cat I pipe?

Answer: No

The following interpretation regarding Clause 11.6.2 and 16.9 of CSA Standard Z245.1-02, Steel Pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Except where required by 11.6.1 (e), does the standard require an inspection for laminations in the body of each pipe?

Question #2: Does the standard require ultrasonic inspection for laminations in the body of each pipe?

Question #3: Do the dimensional requirements of Clauses 11.6.2 and 16.9 require manufacturers to inspect the entire body of the pipe ultrasonically?

Answer 1: No

Answer 2: No

Answer 3: No. However, Clauses 12.1.1 and 12.2.5 require nondestructive inspection of seamless pipe.

The following interpretation regarding Clause 15.2 (k) of CSA Standard Z245.1-02, Steel Pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: For pipe that is being double jointed by the pipe manufacturer, or their subcontractor, does CSA Z245.1-02 require actual measurement on 24 m nominal length pipe that are joined from two 12 m nominal length pipes?

Question #2: For pipe that is being double jointed by the purchaser of the pipe, or their subcontractor, does CSA Z245.1-02 require actual measurement on 24 m nominal length pipe that are joined from two 12 m nominal length pipes?

Answer 1: Yes

Answer 2: No. The requirements of CSA Z245.1-02 do not apply to the activities of the purchaser.



The following interpretation regarding Clause 4.3.4 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: The reference to CSA Z662 Clause 4.3.21 in Z245.11 Clause 4.3.4 does not exist in the current Z662 document. Is the intent to reference another clause?

Answer: No, The current Z662-15 clause reference does not exist but the intent was to reference a proposed clause in Z662-19 which has not yet been approved. As such, this CSA Z662 Clause 4.3.21 option in CSA Z245.11 Clause 4.3.4 (below) is not possible and only the other two options (ASME B.16.49 or as otherwise agreed with the purchaser) are acceptable options.

CSA Z245.11-17 Clause 4.3.4

Pressure design for factory-produced induction and cold bends shall be determined in accordance with CSA Z662 Clause 4.3.21, ASME B16.49, or as otherwise agreed with the purchaser.

The following interpretation regarding Clause 5.1 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does the pressure design wall thickness for critical areas has to be determined and recorded for the prototype fitting (as well as) for fittings it represents?

Question 2: Does the specification require the critical areas be subjected to reinforcements via thickness enhancements irrespective (if) the data yielded from proof tests indicate that it is unwarranted?

Question 3: Does the specification prevent the manufacturer from adopting the (specified nominal wall thickness) as the pressure design thickness for the critical areas, (if) the data yielded from proof tests indicate that it is appropriate to do so?

Answer 1: Yes

Answer 2: No

Answer 3: No. The answers to the 3 questions above are provided assuming that the requirements of Clause 5 are being followed.

The following interpretation regarding Clause 6.4 & 6.4.1 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does Z245.11-17 require all hot formed fittings to be heat treated?

Answer: No. Where required to be heat treated, hot forming by itself does not qualify as heat treatment for these conditions.



The following interpretation regarding Clause 6.5 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Does Clause 6.5.2 require that scraper bars be attached with full penetration welds per Clause 6.3.2?

Question 2: Does Clause 6.5.1 allow weld joint designs other than “full penetration” to be specified for the attachment of scraper bars in a tee?

Answer 1: No

Answer 2: Yes

The following interpretation regarding Clause 8.1, 9.1.3.3 a) & b), Annex B, B.1.7 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is Clause B.1.7 mandatory?

Question #2: If so, does that mean that the heat treatment by Clauses 9.1.3.3 and 9.1.3.4 lot definition a) and b) is also restricted to being controlled within a +/- 15C from the set point temperature?

Question #3: Does demonstrated equivalency to Annex B in Clause 8.1 mean that the mechanical properties and microstructure are equivalent to those obtained from a furnace calibrated in accordance with Annex B?

Answer #1: Yes, unless some other practice can be demonstrated to be equivalent, as permitted by Clause 8.1

Answer #2: Yes, unless some other practice can be demonstrated to be equivalent, as permitted by Clause 8.1

Answer #3: Yes

The following interpretation regarding Clause 9.1.4.2 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Clause 9.1.4.2 states, “The qualification bend shall be made and tested in accordance with ASME B16.49”.



Question 1a: Is it intended that test methods in accordance with B16.49 supersede the test methods stated in Clause 9.4 for qualification bends?

Question 1b: Is it intended that hardness acceptance criteria in accordance with B16.49 supersede the hardness acceptance criteria stated in Clause 9.4 for qualification bends?

Clause 9.1.4.3 states, "...each production bend shall be hardness tested in the same locations as the qualification bend with the same harness test method".

Question 2a: Is it intended that test methods in accordance with B16.49 supersede the test methods stated in Clause 9.4 for production bends?

Question 2b: Is it intended that hardness acceptance criteria in accordance with B16.49 supersede the hardness acceptance criteria stated in Clause 9.4 for production bends?

Answer 1a: Yes

Answer 1b: No

Answer 2a: Yes

Answer 2b: No

The following interpretation regarding Clause 10.3 of CSA Standard Z245.11-17, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does the first paragraph of Clause 10.3 apply to bends?

Answer: No

The following interpretation regarding Clause 6.4.1 of CSA Standard Z245.11-13, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Do elbows less than GR 290 that have been hot formed over the mandrel from welded pipe also need to be heat treated in order to conform to CSA?

Answer: Yes, they need to be heat treated.

The following interpretation regarding Clause 16.6.3 & Figure 4 of CSA Standard Z245.11-13, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Does Z662 section 16.6.3 apply only for butt welds of pipe of unequal thickness as the commentary refers to “Butt welding of piping of unequal thickness...”? (or does it also apply to the welding of pipe to fittings?)

