

# **Pipeline Inspections**

**May 2024**

**Alberta Energy Regulator**  
Manual 005: Pipeline Inspections

May 2024

Published by  
**Alberta Energy Regulator**  
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## Abbreviations

ABSA	Alberta Boilers Safety Association
AER	Alberta Energy Regulator
AST	aboveground storage tanks
DFPL	disposal onto forested public lands
DDS	Digital Data Submission (system)
EA	engineering assessment
<i>EPEA</i>	<i>Environmental Protection and Enhancement Act</i>
EPZ	emergency planning zone
ERP	emergency response plans
FIS	Field Inspection System
HDD	horizontal directional drilling
HDPE	high-density polyethylene
HVP	high vapour pressure
IMP	integrity management program
ITP	Inspection and Test Plan
LVP	low vapour pressure
LWD	landspray while drilling
MBC	mix-bury-cover
MOC	management of change
MOP	maximum operation pressure
<i>OGCA</i>	<i>Oil and Gas Conservation Act</i>
<i>OGCR</i>	<i>Oil and Gas Conservation Rules</i>
PEX	cross-linked polyethylene
ROW	right-of-way

SLMS	Safety Loss Management System
SMYS	specified minimum yield strength
TSP	temporary surface pipeline
TSPW	temporary surface pipelines for water conveyance
UST	underground storage tanks

## Introduction

### About This Manual

*Manual 005: Pipeline Inspections* is a resource document and tool for the Alberta Energy Regulator's (AER) compliance staff and industry. Its purpose is to ensure that pipelines are inspected in a consistent manner throughout Alberta.

### AER Safety and Conduct

Safety is of the utmost importance to the AER. Compliance staff conduct their work in accordance with AER procedures and recognized standards of practice. Compliance staff will report unsafe operating conditions and practices to the licensee and Alberta Workplace Health and Safety if necessary.

AER compliance staff may assess regulated activities at any time. Licensee personnel may be present during the AER compliance activities. During compliance activities, the licensee can provide site and operational information and the AER may inform licensee representatives of AER requirements and processes. Compliance staff can also communicate any remedial or follow-up work that may be required.

### Industry Compliance

Licensees may use *Manual 005* as a guide for their compliance management systems; however, it is important for licensees to consider issues beyond the scope of this manual. Efficient, safe, orderly, and environmentally responsible development of Alberta's energy resources is best achieved through the combined application of this manual with broader management and systems-based approaches.

*Manual 005* identifies many noncompliance statements but is not an exhaustive inventory. Accompanying each noncompliance statement are references to relevant requirements from the *Pipeline Act*, *Pipeline Rules*, CSA standards, and AER directives. In accordance with section 18 of the *Pipeline Rules*, the requirements for the design, construction, testing, operation, maintenance, repair, and leak detection of pipelines are provided in *CSA Z662*, *Z245.11*, *Z245.12*, and *Z245.15* unless otherwise modified, altered, changed, or replaced by the *Pipeline Rules*. Although not specifically referenced, section 18 of the *Pipeline Rules* applies to every noncompliance statement. Noncompliance statements are short statements summarizing what an inspector may look for and are not intended to include every aspect of the requirement. Accordingly, *Manual 005* should not be relied on in designing or implementing a compliance program; always refer to the actual requirement to understand the full extent of the requirement. Industry is responsible for understanding and complying with all pipeline-related regulatory requirements, including developing safety loss management systems, effective integrity management programs, and suitable risk assessment and mitigation strategies.

During compliance activities, AER staff may ask for access to a licensee's operations or controlled areas, inspect or test a licensee's pipeline activities, and review all books, records, and documents that pertain to

pipeline construction, operation, maintenance, or ground disturbance in accordance with section 5 of the *Pipeline Act*. A licensee who interferes with or fails to assist the AER in exercising this authority may be guilty of an offence under section 52(3) of the *Pipeline Act*.

Compliance staff may use education, prevention, or enforcement when dealing with industry compliance issues. AER staff may, at any time, as per section 34(2) of the *Pipeline Act*, require the pipeline licensee to inspect, investigate, or test the pipeline and may prescribe the way these activities will be done. A licensee’s failure to follow the direction of the AER may result in the licensee being found guilty of an offence under the *Pipeline Act*.

The AER is committed to continuous improvement. *Manual 005* will be regularly updated to ensure that noncompliance statements reflect current regulatory requirements.

## How to Use This Manual

*Manual 005* is organized into key technical areas, with each section containing related noncompliance statements and their relevant regulatory references. The effective identification of noncompliance entails a review and understanding of the referenced requirements to ensure the correct application of the associated noncompliance statements.

Regardless of the type or scope of the compliance activities, AER staff may apply any section of *Manual 005* deemed relevant.

Noncompliance statements in the manual are structured as follows:

Manual #	Description
7.7.10.1	Pipe is not supported to prevent excessive stresses and axial or lateral friction forces in the pipe. (CSA Z662 4.9.2.1)

- The **Manual #** is the number used by the Field Inspection System (FIS) and the Digital Data Submission (DDS) system to identify inspection items in the database—this number does not relate to sections in AER directives, acts, or rules.
- The **Description** is the noncompliance statement and associated requirements or rules.

The historical risk ratings (high/low) were removed from *Manual 005* in the June 2022 edition. Before 2016, the AER predetermined risk ratings; however, under the *Integrated Compliance Assurance Framework* and *Manual 013: Compliance and Enforcement Program*, the AER no longer uses predetermined risk ratings. For more information, see [Compliance Assurance Program](#).

