

Topic Paper

G. OPR – Pipeline Integrity Topic Paper

Subtopic 1: Definition of Onshore Pipeline

Objectives for Improvement

The objective is to include new requirements in the OPR that apply to CER-regulated onshore pipelines transporting hydrogen and carbon dioxide in a gaseous state instead of imposing authorization-specific conditions that emulate provisions in the OPR that apply to hydrocarbon pipelines. Other commodity pipelines (such as dense phase carbon dioxide, water, or slurry pipelines that fall within the definition of pipeline pursuant to the Canadian Energy Regulator Act) would continue to be regulated on a case-by-case basis pursuant to the applicable provisions of the CER Act and the conditions contained in their specific authorizations.

Proposed Option

The CER is considering amending the definition of onshore pipeline in the OPR to include the transmission of hydrogen and carbon dioxide in a gaseous state.

Response

G1. Please provide feedback on the proposed change to the definition of onshore pipeline to include hydrogen and carbon dioxide in a gaseous state.

[We have no concerns with the proposed change to the definition of onshore pipeline to include hydrogen and carbon dioxide in a gaseous state.](#)

Subtopic 2: Use of technologies for which no standard is set out in the OPR

Objectives for Improvement

The objective of new requirements will be to help ensure that companies proposing to use technologies for which no standard is set out in the OPR implement them in a manner that is safe and protective of people, the environment, sites of historic or cultural importance, and property.

Proposed Options

The CER is considering the following options to meet the objective outlined above:

- adding a new requirement to section 5.1 to include a notification to the CER where a company plans to use a technology for components, processes, or systems:

- for which no standard is set out in the OPR, and
- which has not been independently reviewed and publicly released.
- adding a new requirement that companies establish and implement a process for evaluating a technology for which no standard is set out in the OPR, and which has not been independently reviewed and publicly released.

Response

G2. What would an appropriate review period be for a notification?

It challenging to determine the appropriate notification review period as the requirement to notify the CER about new technologies is unclear regarding its scope and implementation.

G3. Do you have comments on the proposed approach or suggestions for alternatives?

Rather than requiring a general notification, the CER should consider establishing a risk-based screening mechanism to determine when notification is needed. The notification process should be detailed through Guidance to allow for flexibility and adjustments as the process evolves.

The CER should consider industry-accepted best practices instead of creating new stand-alone requirements. Industry adheres to well-established codes and standards (CSA Z662, ASME, API, CEC, NFPA), ensuring that any new technology meets or exceeds these benchmarks. Additional regulatory requirements by the CER would lead to inefficiencies and redundancies.

Subtopic 3: Pipeline Design

Objectives for Improvement

The objective of new requirements will be to help ensure that companies appropriately assess, mitigate, and manage risk from pipeline design, through construction and operation and finally, abandonment.

Proposed Options

The CER is considering the following options to meet the objective outlined above:

1. adding a requirement for pipeline design to include supporting risk assessments;
2. adding a requirement for companies to perform geohazards assessments to determine potential risks to the pipeline; and
3. adding a requirement for companies selecting trenchless technology for pipeline installations to notify the CER if the installation occurs under a water body or if the installation is large and occurs over land.

Response

G4. Please provide feedback on the inclusion of these new requirements. Provide feedback on the threshold size of the installation mentioned in option 3.

There is general support for incorporating risk assessments and geohazard evaluations into pipeline design; however, mandating these as a universal requirement may be excessive. Stress loadings and dynamic effects are already addressed under CSA Z662, making some of the proposed requirements redundant. Additionally, requiring further geotechnical data collection for geohazard assessments could lead to increased design costs without necessarily providing significant safety or operational benefits. A more targeted approach, based on project-specific risks, may be a more efficient way to achieve the intended regulatory improvements. Any new requirements should be developed and implemented through Guidance and not within the OPR.

G5. Please provide feedback on the impact of these new requirements on safety throughout the lifecycle of the pipeline.

This new requirement could increase the administrative burden through the life cycle of the pipeline with little impact on overall pipeline safety. Excessive regulation may discourage trenchless technology use, leading to higher environmental disruption and safety concerns from open-trench installations.

Subtopic 4: Storage Facilities

Objectives for Improvement

The objective of new requirements will be to help ensure that companies improve safety for people living, working, or exercising rights near storage facilities.

Proposed Options

The CER is considering the following options to meet the objective outlined above:

- adding a requirement that storage facilities have an alternate source of power for emergency shut-down, emergency lighting for evacuation, and maintaining other essential services;
- adding a requirement that storage facilities are designed and constructed to have a secondary containment system capable of containing ignited spills such that the fire does not expose other tanks or adjoining property to ignition;
- adding a requirement that storage facilities are designed and constructed to have fire detection and fire protection; and
- adding a requirement that companies have the demonstrable capability to safely extinguish a fire at their storage facilities.

Response

G6. Please provide feedback about these proposed options.

Clarification is needed on whether these new regulatory requirements will be retroactive for existing facilities or only applicable to new infrastructure. Retroactive implementation would be cost prohibitive and consume resources that could be allocated to other initiatives.

Major pipeline terminals are typically equipped with backup power, UPS systems, and emergency lighting to ensure operational safety during power outages. However, clarification is needed on whether these new regulatory requirements will be retroactive for existing facilities or only applicable to new infrastructure.

For secondary containment of ignited spills, containment berms are commonly used to isolate individual tanks and minimize spill impact. However, concerns remain regarding the definition of "exposure", particularly in terms of radiant heat and thermal flux limits. It is also impractical to expect containment measures to completely prevent radiant heat exposure to adjacent equipment or property.