Question #2: We are welding pipe to a forged steel fitting fabricated to Z245.11 for use in a sour service pipeline designed to Z662. The forged fitting will have ends designed to match the wall thickness of mating pipe. Does the end design as illustrated in Figure 4 (d) of Z245.11 apply for butt welding of pipe to fittings for sour service pipelines designed to Z662?

Answer #1: No

Answer #2: No

The following interpretation regarding Clause Table 13 of CSA Standard Z245.11-09, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. Table 13 of Z245.11-09 shows 89.9 as the nominal outside diameter at bevel large end for NPS 3 × 2-1/2, NPS 3 × 2, NPS 3 × 1-1/2, and NPS 3 × 1-1/4. Should this be 88.9 instead? Is the intent that this should be 88.9?

Response: Yes.

The following interpretation regarding Clause 9.3.2.1 of CSA Standard Z245.11-01, Steel fittings, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

When traverse Charpy impact test specimens (CVN's) are required by the Standard (i.e. on Grades 290 and higher), but the physical dimensions of the test specimens (specifically, 4" nominal pipe and lower) do not allow for removal of transverse specimens (see attached drawing), does the standard permit:

Question (a): Deletion of the CVN requirements if it is not physically possible to remove them in the required orientation?

Question (b): Removal the CVN's in the longitudinal direction?

Question (c): Flattening the test samples to allow for the machining of transverse CVN test specimens?

Answer (a): Yes, if it is not possible to obtain a 1/4 or larger size specimen.

Answer (b): No.

Answer (c): No.



The following interpretation regarding Clause 8.1, 9.1.3.3 & 9.1.3.4 of CSA Standard Z245.12-17, Steel flanges, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: For the purposes of heat treatment in Clause 8.1 and 9.1.3.3 and 9.1.3.4, for a weld neck flange, is the defining “thickness” at the base of the hub?

Answer: Yes

The following interpretation regarding Clause Table 8 of CSA Standard Z245.15-13, Steel valves, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Table 8 provides the Minimum bore sizes. At the bottom of table it also gives the tolerance of -1.6 mm. Is it accurate to apply the -1.6 mm tolerance to the minimum bore sizes in Table 8?

Answer: Yes, it is accurate. It means that you can go 1.6 mm below what is in the table, for the accuracy.

The following interpretation regarding Clause 6.3 & Clause 3 Definitions of CSA Standard Z245.15-09, Steel valves, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: The definition of pressure containing parts lists many specific parts which are considered to be pressure containing but does not specifically list valve obturators. Is a valve obturator a pressure containing part?

Answer: No.

The following interpretation regarding Clause 8.4.4.1 of CSA Standard Z245.15-09, Steel valves, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Are the impact values based on the grade?

Question 2: If yes, are they based on the specified minimum yield strength?

Question 3: Are the impact values given a minimum average requirement?

Response 1: Yes.

Response 2: Yes.



Response 3: Yes.

The following interpretation regarding Clause 1.2.1 of CSA Standard Z245.15-05, Steel valves, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is an NPS 2 reduced port valve within the scope of CSA Z245.15?

Answer: Yes

The following interpretation regarding Clause 1.2 of CSA Standard Z245.20-18, Plant-applied external fusion bond epoxy coating for steel pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is any Z245.20 FBE coating system still considered a Z245.20 coating, if a Fusion Bond Polyester (FBP) UV protection topcoat is applied?

Answer: No

The following interpretation regarding Clause 6.1.3 & 6.1.1 of CSA Standard Z245.20-18, Plant-applied external fusion bond epoxy coating for steel pipe & Z245.21-18, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: In instances where a new revision to CSA Z245.20 has been published and there has been no changes to the annual qualification requirements or the respective test methods are pre-existing annual qualifications enough for an applicator to be compliant with clause 6.1.3 of CSA Z245.20, even if the manufacturer supplied certifications reference the previous revision of the standard?

Question 2: If the above answer is “No”, could the question of compliance be addressed by the coating manufacturer updating their annual certification to include a reference to the latest standard?

Question 3: In instances where a new revision to CSA Z245.21 has been published and there has been no changes to the coating qualification requirements or the respective test methods, does an applicator need to repeat clause 6.1 qualification testing to be compliant with the latest revision of the standard?

Answer 1: Yes

Answer 2: N/A

Answer 3: No

The following interpretation regarding Clause 12.12, 5.4 & 6.1.1 of CSA Standard Z245.20-14, Plant-applied external coatings for steel pipe, and Z245.22-14, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: For the impact test in CSA Z245.20 Clause 12.12, does the 600 mm x 600 mm x 600 mm base have to be a solid cube made out of wood?

Question #2: Is radial creep testing required to qualify a polyurethane system in accordance with CSA Z245.22 Clause 5.4, if the design temperature is less than 110°C?

Question #3: Does changing the amount of blowing agent (e.g. Cyclopentane) during the production / application of polyurethane foam constitute a change in formulation and therefore requalification in accordance with CSA Z245.22 Clause 6.1.1?

Answer #1: Yes

Answer #2: Yes

Answer #3: No, provided the density remains within the qualified properties of the system specified in Table 10.

The following interpretation regarding Clause 12.11.2 of CSA Standard Z245.20-14, Plant-applied external coatings for steel pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Clause 12.11.2 states that the flexibility test specimen dimensions "...from test rings shall measure approximately 25mm x 200mm x pipe wall thickness". The actual specimen thickness is then measured before testing per clause 12.11.3 (d). Question: Is it allowable to physically reduce the specimen thickness, by means that does not affect the coating, in order to accommodate bend test apparatus restrictions?

Answer: Yes

The following interpretation regarding Clause 12.2.2 (g) of CSA Standard Z245.20-10, Plant-applied external coatings for steel pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Q.1. Is it intended that the timing device be stopped when the tool no longer marks the gelled epoxy powder?