# 1 Records Request

## 1.1 General

Manual #	Description
1.1.5.1	The inspector requested information from the licensee and did not receive a response by the deadline date. ( <i>Pipeline Act 5(1); Pipeline Rules 12(2)</i> )

# 2 Licence and Approvals and Amendments

## 2.1 General

Manual #	Description
2.1.5.1	Licence was not obtained before pipeline construction or any operation that prepares for or is incidental to the construction of any part of a pipeline. ( <i>Pipeline Act 6(1); Pipeline Rules 7</i> )
2.1.10.1	Licensee did not submit an application to construct and operate a pipeline, including any applicable installation, in accordance with the requirements of <i>Directive 056</i> . ( <i>Pipeline Rules 7(1)</i> )
2.1.15.1	Application not submitted to amend the licence where the licensee changed the pipeline before completing construction. ( <i>Pipeline Act 10(1)</i> )
2.1.20.1	Application was not submitted after the pipeline was constructed, where a licensee changed, altered, added to it, relocated, diverted, or extended the pipeline. ( <i>Pipeline Act 11(1)</i> )
2.1.25.1	Licensee resumes construction or operation of a pipeline without approval where the work has been suspended by the AER. ( <i>Pipeline Act 29(1)</i> )
2.1.30.1	Licensee did not obtain all required approvals from the Alberta Boilers Safety Association (ABSA) before putting into operation a steam distribution pipeline with an internal aggregate capacity greater than 0.5 cubic metres or a design temperature greater than 230°C. ( <i>Pipeline Rules 7(2)(b)</i> )
2.1.35.1	Right-of-way (ROW) boundaries for the pipeline were not surveyed in accordance with the <i>Surveys Act</i> before construction or where necessary when repairs or modifications require an additional ROW. ( <i>Pipeline Rules 8</i> )
2.1.40.1	Licensee did not notify the AER in accordance with <i>Directive 056</i> that the licence has expired, there is a delay in the construction, or the construction of the pipeline will not be completed. ( <i>Pipeline Rules 10</i> )
2.1.45.1	No AER approval was given for nonstandard materials, components, or methods before their use. ( <i>Pipeline Rules 19</i> )
2.1.50.1	Licensee did not submit an application for approval to install a liner (expanded or freestanding) or an in situ application of a thin-film internal coating in a pipeline, or part of a pipeline in accordance with <i>Directive 056</i> . ( <i>Pipeline Rules 61</i> )
2.1.55.1	Application was not made to change the substance or the licensed maximum operating pressure (MOP) of a pipeline as specified in the rules. ( <i>Pipeline Rules 63</i> )

### 3 Safety and Loss Management System

#### 3.1 SLMS Leadership Commitment and Organizational Structure

Manual #	Description
3.1.5.1	The licensee's safety and loss management system (SLMS) does not include a clearly articulated policy and leadership commitment for development, implementation, and continual improvement. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(a), annex A</i> )
3.1.10.1	The licensee's SLMS does not include an organizational structure with defined responsibilities, authorities, and structure, or the licensee did not demonstrate implementation or communication. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(b), annex A</i> )

#### 3.2 Resource Management Process

Manual #	Description
3.2.5.1	The licensee's SLMS does not include a resource management process, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(c), annex A</i> )
3.2.10.1	The licensee's SLMS resource management process does not include personnel competency requirements, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(c)(i), annex A</i> )
3.2.15.1	The licensee's resource management process does not include a training program with a process for evaluating training effectiveness nor a process for maintaining training records, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(c)(ii) annex A</i> )
3.2.20.1	The licensee's resource management process does not include contractor selection and performance monitoring, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(c)(iii), annex A</i> )

#### 3.3 Communication, Documentation, Records Management Process

Manual #	Description
3.3.5.1	The licensee's SLMS does not include an internal and external communication process, or the licensee did not demonstrate implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(d), annex A</i> )
3.3.10.1	The licensee's SLMS does not include a document and records management control process, or the licensee did not demonstrate implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(e), annex A</i> )

#### 3.4 Controls

Manual #	Description
3.4.5.1	The licensee's SLMS does not include controls in accordance with CSA Z662 clause 3.1.2 (f), or the licensee could not demonstrate that controls were implemented. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(f), annex A</i> )

### 3.5 Change Management Process

Manual #	Description
3.5.5.1	The licensee's SLMS does not include a management of change (MOC) process, or the MOC process does not include the elements identified in CSA Z662 clause 3.1.2(g), or the licensee did not demonstrate implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(g), annex A</i> )

### 3.6 Continual Improvement Process

Manual #	Description
3.6.5.1	The licensee's continual improvement process does not include development of measurable objectives and targets, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(h)(i), annex A</i> )
3.6.10.1	The licensee's continual improvement process does not account for the reporting, collection, evaluation, and analysis of data trends related to hazards, incidents, and near misses, nor the communication of any findings and corrective actions, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(h)(ii), annex A</i> )
3.6.15.1	The licensee's continual improvement process does not include learning from events or findings, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(h)(iii), annex A</i> )
3.6.20.1	The licensee's continual improvement process does not include performance monitoring of objectives and targets, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(h)(iv), annex A</i> )
3.6.25.1	The licensee's continual improvement process does not include conformance monitoring or verification of the effectiveness of corrective actions taken since the previous audit, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(h)(v), annex A</i> )
3.6.30.1	The licensee's continual improvement process does not include controls for nonconformances, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(h)(vi), annex A</i> )
3.6.35.1	The licensee's continual improvement process does not include management reviews for suitability, adequacy, and effectiveness at the planned intervals, or the licensee did not demonstrate process implementation. ( <i>Pipeline Rules 14; CSA Z662 3.1.1, 3.1.2(h)(vii), annex A</i> )