In terms of fire detection and protection, many facilities already employ fire eyes, LEL detection, and fire suppression systems to mitigate fire risks. However, further clarification is needed on the level of fire protection required under the new regulations. It remains unclear whether full-tank suppression systems, rim-seal fire detection, or NFPA compliance will be the required standard. Additionally, it should be clarified whether existing compliance with NFPA regulations will be sufficient to meet new regulatory requirements.

Regarding fire extinguishing capability, many facilities rely on third-party emergency response providers to handle fire incidents. Rather than requiring companies to maintain on-site fire extinguishing capabilities, a more practical approach would be to demonstrate an ability to respond within a reasonable timeframe. This would ensure effective fire suppression while allowing flexibility in managing fire response resources.

Subtopic 5: Quality Assurance Program - Traceability

Objectives for Improvement

The objectives of new requirements will be to help ensure that companies:

1. use only materials meeting applicable standards; and
2. maintain appropriate records in regard to materials used on their pipelines.

Proposed Options

The CER is considering the following options to meet the objectives outlined above:

- adding a requirement that materials to be used in the manufacturing, fabrication, construction, and maintenance of the pipeline and pressure vessels be traceable, where traceability means the ability to trace the history, use and location of a pipeline material and its characteristics, including material properties, inspection, and testing data, through recorded identification data throughout the life of the pipeline;
- adding a requirement that if a company verifies that it has received, installed, or has in service materials that do not meet applicable standards or company specifications, the company must notify the CER;
- adding a requirement that companies must ensure that materials of steel pipe and components to be installed on the pipeline have proven notch toughness properties for fracture resistance, except under conditions where the pipe and components:
 - have inherent notch toughness properties; or
 - are too small to yield meaningful notch toughness results; or
 - operate at such low stress levels that fracture is not considered to be notch toughness dependent; and
- adding a requirement that all information with respect to the quality assurance program be retained for at least two years after abandonment.

Response

G7. Please provide feedback on the proposed approach.

Material traceability is a critical component of pipeline integrity and quality assurance programs. Many companies already retain comprehensive records documenting the manufacturing, fabrication, and material properties of their pipelines throughout their operational lifespan. Compliance with existing standards, such as CSA Z662-23, ensures that material traceability requirements are met. Additionally, recent updates to industry standards include enhanced inspection protocols for defects and new hydrotesting reporting requirements, which further strengthen material quality control.

In cases where non-conforming materials are identified, established procurement and inspection processes help prevent their use. Companies typically verify compliance with applicable codes and require manufacturers to provide Material Test Reports (MTRs) to confirm adherence to industry specifications. For steel pipes and components, notch toughness properties are an essential consideration for fracture resistance, though certain low-stress or small-diameter pipelines may not require such testing, as specified by industry guidelines.

Regarding records retention, many organizations already maintain quality assurance documentation well beyond the proposed two-year requirement after abandonment, often extending to 15 years or more. To avoid unnecessary duplication, any new regulations should align with existing industry standards for material traceability, ensuring efficiency and consistency across the sector. New changes should be implemented through Guidance and not included in the OPR.

Subtopic 6: Definitions connected to operating pressures

Objectives for Improvement

The objective of new requirements will be to help ensure that companies are clear about the CER's expectations regarding maximum operating pressures.

Proposed Options

The CER is considering the following options to meet the objectives outlined above:

- adding a definition for Approved Maximum Operating Pressure: The maximum pressure for a pipeline system, or designated portion thereof, as approved by the Commission in a Leave to Open Order or a different authorization such as an order or certificate;
- adding a definition for Qualified Maximum Operating Pressure: The maximum pressure at which a pipeline system is qualified to be operated, not to exceed the design pressure or the approved maximum operating pressure or the amended maximum operating pressure; and
- adding a definition for Amended Maximum Operating Pressure: The maximum pressure for a pipeline system, or designated portion thereof, as established by revised design criteria, not to exceed the approved maximum operating pressure.

These will result in two consequential impacts:

- since both the Approved Maximum Operating Pressure and the Amended Maximum Operating Pressure are based on design criteria, if a company wishes to increase either one of these Maximum Operating Pressures (MOPs) it will need to apply for the increase to the CER pursuant to section 43 of the OPR; and
- if a company wishes to reduce the MOP as a corrective measure for a class location change, this reduced MOP is now the Amended MOP, and future increases would be subject to s.43, requiring an application for the increase to the CER.

Response

G8. What is your feedback on this proposed approach?

The proposed definitions for Approved Maximum Operating Pressure (AMOP), Qualified Maximum Operating Pressure (QMOP), and Amended Maximum Operating Pressure (AMOP) aim to clarify regulatory expectations regarding pipeline operating pressures. However, the terminology may be confusing, particularly in distinguishing between QMOP and AMOP. A clearer framework is needed to ensure companies can effectively interpret and apply these definitions without ambiguity.

Aligning these definitions with existing CSA Z662 standards would enhance consistency across regulatory and industry practices. QMOP should reflect the maximum pressure at which a pipeline can safely operate while considering existing anomalies and integrity constraints, while AMOP should correspond to long-term pressure adjustments due to design changes or class location modifications. Ensuring alignment with industry norms would prevent unnecessary regulatory complexity.

Additionally, requiring companies to apply for an increase in operating pressure under Section 43 of the OPR could introduce delays in necessary integrity management decisions. It is unclear whether temporary pressure reductions, such as those implemented for integrity assessments, would also require formal CER approval to revert to previous levels. Establishing a well-defined approval process with clear timelines would help mitigate delays and ensure regulatory changes do not create operational inefficiencies.

Clarification is also needed regarding how long CER would take to approve changes in maximum operating pressures. A structured review and approval timeline would provide greater certainty for operators, allowing them to plan accordingly while maintaining compliance with regulatory requirements.