Q.2 Is it intended that the timing device be stopped the instant that the tool no longer contacts the metal plate?

Response 1: No.

Response 2: Yes.

The following interpretation regarding Clause 1 of CSA Standard Z245.20-06, External fusion bond epoxy coating for steel pipe / External polyethylene coating for pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does the scope of CSA Standard Z245.20-06 include two component high solids liquid epoxy coatings?

Answer: No

The following interpretation regarding Clause 5.2.2 and 6.1.3 of CSA Standard Z245.20-06, External fusion bond epoxy coating for steel pipe / External polyethylene coating for pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: With regard to the frequency of testing by the epoxy powder manufacturer specified in Clauses 5.2.2 and 6.1.3, is it permissible for an applicator to certify a coating system as meeting CSA Z245.20-06 when the date of testing indicated on the test report from the epoxy powder manufacturer for the coating system is more than 365 days prior to the date of application of the coating?

Answer: No

The following interpretation regarding Clause 6.1.1 (b) of CSA Standard Z245.20-02, External fusion bond epoxy coating for steel pipe / External polyethylene coating for pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: When one product is offered in several different versions, which differ only in the catalyst used to give the required gel time, all other components of the formulation (pigment, resin, curing agent, filler and additives) are the same, is one certification needed for the product or does each different gel time version need to be tested?
In other words, does a variation in the catalyst qualify as a change in formulation per 6.1.1 (b)?

Answer: No



The following interpretation regarding Clause 12.8, 12.7.3.3.1 of CSA Standard Z245.20-10, Plant-applied external coatings for steel pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Clause 12.8.1 (f) allows for the use of reverse osmosis water when preparing the 3% NaCl solution, however Clause 12.8.3.2 (h) specifies that the solution level be maintained by the addition of distilled water. Is it acceptable to use reverse osmosis water to maintain the solution level during the test?

Question #2: Clause 12.7.3.3.1 (a) states that the T_g values shall be determined from the inflection point and references figures 4 & 5. Upon review it appears that figure 4 (epoxy powder) is indicating the onset point whereas Figure 5 (coating) indicates the inflection point. Is figure 4 indicating the wrong position for determining the T_g value?

Response #1: Yes.

Response #2: Yes.

The following interpretation regarding Clause 5.6.1, 5.6.2, 12.3.4, 12.4.5 and 12.5.5 of CSA Standard Z245.21-10, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Clauses 5.6.1 & 5.6.2 make reference to Clause 5.2(b). Should the referenced clause be 5.2.1(b)?

Question #2: Clauses 12.3.4, 12.4.5 and 12.5.5 require you to report the lot number for each coating component, but the term for primer has been changed to batch. Should we be reporting the primer batch number for these tests?

Response #1: Yes.

Response #2: Yes.

The following interpretation regarding Clause 6.1.1, 6.2.2.4, 8.2.1 and 8.2.3 of CSA Standard Z245.22-10, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Clause 6.1.1 states that, "The foam insulation coating system shall be qualified for production by the applicator by testing specimens removed from a pipe coated in the plant...." Does this mean that foam insulation system must be qualified for each individual application facility?

Question #2: Clause 6.2.2.4 states that for liquid anti-corrosion coatings applied in line with the foam application the thickness measurements and holiday inspection shall be conducted without foam application at start up and every 4 hours of production. If a pipe fails to meet the thickness



requirement or pass the holiday test is the disposition that all coated pipe from the last passing test to the noted failure must be stripped?

Question #3: Clause 8.2.1 defines the maximum number of repairs per 12m pipe length, but doesn't provide a disposition if it is exceeded. Does the coated joint need to be stripped if 2 repairs per 12m pipe length is exceeded?

Question #4: Clause 8.2.3 references Clause 8.2.1 for repair of remaining cracks and protrusions. Should this reference Clause 8.2.2 instead?

Response #1: Yes.

Response #2: No.

Response #3: Yes.

Response #4: No.

The following interpretation regarding Clause 7.4.1.4 of CSA Standard Z245.21-98, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: In Clause 7.4.1.4 of CSA Z245.21-98, it states that the minimum recording frequency of measurements shall be at start up, 5th, 15th, 50th and every 50th pipe thereafter. Does this start up refer to when pipe starts moving through the plant for coating?

Question 2: Does this start up refer to start of every work order regardless if the work order occurs during a continuous run?

Answer 1: Yes, the startup is the first pipe coated in the coating run.

Answer 2: No

The following interpretation regarding Clause 6.1.1 of CSA Standard Z245.22-18, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does “manufacturer” in Clause 6.1.1 a) refer to the manufacturer of the foam insulation materials?

Answer: Yes, the chemical manufacturer of each component, polyol, isocyanate and blowing agent.



The following interpretation regarding Clause 8.3 of CSA Standard Z245.22-18, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Clause 8.2.2 through 8.2.4 allows repairs to foam insulation, two repairs per 12 m joint and repair length up to 3 meters in length. Clause 8.3 only states two repairs to a maximum of 300mm. Foam repairs completed under 8.2.3 & 8.2.4 will require external polyethylene repair. Is it permissible to perform external polyethylene jacket repairs within the same limits as specified in 8.2.2 through 8.2.4?

Answer: Yes

The following interpretation regarding Clause Table 2 of CSA Standard Z245.22-14, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is there a way to express ASTM D2842 test results so that they can be compared to the CSA Z245.22 and CSA245.30 acceptance criteria of “ ≤ 20 g /1000 mL”?

Answer: No. This will be corrected in the next edition of the standards. Default to ASTM D2842 for the units and record value for pass/fail criteria.

The following interpretation regarding Clause Table 2 of CSA Standard Z245.22-14, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is compressive strength testing (before aging) at maximum design temperature +/- 3 deg C required in order to qualify a polyurethane foam to the CSA Z245.22 standard?