## 4 Risk Management Process

### 4.1 General

Manual #	Description
4.1.5.1	The risk management process does not include risk acceptance criteria. ( <i>Pipeline Rules 14; CSA Z662 3.1.2 (f)(i), 3.2(a)</i> )
4.1.10.1	The risk management process does not include hazard identification, risk analysis, and risk evaluation as part of the risk assessment. ( <i>Pipeline Rules 14; CSA Z662 3.1.2 (f)(i), 3.2(b)</i> )
4.1.15.1	The risk management process does not include risk control. ( <i>Pipeline Rules 14; CSA Z662 3.1.2 (f)(i), 3.2(c)</i> )
4.1.20.1	The risk management process does not include risk monitoring and review. ( <i>Pipeline Rules 14; CSA Z662 3.1.2 (f)(i), 3.2(d)</i> )
4.1.25.1	The risk management process does not include a communication process. ( <i>Pipeline Rules 14; CSA Z662 3.1.2 (f)(i), 3.2(e)</i> )
4.1.30.1	The risk management process does not include documentation requirements. ( <i>Pipeline Rules 14; CSA Z662 3.1.2 (f)(i), 3.2(f)</i> )

Manual #	Description
4.1.35.1	Controls for risk management and monitoring were not documented or not implemented. ( <i>Pipeline Rules</i> 14, 15; <i>CSA Z662</i> 3.1.2(f), 3.3, <i>annex N.1.8.3</i> , <i>N.1.9.1</i> )
4.1.40.1	The risk assessment management process, results of risk assessments, risk treatment and control, or risk monitoring were not documented. ( <i>Pipeline Rules</i> 14, 15; <i>CSA Z662</i> 3.1.2 (f)(i), 3.2, <i>annex N.1.9.2.1</i> )
4.1.45.1	Licensee did not document when risk assessments will be conducted. ( <i>Pipeline Rules</i> 14, 15; <i>CSA Z662</i> 3.1.2 (f)(i), 3.3, <i>annex N.1.9.2.2</i> )

## 5 Integrity Management Program

### 5.1 General

Manual #	Description
5.1.5.1	Licensee or pipeline owner, in the case of an unlicensed pipeline, did not develop and implement a documented integrity management program (IMP) for its pipelines in accordance with <i>annex N</i> of <i>CSA Z662</i> . ( <i>Pipeline Rules</i> 15(1))
5.1.10.1	The licensee's IMP does not address the pipeline system life cycle. ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3)
5.1.15.1	The IMP does not include procedures for monitoring, eliminating, and mitigating conditions that may lead to a failure, managing pipeline integrity data, or the licensee did not demonstrate procedure implementation. ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1, <i>annex N</i> )
5.1.20.1	The IMP does not describe commitments and responsibilities or quantifiable objectives, or the licensee did not demonstrate procedure implementation. ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1, <i>annex N</i> )
5.1.25.1	The IMP does not include methods for assessing risk, or the licensee did not demonstrate method implementation. ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1(a), <i>annex N</i> )
5.1.30.1	The IMP does not include methods for identifying risk reduction approaches or corrective actions, or the licensee did not demonstrate method implementation. ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1(b), <i>annex N</i> )
5.1.35.1	The IMP does not include methods for implementing the IMP. ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1(c), <i>annex N</i> )
5.1.40.1	The IMP does not include methods for monitoring results, or the licensee did not demonstrate monitoring. ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1(d), <i>annex N</i> )

### 5.2 Objectives and Performance Indicators

Manual #	Description
5.2.5.1	The IMP does not include methods for collecting, integrating, and analyzing information appropriate for the type of pipeline system in accordance with <i>annex N</i> . ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1, <i>annex N.1.1</i> )
5.2.10.1	Licensee did not document integrity-related objectives and performance indicators in accordance with <i>annex N</i> . ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1, <i>annex N.1.2</i> )
5.2.15.1	Licensee did not identify or document the organization of personnel responsible for the various elements of the IMP in accordance with <i>annex N</i> . ( <i>Pipeline Rules</i> 15; <i>CSA Z662</i> 3.3, 10.3.1, <i>annex N.1.3</i> )



Manual #	Description
5.2.20.1	Licensee did not develop descriptions of the pipeline system in the IMP in accordance with <i>annex N</i> , or the licensee did not demonstrate consideration of items listed in <i>annex N.1.4</i> for inclusion in the pipeline system description. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.4</i> )

### 5.3 Integrity Management Program Records

Manual #	Description
5.3.5.1	Licensee did not prepare or manage records applicable to the pipeline system in accordance with <i>annex N</i> , or the licensee did not demonstrate consideration of items listed in <i>annex N.1.5</i> for inclusion in the records. ( <i>Pipeline Rules 15; CSA Z662 3.3,10.3.1, annex N.1.5.2</i> )

### 5.4 Management of Change

Manual #	Description
5.4.5.1	Licensee has no management of change (MOC) process or has not implemented it as specified in the rules or standard. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1,16.8.6, annex N.1.6</i> )

### 5.5 Competency and Training

Manual #	Description
5.5.5.1	Licensee does not have required training programs for pipeline operations or pipeline system maintenance as specified in the standard. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.2.1</i> )
5.5.10.1	The IMP does not include competency and training requirements, or licensee did not follow the IMP requirements, or the licensee did not provide training opportunities when an evaluation of knowledge and skills indicated it was necessary. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.7.1, N.1.7.2</i> )

### 5.6 Hazard Identification and Control

Manual #	Description
5.6.5.1	Licensee did not identify hazards that might lead to a failure or damage incident. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.8.1</i> )
5.6.10.1	The process and data used for hazard identification were not documented or did not include consideration of the primary causes and other relevant failure or damage causes. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.8.2</i> )

### 5.7 Integrity Management Program Planning

Manual #	Description
5.7.5.1	Plans and schedules for condition monitoring and IMP activities were not established or documented. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.11.1</i> )
5.7.10.1	Licensee did not demonstrate the IMP planning considered the conditions and activities appropriate for the pipeline system. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.11.2</i> )

Manual #	Description
5.7.15.1	The process for prioritizing and scheduling activities related to pipeline integrity management was not documented. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.11.3</i> )

## 5.8 Inspections, Testing, Patrols, and Monitoring

Manual #	Description
5.8.5.1	The methods and procedures used to conduct inspections, testing, patrols, and monitoring were not documented or implemented. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.12.1</i> )
5.8.10.1	The rationale and methods used to determine the timing or frequency of inspections, testing, patrols, or monitoring (not specified by CSA Z662) were not documented. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.12.2</i> )

## 5.9 Recommendations, Corrective Action, and Continual Improvement

Manual #	Description
5.9.5.1	Procedures for corrective actions or repair of conditions or imperfections that could potentially cause pipeline incidents are not documented. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.14.1, N.1.14.2</i> )
5.9.10.1	Pipeline is not suitable for continued service due to the presence of defects is not operated at pressures determined by the engineering assessment or repaired in accordance with CSA Z662 10.10.2 to 10.12. ( <i>Pipeline Rules 15, CSA Z662 3.3, 10.3.1; annex N.1.14.3</i> )
5.9.15.1	IMP reviews and evaluations were not conducted or documented as specified in the rules or standard. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.15.1</i> )
5.9.20.1	Procedures for monitoring and measuring the performance of the IMP are not documented or were not implemented. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.15.2</i> )
5.9.25.1	Licensee did not periodically audit the IMP as specified in the rules or standard. ( <i>Pipeline Rules 15; CSA Z662 3.1.2, 10.3.1, annex N.1.15.3</i> )
5.9.30.1	Procedures for controlling nonconformances with the IMP are not documented, or corrective or preventive actions were not implemented. ( <i>Pipeline Rules 15; CSA Z662 3.3, annex N.1.15.4</i> )

## 5.10 Incident Investigation

Manual #	Description
5.10.5.1	Procedures for investigating and reporting failure and damage incidents are not documented or not implemented. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.16</i> )

## 6 Engineering Assessment

### 6.1 General

Manual #	Description
6.1.5.1	Licensee returned a pipeline to service following repair without confirming the pipeline's integrity by conducting an engineering assessment (EA), inspection, or a pressure test or did not obtain authorization from the AER to return the pipeline to service. ( <i>Pipeline Rules 32(3)</i> )
6.1.10.1	Licensee is aware of conditions that may lead to failures and did not conduct an EA to determine the suitability of continued service, or the EA did not consider the requirements of <i>annex N</i> . ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.2.1, 10.3.2.2, annex N.1.13.1, N.1.13.2.2</i> )
6.1.15.1	Licensee did not develop a documented process for conducting EAs or did not implement the process. ( <i>Pipeline Rules 14; CSA Z662 3.1.2 (f)(vi), 3.4.2</i> )
6.1.20.1	Licensee did not implement recommended changes specified in the EA or the MOC process was not used. ( <i>Pipeline Rules 14; CSA Z662 3.1.2(g), 3.4.2</i> )
6.1.25.1	Licensee did not keep EA records for the life of the pipeline, or the records did not include the required information as specified in the standard. ( <i>Pipeline Rules 12, 14; CSA Z662 3.4.3</i> )
6.1.30.1	EAs allowed or required for design were not conducted or documented as specified in the standard. ( <i>Pipeline Rules 14; CSA Z662 4.1.12</i> )
6.1.35.1	An EA of the existing pipeline system was not conducted or documented or did not consider the applicable items set out in <i>CSA Z662</i> clause 10.1.1. ( <i>Pipeline Rules 14; CSA Z662 10.1.1, 10.1.2</i> )
6.1.40.1	Licensee did not conduct an EA to determine the suitability of continued service before significantly increasing the normal operating pressure. ( <i>Pipeline Rules 14; CSA Z662 10.3.2.3</i> )
6.1.45.1	An EA was not conducted for a change in the service fluid as specified in the standard. ( <i>CSA Z662 10.3.7.1, 10.3.7.2</i> )
6.1.50.1	Before upgrading a pipeline system for a higher MOP, the licensee did not conduct an EA to determine whether the pipeline would be suitable for service at the proposed MOP, or the licensee did not implement appropriate measures to accommodate the change in MOP. ( <i>CSA Z662 10.3.8.1, 10.3.8.2</i> )
6.1.55.1	An EA for class location and engineering analysis of all loads expected on the pipeline during construction and operation was not conducted for existing pipelines crossed by new roads or railways and which were not upgraded to meet the applicable design requirements. ( <i>CSA Z662 10.8.1</i> )
6.1.60.1	Where an EA was conducted to determine a dent was acceptable, the EA did not include consideration of pipe design and manufacturing, service history and loading (including fatigue), anticipated service conditions, the mechanism of dent formation, dent shape and dimensions, failure modes, and material properties (including fracture toughness properties). ( <i>CSA Z662 10.10.4.3</i> )
6.1.65.1	Where an EA of ripples, wrinkles, or buckles was conducted, it did not include pipe design and manufacturing, service history and loading (including fatigue), anticipated service conditions, the mechanism of ripple, wrinkle, or buckle formation and their growth, shape and dimensions, pipe failure modes, pipe material properties (including fracture toughness properties) and interactions with other imperfections. ( <i>CSA Z662 10.10.8.4</i> )