Question #2: Is compressive strength testing on aged test specimens required in order to qualify a Polyurethane foam to the CSA Z245.22 or CSA Z245.30 standard?

Answer #1: No

Answer #2: No

The following interpretation regarding Clause Table 2 of CSA Standard Z245.22-14, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

CSA Z245.22 Table 2 (Coating system qualification tests) does not have a column for “number of test specimens” but does list the same ASTM standards in the Test Method column.

Question #1: Can the number of test specimens listed in CSA Z245.30 be used to qualify PUR foams to CSA Z245.22?



Question #2: Do the number of test specimens required by the ASTM test method need to be followed?

Answer #1: No

Answer #2: Yes, unless otherwise stated in CSA

The following interpretation regarding Clause 6.1.1 (a) of CSA Standard Z245.22-14, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: We currently use cyclopentane as a blowing agent in the production of polyurethane foam insulation. This raw material may be purchased through multiple suppliers, but regardless of supplier, the cyclopentane must meet our internal specifications to be purchased. Does a change in cyclopentane supplier constitute a change in the manufacturer of the foam insulation materials?

Answer: Yes

The following interpretation regarding Clause 8.2.1 of CSA Standard Z245.21-14, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Clause 8.2.1 states “Steel pipe surface imperfections (e.g. protrusions, particles under the coating, sharp cuts, and indentations) that fail to meet the holiday testing requirements of Clause 7.4.2 shall not be repaired and shall be cut out as a cylinder.”

In the 2010 edition, this clause stated ““Imperfections that fail to meet the holiday testing requirements of Clause 7.4.2 (e.g. protrusions, particles under the coating, sharp cuts, and indentations) shall be cut out.”

Was the intent to change the clause to deal with steel pipe imperfections instead of coating holiday repairs?

Question #2: Is the actual intent of this clause that the affected coating be removed and repaired in accordance with Clauses 8.2.2 and 8.2.3?

Answer #1: Yes

Answer #2: Yes

The following interpretation regarding Clause 12 of CSA Standard Z245.20-14, Plant-applied external coatings for steel pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question: Are test specimens with 6.0 mm thickness acceptable under CSA Z245.20 requirements?

Answer: Yes

The following interpretation regarding Clause 12.8.3.1 (i) & 12.14.3 (b) of CSA Standard Z245.20-14, Plant-applied external coatings for steel pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Clauses 12.8.3.2 (i) and 12.14.3 (b) of Z245.20-14 require that the test specimen be “air cooled”. Is forced air cooling by means of aiming a fan at the specimen allowed?

Answer: Yes

The following interpretation regarding Clause 12.10 of CSA Standard Z245.20-14, Plant-applied external coatings for steel pipe, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Regarding the application of ARO coatings for a System 2B coating system for testing porosity: is it acceptable to spray the ARO on a prepped bar (not previously coated with FBE) and rate it for cross sectional porosity?

Answer: No

The following interpretation regarding Clause 1.2 of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

The scope of the Z245.30-14 Clause 1.2 identified “liquid-applied or fusion bond epoxy (FBE) coating”, while the Z245.30-18 Clause 1.2 identifies “liquid-applied epoxy or fusion bond epoxy (FBE).

Question 1: Does the scope in Z245.30-18 mean to include liquid-applied epoxy hybrid coatings?

Question 2: Does the scope in Z245.30-18 mean to include liquid-applied 100% urethane coatings?

Answer 1: Yes

Answer 2: No



The following interpretation regarding Clause 1.2 a) of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: SPC SP 2888 is an epoxy hybrid (contains a fraction of urethane in a predominantly epoxy matrix). With a glass transition temperature below 115 C, is this product considered a System FC1 under CSA Z245.30?"

Answer: Yes

The following interpretation regarding Clause Table 6 of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is the intent of Table 6 – Appearance, to mandate that 100% of pinholes be detected by visual inspection?

Answer: No

The following interpretation regarding Clause 6.1.2.5.1 e) & 6.1.2.5.5 e) of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: If an applicator was qualified to the 2014 edition, and does not require re-qualification per Clause 6.1.2.6, is it expected that a new qualification certificate be issued?

Answer: No

The following interpretation regarding Clause 7.5.4.1 of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Clause 7.5.4.1, Holiday inspection – General. For new construction, is the use of a holiday detector on 100% of the coated surface of the pipe required?

Question 2: Does “existing pipe” refer to pipe already in-service?

Answer 1: Yes



Answer 2: Yes

The following interpretation regarding Clause 7.5.4.1 of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is 100% holiday detection required on coating applied on a pipe replacement section, where possible?

Answer: Yes

The following interpretation regarding Clause Table 7, Clauses 9 & 10 including footnotes of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question 1: Is it required to perform an adhesion test onto the outer jacket when using FC7 for an FC6 system outer layer if the FC7 MQAP does not require it?

Question 2: Is it required to perform an adhesion test onto the polyurethane foam when using FC7 for an FC6 system outer layer if the FC7 MQAP does not require it?

Answer 1: Yes

Answer 2: No

The following interpretation regarding Clause 12.1 b) of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Clause 12.1 b) “The coating shall reach a thumbnail hard state”.

Question: Is the use of a thumbnail, as stated in Clause 12.1 b), a test method?

Answer: No

The following interpretation regarding Clause Table 1 of CSA Standard Z245.30-18, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Table 1: Manufacturer qualification coating test requirements for systems FC1, FC2 and FC3

Question: Is flexibility testing in the field applicable to girth welds coated with liquid epoxy coating(s)?

Answer: No

The following interpretation regarding Clause Testing of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Given that the coatings made at our two manufacturing facilities are identical in every way, is it permissible to do full Z245.30 testing on coatings made at one facility only?