Manual #	Description
6.1.70.1	An EA was not completed to address changes in the service fluid composition or in operating conditions on sour service pipelines. (CSA Z662 16.8.7)

## 7 Construction Activities

### 7.1 Approvals

Manual #	Description
7.1.5.1	Pipeline constructed on, across, over, or under a road without the approval of the local authority. ( <i>Pipeline Act 39(1)</i> )
7.1.10.1	Pipeline parallel to a road is within 30 metres (m) of the boundary of the road without the approval of the local authority. ( <i>Pipeline Act 39(2)</i> )
7.1.15.1	No approval from the local authority to have a bend in the pipeline within the boundaries of a road or within 8 m of the boundary of a road. ( <i>Pipeline Act 39(3)</i> )
7.1.20.1	No approval from the owner before constructing a pipeline on, across, over, or under an irrigation canal or ditch. ( <i>Pipeline Act 41</i> )
7.1.25.1	No AER approval where pipeline construction interferes with the present workings or obstructs any openings to a mine or quarry. ( <i>Pipeline Act 44</i> )

### 7.2 Notification

Manual #	Description
7.2.5.1	Licensee did not notify the AER at least 24 hours, but not more than 14 days, before starting pipeline construction. ( <i>Pipeline Rules 5(1), 9</i> )
7.2.10.1	The licensee did not notify the AER at least 48 hours before starting a pressure test. ( <i>Pipeline Rules 5(1), 33(1)</i> )

### 7.3 Inspection and Test Plan

Manual #	Description
7.3.5.1	The licensee did not develop or provide a construction inspection and test plan (ITP) for sour service pipelines to the contractor, or the contractor did not use the plan. (CSA Z662 16.5.3)
7.3.10.1	Pipeline construction was not in accordance with the licensee's SLMS and documented quality program, or the licensee does not have the required records as specified in the standard. (CSA Z662 6.1.5, 10.4.2)

### 7.4 Ditch Preparation, Backfill Procedures

Manual #	Description
7.4.5.1	Ditch bottom does not provide suitable support for the piping, or the backfill material for reinforced composite or polyethylene pipe is not free of rocks and debris and does not extend 150 millimetres (mm) from the pipe in all directions. (CSA Z662 6.2.6.3, 13.1.4.5)
7.4.10.1	Backfilling was not done as specified in the standard. (CSA Z662 6.2.7.1–6.2.7.4)
7.4.15.1	Cleanup and restoration of areas disturbed during pipeline activities were not restored to a stable condition or maintained to control erosion. (CSA Z662 6.2.9)
7.4.20.1	For reinforced composite or polyethylene pipe installed by ploughing, an assessment was not done to ensure that the soil was adequate to support the pipe and that it would not damage the pipe. (CSA Z662 13.1.4.6)

## 7.5 Depth of Cover and Clearance

Manual #	Description
7.5.5.1	The minimum earth cover for any operating or discontinued pipeline is not as required. ( <i>Pipeline Rules 29</i> )
7.5.10.1	The clearance in any direction between a pipeline and other structures (e.g., cables, conductors, other pipelines) is not as specified in the standard. ( <i>CSA Z662 4.11.3, table 4.9</i> )

## 7.6 Crossings (Trenchless, Tunnelling, and Open Cut)

Manual #	Description
7.6.5.1	Pipeline construction under a highway or road is not as required. ( <i>Pipeline Rules 28</i> )
7.6.10.1	Pipeline does not have a straight alignment or a required depth of cover for the full width of the utility ROW. ( <i>Pipeline Rules 28; CSA Z662 4.12.2.1</i> )
7.6.15.1	Installation of cased or uncased crossings is not as specified in the standard. ( <i>CSA Z662 4.12.3.1–4.12.3.3, table 4.10, 13.1.4.7</i> )
7.6.20.1	Pipeline installed by directional drilling is not as specified in the standard. ( <i>CSA Z662 4.22</i> )
7.6.25.1	Installation of crossings by open-cut or trenchless methods is not as specified in the standard. ( <i>CSA Z662 6.2.10.1</i> )
7.6.30.1	Carrier or casing pipe used for open-cut crossings does not lie on suitable bedding material with an even bearing throughout the length or installed to prevent the formation of a waterway along them, nor is the bedding material compacted to prevent settlement. ( <i>CSA Z662 6.2.10.2</i> )
7.6.35.1	Trenchless crossing is not as specified in the standard. ( <i>CSA Z662 6.2.10.3</i> )
7.6.40.1	Auger-bored crossings are not specified in the standard. ( <i>CSA Z662 6.2.10.4</i> )
7.6.45.1	An approved written execution plan was not developed before horizontal directional drilling (HDD) or not used during the completion of such drilling, or the plan did not include the expectations as specified in the standard. ( <i>CSA Z662 6.2.11.2</i> )
7.6.50.1	Tunnelling and directional microtunnelling construction (specific equipment and work procedures) requirements were not met when the carrier pipe is installed directly with and behind the drilling equipment or is installed in a tunnel. ( <i>CSA Z662 6.2.12</i> )