Answer: No

The following interpretation regarding Clause 1.1 & 5.3.1, and Table 1 FC1 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does the coating need to pass 95 °C adhesion even if there is not an existing coating?

Answer: No

The following interpretation regarding Clause 1.2 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it intended that the System for liquid-applied coatings be classified by the glass transition temperature of the coating?

Answer: No. The System classification for liquid-applied coatings are to be determined by the maximum operating temperature of the coating and the System classification for fusion bond epoxy coatings are determined by the glass transition temperature.

The following interpretation regarding Clause 1.2 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question: Does System FC1, FC2 and FC3 of the CSA Z245.30-14 standard include liquid applied vinyl esters and polyurethane coatings?

Answer: No

The following interpretation regarding Clause Table 1 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is it necessary to test the coating at 1.5 J if it passes at 3 J?

Answer: No

The following interpretation regarding Clause Tables 2, 3, 5, 6 & 7 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Does the adhesion testing need to be performed at both the steel and the existing coating?

Question #2: And if so is the number of test samples to be 3 in each location for Tables 2, 3 and 5?

Question #3: For Tables 6 and 7 is the requirement to test both locations, steel and existing coating?

Answer #1: Yes

Answer #2: Yes, three at each location for a total of 6 test samples

Answer #3: Yes

The following interpretation regarding Clause Table 4 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is there a way to express ASTM D2842 test results so that they can be compared to the CSA Z245.22 and CSA245.30 acceptance criteria of “ ≤ 20 g /1000 mL”?

Answer: No. This will be corrected in the next edition of the standards. Default to ASTM D2842 for the units and record value for pass/fail criteria.



The following interpretation regarding Clause Table 4 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is compressive strength testing (before aging) at maximum design temperature +/- 3 deg C required in order to qualify a polyurethane foam to the CSA Z245.22 standard?

Question #2: Is compressive strength testing on aged test specimens required in order to qualify a Polyurethane foam to the CSA Z245.22 or CSA Z245.30 standard?

Answer #1: No

Answer #2: No

The following interpretation regarding Clause Table 4 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: CSA Z245.30 Table 4 (Manufacturer qualification coating test requirements for System FC6) has a column that details the number of test specimens required and also has a column that details the test method to be used. In cases where the “number of test specimens” in Table 4 differs from the number of test specimens required by the ASTM test method being referenced, is it permissible to supersede the ASTM number of test specimens with the CSA Z245.30 Table 4 number of test specimens when qualifying PUR foams in accordance with CSA Z245.30?

Answer: Yes

The following interpretation regarding Clause 4.2 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: Is the seller required to have a documented QMS?

Question #2: Is the seller considered the manufacturer as defined by the standard?

Question #3: Is the toll manufacturer considered the manufacturer as defined by the standard?

Answer #1: Yes

Answer #2: Yes

Answer #3: No

The following interpretation regarding Clause 5.3 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question #1: If a manufacturer of plural component systems manufactures the components at multiple manufacturing sites, do different combinations of components manufactured at different sites by the same manufacturer, to the same formulation, require separate qualification?

Question #2: If a manufacturer has multiple grades of products (e.g., brush applied, cartridge, spray applied) with different physical properties, are they considered different coating formulations requiring separate qualification?

Answer #1: No

Answer #2: Yes

The following interpretation regarding Clause 6.1.2.4, 6.1.2.5 & 6.1.3.4 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Does the applicator have to maintain the qualification test records as identified in Tables 6, 7, 8 of Clause 6.1.2.4?

Answer: No

The following interpretation regarding Clause 6.1.3.4 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.

Question: Is there a minimum duration for maintaining competency records according to Z245.30-14?

Answer: No

The following interpretation regarding Clause 7.5.2.1 of CSA Standard Z245.30-14, Field-applied external coatings for steel pipeline systems, has been approved by the Members of the CSA Standards Technical Committee on *Petroleum and Natural Gas Industry Pipeline Systems and Materials (Z662)*.



Question #1: Can the coating of flat panels be used to meet the applied coating quality testing requirements of system FC1, 2, 3 in table 6?

Question #2: Can the coating of flat panels be used to meet the applied coating quality testing requirements of system FC4, 5, 7 in table 7?

Question #3: Can the coating of flat panels be used to meet the applied coating quality testing requirements of system FC6 in table 8?

Answer #1: Yes, provided the company approves it. See ‡ Note to Table 6:

‡ Alternate test methods are acceptable providing they are approved by the company.

Answer #2: No

Answer #3: No

Posted Jun 24, 2021

The following interpretation regarding Table 1, Reference 25.5 of CSA standard Z317.2, Special requirements for HVAC systems in health care facilities, has been approved by the Members of the CSA Technical Committee on *Health Care Facilities (Z257.)*

Question:

i) Do the HVAC parameters in CSA Z317.2 Table 1; Reference 25.5; Function - In-vitro fertilization apply to a room that performs embryo transfer procedures only?

Answer:

i) Yes.

Note: Table 1, Reference 25.5 focuses on minor surgical procedure spaces, so it would apply to the embryo transfer room. Please note that this reference would also apply to any other procedure rooms associated with the IVF process (e.g. egg retrieval room). It is not intended to apply to administrative spaces.

Posted Apr 20, 2021

The following interpretation regarding Clause 8.2.2 of CSA standard N287.3-14, Design requirements for concrete containment structures for nuclear power plants, has been approved by the Members of the CSA Technical Committee on *Concrete Containment and Safety Related Structures for Nuclear Power Plants (N287/291)*

Question:

i) Is the intention of Clause 8.2.2 of N287.3 for non-prestressed reinforced concrete design to provide more stringent requirements than Ultimate Limit State (ULS) prescribed in A23.3?

ii) Shall strain limit requirement of 0.002 per Clause 8.2.2 be considered together with concrete resistance factor of 0.65 from CSA A23.3? (i.e. shall concrete stress-strain curve be modified by concrete resistance factor)?

Answer

i) Yes.

ii) Yes

Posted Apr 20, 2021

The following interpretation regarding Clause 9.2.1 of CSA Standard CAN/CSA-C439-18, Laboratory methods of test for rating the performance of heat/energy-recovery ventilators, has been approved by the Members of the CSA Technical Committee on *Heating, Ventilation, Air Conditioning and Refrigeration*.

Question 1: The apparent effectiveness of an HRV/ERV shall be calculated as follows: To determine the value of M_s or M_e for use in Equation 7, one shall use the equations provided in Clause 9.3.3.1 defining M_s and M_e (i.e., $M_s = M_2 \times (1-R)$, and $M_e = M_3 \times (1-R)$). Is this interpretation correct?

Answer 1: No. Further clarification may be required at next revision.

Question 2: The apparent effectiveness of an HRV/ERV shall be calculated as follows: To determine the value of M_s or M_e for use in Equation 7, one shall use the value of M_2 for M_s and M_3 for M_e . Is this interpretation correct?

Answer 2: Yes. Further clarification may be required at next revision.

Posted Apr 20, 2021

The following interpretation regarding Clauses 9.3.3.4.3 (equation 15) and Clauses 9.3.3.4.4 (equation 16) of CSA Standard CAN/CSA-C439-18, Laboratory methods of test for rating the performance of heat/energy-recovery ventilators, has been approved by the Members of the CSA Technical Committee on *Heating, Ventilation, Air Conditioning and Refrigeration*.

Question: When calculating Q_{CD} for tests performed in cooling mode, one shall use Eq. 15 as written. When calculating Q_{CD} for tests performed in heating mode, one shall transpose the variables t_{air} and $t_{case,i}$ as follows:

$$Q_{CD} = \left(\sum_{i=1}^n U A_{cd,i} \times (t_{air} - t_{case,i}) \right) \times \theta_t$$

Likewise, when calculating Q_{CW} for tests performed in cooling mode, one shall use Eq. 16 as written. When calculating Q_{CW} for tests performed in heating mode, one shall transpose the variables h_{air} and $h_{case,i}$ as follows:

$$Q_{CW} = \left(\sum_{i=1}^n U_w A_{cw,i} \times (h_{air} - h_{case,i}) \right) \times \theta_t$$

Is this interpretation correct?

Answer: Yes. The objective is to take the absolute value between “air” and “case”.

Currently, laboratory is correctly applying the absolute value in their calculations. Further improvements should be included in the new revision for further clarifications.

Posted Apr 20, 2021

The following interpretation regarding Clause 9.3.3.5 of CSA Standard CAN/CSA-C439-18, Laboratory methods of test for rating the performance of heat/energy-recovery ventilators, has been approved by the Members of the CSA Technical Committee on *Heating, Ventilation, Air Conditioning and Refrigeration*.

Question: For HRVs/ERVs that circulate indoor air through the unit for defrost, the energy loss from the circulated air shall be calculated as follows: When using Eq. 17, the flow rate of the air circulated for defrost, M_D , shall be determined using the following equation: $M_D = M_2$ or M_3 , whichever is greater. Is this interpretation correct?

Answer: No. Lab has sufficient measurements and responsibilities determine M_D . Further improvements should be included in the new revision for further clarifications.

Posted Apr 20, 2021

The following interpretation regarding Clause 9.3.3.6 of CSA Standard CAN/CSA-C439-18, Laboratory methods of test for rating the performance of heat/energy-recovery ventilators, has been approved by the Members of the CSA Technical Committee on *Heating, Ventilation, Air Conditioning and Refrigeration*.

Question 1: Energy loss due to casing leakage shall be calculated in accordance with the following equations. For consistency with Equations 18 a) and 18 b), Clause 9.3.3.6 should be amended to read as follows: For tests performed in cooling mode, the absolute value of $(t_{3,i} - t_{4,i})$ shall be used in Equation 18 a), and the absolute value of $(t_{5,i} - t_{1,i})$ shall be used in Equation 18 b). Is this interpretation correct?

Answer 1: Yes. Missing $(t_{3,i} - t_{4,i})$ in the requirement following equations 18a and 18b.

Question 2a: Energy loss due to casing leakage shall be calculated in accordance with the following equations. Q_L shall be set to zero whenever an H/ERV is in recirculation defrost mode. Is this interpretation correct?

Answer 2a: Yes. When 9.3.3.3 applies, then Q_L can be set to 0 during defrost period. Standard can be updated for more clear definitions for the various defrost modes (i.e. recirculation defrost mode).

Question 2b: Energy loss due to casing leakage shall be calculated in accordance with the following equations. To evaluate the conditional equation:

$$\left(M_{3,i} - M_{4,i} \times \frac{B_4}{B_3} \right) - \left(M_{2,i} \times R_1 \right) > 0.05 \times \sum_{i=1}^n M_{max,i}$$

If

$$\left[\left(M_{3,i} - M_{4,i} \times \frac{B_4'}{B_3'} \right) - (M_{2,i} \times R_1) \right] > 0.05 \times M_{\max,i}$$

And to undertake the calculation in equation 18 a) of the C439 standard (if applicable),
The absolute value of

$$\left[\left(M_{3,i} - M_{4,i} \times \frac{B_4'}{B_3'} \right) - (M_{2,i} \times R_1) \right] \text{ Shall be used. Is this interpretation correct?}$$

Answer 2b: No. However, Further evaluation is required to better understand the validity the QL calculations and its impact for qualification. Shall be considered for next revision.