## 7.7 Design

Manual #	Description
7.7.5.1	External pressures and loadings on the pipe are not accounted for, or the pipe wall thickness is not of adequate strength to prevent excessive deformation and collapse. ( <i>CSA Z662 4.2.1.2</i> )
7.7.10.1	Pipe is not supported to prevent excessive stresses and axial or lateral friction forces in the pipe. ( <i>CSA Z662 4.9.2.1</i> )
7.7.15.1	The designer did not determine supplemental local stress design criteria for structural discontinuities, high-temperature thermoelectricity, and fatigue evaluations; structural limits for denting, wrinkling, secondary tensile loading, and bending stresses in buried pipelines; and structural stability. ( <i>CSA Z662 4.3.1.1</i> )
7.7.20.1	The pipeline was not designed to prevent damage to the piping from unusual or special external conditions. ( <i>CSA Z662 4.3.1.2</i> )

Manual #	Description
7.7.25.1	Threaded metallic pipe-to-pipe and pipe-to-component joints used for permanently buried installations are not as specified in the standard. (CSA Z662 4.5.2, 16.3.5)
7.7.30.1	Anchors or ground restraints do not allow movement necessary to prevent stress or strain on partially restrained buried pipelines. (CSA Z662 4.7.3)
7.7.35.1	Licensee did not provide sufficient flexibility of unrestrained portions of pipeline systems to absorb thermal strains (expansion and contraction) and prevent excessive stresses. (CSA Z662 4.8.1, 4.8.2)
7.7.40.1	For sour service, the piping on both sides of anchored circumferential welds is not supported as specified in the standard. (CSA Z662 16.3.4)
7.7.45.1	Appropriate materials were not selected, or heat treatment procedures were not implemented for pipelines susceptible to environmental cracking. (CSA Z662 16.4.1)
7.7.50.1	Construction drawing or document deviations for a sour service pipeline were made without prior approval from the licensee or without record of approval. (CSA Z662 16.5.1)
7.7.55.1	A sour gas or sour multiphase pipeline is not designed to accommodate internal maintenance cleaning and inspection devices. (CSA Z662 16.9.2.2)

## 7.8 Materials

Manual #	Description
7.8.5.1	Components for new pipeline construction or modification of an existing pipeline do not have pressure ratings equal to or greater than the MOP or do not account for the maximum design temperature of the pipeline. ( <i>Pipeline Rules</i> 25(a))
7.8.10.1	The licensed MOP for pipeline components, if manufactured using other non-CSA standards as allowed by CSA Z662, was not authorized by the AER. ( <i>Pipeline Rules</i> 25(b); CSA Z662, table 5.3)
7.8.15.1	The wall thickness for steel carrier pipe is less than the applicable value given in CSA Z662, table 4.5. (CSA Z662 4.3.11.2)
7.8.20.1	Steel pipe is not made to a standard or specification given in table 5.3, except as specified in the standard. (CSA Z662 5.2.4.1)
7.8.25.1	Steel fittings, flanges, and valves are not made to a standard or specification given in table 5.3, except as specified in the standard. (CSA Z662 5.2.5)
7.8.30.1	Bends are not made as specified in the standard. (CSA Z662 6.2.3)
7.8.35.1	Flanges or fittings are not suitable for the grade of pipe to which they are joined. (CSA Z662 5.2.6.1, 5.2.9.1)
7.8.40.1	Pipe and components intended for sour service are not marked as specified in the standard. (CSA Z662 16.4.3.1–16.4.3.3)
7.8.45.1	Pipeline material does not comply with the sour service clause of the applicable CSA Z245 standard. (CSA Z662 16.4.2.1)

## 7.9 Pipe Handling

Manual #	Description
7.9.5.1	The identity of the material used in the construction of pipeline systems was not verified before use. (CSA Z662 5.7.1)
7.9.10.1	The transportation, installation, or repair of a pipeline reduced the wall thickness at any point to less than 90% of the design wall thickness. (CSA Z662 6.1.3, 15.5.3.2)
7.9.15.1	Care is not taken in the handling, transporting, stockpiling, and placing of pipe and components to prevent damage to the pipe, coating, and any lining. (CSA Z662 6.2.2)
7.9.20.1	Licensee did not have procedures for storage, handling, transportation, and installation of coated pipe and coated components, or the procedures were not followed. (CSA Z662 9.4)