Question 2c: Energy loss due to casing leakage shall be calculated in accordance with the following equations. To evaluate the conditional equation:

~~If~~

$$\left[\left(M_{1,i} - M_{4,i} \times \frac{B_4}{B_1} \right) - M_{2,i} \times (1 - R_2) \right] > 0.05 \times \sum_{i=1}^n M_{\max,i}$$

If

$$\left[\left(M_{1,i} - M_{4,i} \times \frac{B_4''}{B_1''} \right) - M_{2,i} \times (1 - R_2) \right] > 0.05 \times M_{\max,i}$$

And to undertake the calculation in equation 18 b) of the C439 standard (if applicable),
The absolute value of

$$\left[\left(M_{1,i} - M_{4,i} \times \frac{B_4''}{B_1''} \right) - M_{2,i} \times (1 - R_2) \right] \text{ Shall be used. Is this interpretation correct?}$$

Answer 2c: No. However, Further evaluation is required to better understand the validity the QL calculations and its impact for qualification. Shall be considered for next revision.

Question 2d: Energy loss due to casing leakage shall be calculated in accordance with the following equations. There are problems with the way that the conditional equations, resultant equations (if applicable) and summations are presented in clause 9.3.3.6.

Clause 9.3.3.6 should be interpreted as

For i = 1 to n

If

$$\left[\left(M_{3,i} - M_{4,i} \times \frac{B_4'}{B_3'} \right) - (M_{2,i} \times R_1) \right] > 0.05 \times M_{max,i}$$

Then $Q_{Li} =$

$$\left[\left(M_{3,i} - M_{4,i} \times \frac{B_4'}{B_3'} \right) - (M_{2,i} \times R_1) \right] \times C_p \times (t_{3,i} - t_{4,i}) \times \Delta\theta_i \quad \text{Eq. 18a)}$$

Otherwise $Q_{Li} = 0$

$$Q_{L1} = \sum_{i=1}^n Q_{Li}$$

If

$$\left[\left(M_{1,i} - M_{4,i} \times \frac{B_4''}{B_1''} \right) - M_{2,i} \times (1 - R_2) \right] > 0.05 \times M_{max,i}$$

Then $Q_{L2i} =$

$$\left[\left(M_{1,i} - M_{4,i} \times \frac{B_4''}{B_1''} \right) - M_{2,i} \times (1 - R_2) \right] \times C_p \times (t_{5,i} - t_{1,i}) \times \Delta\theta_i \quad \text{Eq. 18b)}$$

Otherwise $Q_{L2i} = 0$

$$Q_{L2} = \sum_{i=1}^n Q_{L2i}$$

Is this interpretation correct?

Answer 2d: Yes. Condition should be applied at each interval.

Posted Apr 20, 2021

The following interpretation regarding Clause 9.3.4 of CSA Standard CAN/CSA-C439-18, Laboratory methods of test for rating the performance of heat/energy-recovery ventilators, has been approved by the Members of the CSA Technical Committee on *Heating, Ventilation, Air Conditioning and Refrigeration*.

Question: Net Outdoor Airflow: During recirculation defrost, M_{sup} , M_{exh} , and M_{OA} should be set to zero in Equation 25. Is this interpretation correct?

Answer: Yes. Provided: Clause 9.3.3.3 applies

and

~~the measured flows M_{sup} , M_{exh} , and M_{OA} are less than 5 L/s. Then M_{sup} , M_{exh} , and M_{OA} shall be set to zero.~~

Further improvements should be considered in the new revision for further clarifications on how to determine whether 9.3.3.3 applies.

Posted Apr 20, 2021

The following interpretation regarding Clause 10.6.5 of CSA Standard CAN/CSA-C439-18, Laboratory methods of test for rating the performance of heat/energy-recovery ventilators, has been approved by the Members of the CSA Technical Committee on *Heating, Ventilation, Air Conditioning and Refrigeration*

Question: The low-temperature ventilation reduction for net outdoor airflow, supply airflow, and exhaust airflow shall be calculated as follows: When calculating $LTVR_E$, M_e shall be used for calculating m_{end} and m_{start} . Additionally, when calculating $LTVR_E$, M_e shall be equal to zero during periods of recirculation defrost. Is this interpretation correct?

~~[[Note: at CSA's discretion, please replace the variable M_e with the variable M_z in the interpretation above if M_z is the correct variable to use when calculating $LTVR_E$.]]~~

Answer: Yes. Provided: Clause 9.3.3.3 applies

and

~~the measured flow M_e is less than 5 L/s. Then M_e shall be set to zero.~~

Further improvements should be considered in the new revision for further clarifications on how to determine whether 9.3.3.3 applies.

Posted Apr 20, 2021

The following interpretation regarding ~~Clause 10.6.6~~ Clause 3 Definitions of CSA Standard CAN/CSA-C439-18, Laboratory methods of test for rating the performance of heat/energy-recovery ventilators, has been approved by the Members of the CSA Technical Committee on *Heating, Ventilation, Air Conditioning and Refrigeration*.

Question: ~~Clause 10.6.6~~ ~~The maximum unbalanced airflow measured during the 72 h test shall be recorded and reported:~~ Clause 3 Definitions. Low Temperature Airflow Imbalance (LTAI) shall be calculated as follows:

$$LTAI = \left[\frac{\frac{\sum_{i=0}^n M_e}{n}}{\frac{\sum_{i=0}^n M_e}{n}} \right] \times 100\%$$

where $M_e = 0$ (when clause 9.3.3.3 applies) Is this interpretation correct?



Answer: Yes.

Posted Apr 20, 2021

The following interpretation regarding Clause 7.6.2 of CSA Standard CSA B51:19, Boiler, pressure vessel and pressure piping code, has been approved by the Members of the CSA Technical Committee on *Boilers and Pressure Vessels (B51)*.

Question 1: Does the term “anhydrous ammonia” as used in CSA B51 apply in the same way to both agricultural and refrigeration applications?

Answer 1: Yes. The definition is applicable to both agricultural and refrigeration applications.