## 7.10 Installation

Manual #	Description
7.10.5.1	Nonwelded or welded pipe-supporting attachments to the pipe are not designed to minimize additional stresses in the pipe wall. (CSA Z662 4.10)
7.10.10.1	Piping does not reasonably follow the contour of the ditch, or external force was used on the pipe to make it fit the ditch contour, causing stress to the pipe or damaging the coating. (CSA Z662 6.2.6.4)
7.10.15.1	Pipeline weights were not installed properly to prevent damage to the pipeline and coating. (CSA Z662 6.2.6.5)
7.10.20.1	Ripples, wrinkles, and buckles that exceed the acceptable limits were not removed as specified in the standard. (CSA Z662 6.3.4.1)
7.10.25.1	Pipe out of roundness does not within the limits set out in CSA Z662 or the alternative value established by an EA and has not been removed. (CSA Z662 6.3.4.2)
7.10.30.1	Freestanding reinforced composite pipe installed through a conduit was not as specified in the standard. (CSA Z662 13.1.4.10)

## 8 Joining

### 8.1 General

Manual #	Description
8.1.5.1	Welding was conducted in weather conditions that impaired the welding (e.g., moisture, blowing sand, high winds, low temperature) without mitigating the adverse effects (e.g., using wind shields). (CSA Z662 7.9.7.1)
8.1.10.1	Pipe or components are aligned by hammering after welding of root bead has begun. (CSA Z662 7.9.2)
8.1.15.1	Grounding device is welded to pipe or component. (CSA Z662 7.9.3)
8.1.20.1	Excessive force was used to align tie-in welds on sour service pipelines (e.g., track hoes, jack alls, come alongs). (CSA Z662 16.6.6)

## 8.2 Welding Procedures and Qualifications

Manual #	Description
8.2.5.1	The licensee did not approve the welding procedure. (CSA Z662 7.6.2)
8.2.10.1	Welding procedure qualification test and welding procedure are not being recorded or were not available during construction where the work was done. (CSA Z662 7.6.3)
8.2.15.1	Welding specification procedures are not requalified when essential changes occurred. (CSA Z662 7.6.5, table 7.3, 16.6.2)
8.2.20.1	Welder was not qualified for the specified welding procedure or was not requalified within the required time interval. (CSA Z662 7.8.1.1)
8.2.25.1	Welding of piping does not follow a qualified welding procedure. (CSA Z662 7.9.1.1)
8.2.30.1	Welding procedure was not qualified for stud welding (for the purpose of corrosion monitoring) as specified in the standard. (CSA Z662 9.10.3.2, 16.6.4)
8.2.35.1	The base material carbon equivalent used in procedure qualification was not captured in the procedure qualification record. (CSA Z662 16.6.1)
8.2.40.1	The qualified welding procedure specification for preheating sour service pipeline was not followed. (CSA Z662 16.6.7)

## 8.3 Weld Repairs

Manual #	Description
8.3.5.1	Cracks in circumferential or fillet welds have not been completely removed by cutting out as a cylinder or addressed in accordance with CSA Z662 clause 7.12.5. (CSA Z662 6.3.5)
8.3.10.1	Root defects in partial penetration butt welds were not removed by cutting out a cylinder of pipe containing the defect and rewelding. (CSA Z662 7.12.1)
8.3.15.1	Licensee did not approve all weld repairs requiring their authorization as specified in the standard. (CSA Z662 7.12.2)
8.3.20.1	Direct deposit welding was not performed as specified in the standard. (CSA Z662 10.11.6.1)
8.3.25.1	Before welding on in-service piping, the area to be welded was not inspected for adequate wall thickness and imperfections. (CSA Z662 10.13.2.2)
8.3.30.1	Welding on in-service piping was not performed by welders employed by the operating company or contract welders supervised by an operating company representative as specified in the standard. CSA Z662 10.13.2.3)
8.3.35.1	Direct deposit welding repairs were used on sour service pipelines. (CSA Z662 16.8.5)
8.3.40.1	Indications of incomplete penetration of the root bead and incomplete fusion of the root at the joint were not considered unacceptable. (CSA Z662 16.9.3.3)



## 8.4 Welding–Visual and Nondestructive Inspection

Manual #	Description
8.4.5.1	Welds are not visually or nondestructively inspected. (CSA Z662 7.10.1)
8.4.10.2	The visual inspection, inspections results, or records are not as specified in the standard. (CSA Z662 7.10.2)
8.4.15.1	All welds within the limits of uncased roadways, railway crossings, water crossings, pressure-retaining welds that will not be pressure tested in place, and a minimum of 15% of all other production welds made each day were not nondestructively inspected for 100% of their length. (CSA Z662 7.10.3.1)
8.4.20.1	All butt welds in carbon dioxide (CO <sub>2</sub> ) pipelines were not inspected (radiographic or ultrasonic methods) for 100% of their circumference. (CSA Z662 7.10.3.2)
8.4.25.1	Partial penetration butt welds are not radiographically inspected for 100% of their circumference. (CSA Z662 7.10.3.3)
8.4.30.1	Nondestructive inspection procedures used were not documented or the procedures were not approved by qualified personnel or accepted by the licensee. (CSA Z662 7.10.4.1)
8.4.35.1	Ultrasonic evaluation records are not kept until the piping is abandoned, or inspection records, calibration records, and logbooks are not kept for a minimum of two years. (CSA Z662 7.15.11.5)
8.4.40.1	Nondestructive testing of welds made on in-service piping was not done using appropriate inspection methods. (CSA Z662 7.17.7.1)
8.4.45.1	Sour service butt welds were not nondestructively tested for 100% of their circumference or as specified in the standard. (CSA Z662 16.9.3.2)