Question 2: Is a pressure vessel containing ammonia for use in a refrigeration system considered an anhydrous ammonia tank?

Answer 2: Yes. The risks involved in storing ammonia for refrigeration requires its classification as an anhydrous ammonia tank.

Question 3: Does a pressure vessel with a water capacity greater than 13 600 L that contains ammonia for use in a refrigeration system require a manhole in accordance with clause 7.6.2?

Answer 3: Yes. The manhole is needed to permit inspection on vessels with water capacity greater than 13 600 L.

Posted Feb 26, 2021

The following interpretation regarding Clause 6.8.2 of CSA standard N289.3-10, Design procedures for seismic qualification of nuclear power plants, has been approved by the Members of the CSA Technical Committee on *Seismic Design for Nuclear Power Plants (N289)*.

Question:

i) Is the intent of clause 6.8.2 CSA N289.3-10 to add absolute values of piping responses to calculate total response in the multiple response spectra method where the seismic inputs to the piping system are known to be in phase?

ii) Is the intent of clause 6.8.2 (and in particular 6.8.2.4) CSA N289.3-10 to add absolute values of piping stresses from differential support movements to calculate total differential support movement response, when differential support movements are applied one at a time (i.e. in separate load cases)?

Answer:

i) Yes. This is correct for inertial effects, as indicated in the last sentence in Clause 6.8.2.3.

ii) No. Clause 6.8.2 (and in particular 6.8.2.4) does not address how to combine stresses from differential support movements when they are applied one at a



time.

Posted Feb 26, 2021

The following interpretation regarding Clause 7.6.5.2 of CSA standard N289.3:20, Design procedures for seismic qualification of nuclear power plants, has been approved by the Members of the CSA Technical Committee on *Seismic Design for Nuclear Power Plants (N289)*.

Question 1: For anchorage of conventional NPP SSCs that fall under NBCC, is it the intent to use, as a minimum, load combinations as per NBCC for their anchorage design as per Clause D.4.2?

Answer 1: Yes. NBCC load combinations shall be used as a minimum, but also load combinations as per N287 or N291 may be used, especially for anchorage of SSCs that are supported on containment or safety-related structures.

Question 2: For anchorage of conventional NPP SSCs that fall under NBCC, does clause D.4.3.3 apply so that there can be an anchorage design that can avoid the application of clauses D.4.3.4 to D.4.3.8?

Answer 2: No. D.4.3.3 should not apply such that clauses D.4.3.4. to D.4.3.8 are always applicable.

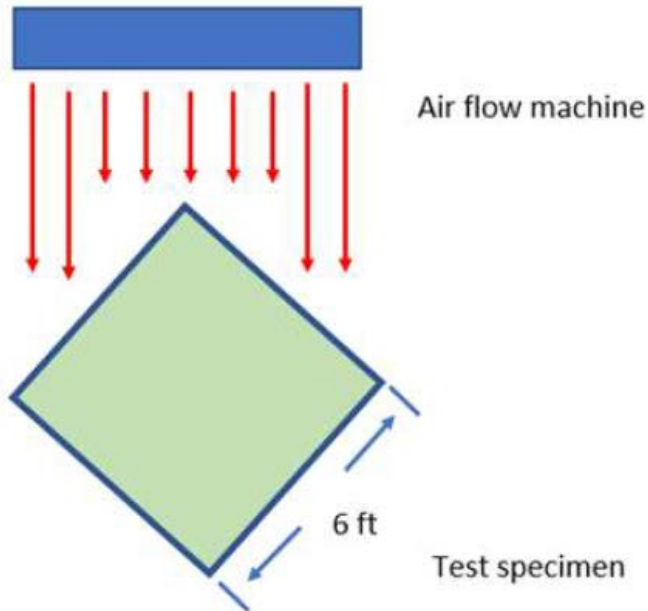
Posted Jan 28, 2021

The following interpretation regarding Clause 7.1 of CSA standard A123.24:15 (R2019), Standard test method for wind resistance of modular vegetated roof assembly, has been approved by the Members of the CSA Technical Committee on *Bituminous Roofing Materials (A123 Series)*.

Question: is the following interpretation right (YES) or wrong (NO)

Interpretation A) per 7.1

The with of the test specimen is measured as indicated on the drawing below?



Answer: Yes

Posted Jan 28, 2021

The following interpretation regarding Clause 10.7 of CSA Standard N293-12, Fire protection for nuclear power plants, has been approved by the Members of the CSA Standards Technical Committee on *Fire Protection for Nuclear Power Plants (N293)*.

Question: Does 10.7.4 apply to mobile foam carts and their contained concentrate installed for emergency response in that manufacturer instructions can be followed for maintenance or applicable standards?

Answer: Yes

Posted Jan 28, 2021



The following interpretation regarding Clauses 8.2.1.1, 8.2.1.4 and 8.2.1.5 of CSA Standard N293-12 (R2017), Fire protection for nuclear power plants, has been approved by the Members of the CSA Standards Technical Committee on *Fire Protection for Nuclear Power Plants (N293)*.

Question:

- a) 8.2.1.1 applies to determining the extent of fire training that is appropriate (e.g. fire brigade vs specialist sitting at a computer).
- b) 8.2.1.4 applies to everyone who gets fire safety training.
- c) 8.2.1.4 is determined by the training needs analysis (TNA).
- d) 8.2.1.4 is only for individuals who have been determined to need specific fire awareness training and is NOT the general expectation of staff and does NOT need to be covered by General training so everyone receives it.
- e) 8.2.1.5 applies to all staff who can access the station should be trained on fire extinguishers, not just those expected to be competent in their use.

Answer:

- (a) Yes
- (b) Yes
- (c) No (Clause 8.2.1.4 applies to all personnel and is NOT determined by TNA which determines what needs to be done over and beyond the minimum requirements)
- (d) No
- (e) Yes