## 9 Mechanical Interference Fit Joints

### 9.1 General

Manual #	Description
9.1.5.1	Sleeve, coupled, mechanical interference fit, and other patented joints are used in high vapour pressure (HVP) or CO <sub>2</sub> pipeline systems. (CSA Z662 4.5.3.1)
9.1.10.1	Sleeve, coupled, mechanical interference fit, and other patented joints used in low vapour pressure (LVP) pipeline systems are not as specified in the standard. (CSA Z662 4.5.3.2)
9.1.15.1	Mechanical interference fit joints are installed in a gas pipeline system that is not in a class 1 location. (CSA Z662 4.5.3.3)
9.1.20.1	No procedure specifications provided for mechanical interference fit joining, or the specifications are not supported by engineering test data or field trials. (CSA Z662 7.16.2.1)
9.1.25.1	Operator qualification for mechanical interference fit joining is not as specified in the standard. (CSA Z662 7.16.3.1, 7.16.3.2)
9.1.30.1	Inspection procedures for mechanical interference fit joints are not approved and implemented by the licensee or do not include the required inspection criteria as specified in the standard. (CSA Z662 7.16.4.1)
9.1.35.1	Mechanical interference fit joints were used to join pipeline licensed for sour service. (CSA Z662 16.10.2)

## 10 Reinforced Composite, Polyethylene, and Liners

### 10.1 General Design and Installation

Manual #	Description
10.1.5.1	Steel pipe, risers, valves, or other heavy components are not supported to prevent damage to reinforced composite pipe. (CSA Z662 13.1.2.14)
10.1.10.1	The requirements are not met for aboveground reinforced composite or for polyethylene piping that is joined to metallic piping or is part of an aboveground piping system installation. (CSA Z662 13.1.2.15, 13.3.2.10)
10.1.15.1	Where reinforced composite pipe joins metallic piping below the ground, the required measures to prevent soil settlement at over-excavated areas around pipeline risers were not provided. (CSA Z662 13.1.2.16)
10.1.20.1	A continuous, electrically insulated 12-gauge or thicker metallic tracer wire was not installed as specified in the standard for a reinforced composite or polyethylene pipeline. (CSA Z662 13.1.4.1, 13.3.4.1)
10.1.25.1	Reinforced composite pipe or polyethylene pipe was not uncoiled, unspooled, handled, or bent in accordance with the manufacturer's recommendations. (CSA Z662 13.1.4.3, 13.3.4.2)
10.1.30.1	For polyethylene pipe, the pipeline trench bottom and backfill material are not in accordance with the manufacturer's recommendations or CSA Z662. (CSA Z662 13.3.4.5)
10.1.35.1	Uncased reinforced composite pipelines at crossings are not as specified in the standard. (CSA Z662 13.1.4.9)
10.1.40.1	Polyethene pipelines at cased crossings are not as specified in the standard. (CSA Z662 13.3.2.8)
10.1.45.1	Polyethene pipelines at uncased crossings are not as specified in the standard. (CSA Z662 13.3.2.9)

### 10.2 Reinforced Composite Pipe Joining Procedure and Qualification

Manual #	Description
10.2.5.1	Personnel are not competent at installing couplings or components based on the manufacturer's recommended practice, or couplings and components were not installed in accordance with the manufacturer's recommended practice. (CSA Z662 13.1.4.4)
10.2.10.1	Production joints were not made in accordance with a documented procedure for joining reinforced composite pipe based on the manufacturer's joining recommendations. (CSA Z662 13.1.5.1)
10.2.15.1	Reinforced composite pipe systems are not joined using an acceptable method as specified in the standard. (CSA Z662 13.1.5.2)
10.2.20.1	Reinforced composite collars or steel collars were not used at transitions from reinforced composite pipe to steel pipe that used threaded or adhesive-bonded tapered connections. (CSA Z662 13.1.5.4)
10.2.25.1	The licensee did not ensure the personnel performing the joining are qualified and competent in the procedure for reinforced composite pipe joining. (CSA Z662 13.1.6.1)
10.2.30.1	Quality control of joints was not performed in accordance with an ITP. (CSA Z662 13.1.7.1)

### 10.3 Polyethylene Pipe

Manual #	Description
10.3.5.1	Installation of continuous-length polyethylene pipe by ploughing was not completed as specified in the standard. (CSA Z662 13.3.4.3)
10.3.10.1	Polyethylene pipe was not inspected for imperfections before and during installation, or defects were not removed or repaired as specified in the standard. (CSA Z662 13.3.4.4)
10.3.15.1	Polyethylene component installation specifications were not based on the manufacturer's recommended practices, or personnel conducting component installation were not competent in accordance with the manufacturer's recommended practice. (CSA Z662 13.3.4.7)
10.3.20.1	High-density polyethylene (HDPE), polyethylene, and cross-linked polyethylene (PEX) pipe were not joined as specified in the standard. (CSA Z662 13.3.5.1)
10.3.25.1	Threaded connections were used to join polyethylene pipe. (CSA Z662 13.3.5.2)
10.3.30.1	The fusion-joining procedure for the HDPE pipe was not performed as specified in the standard. (CSA Z662 13.3.5.3)
10.3.35.1	The joining procedure for polyethylene pipe does not include provisions for field conditions or adjustments required for different ambient temperatures. (CSA Z662 13.3.5.4)
10.3.40.1	Fusion-joining equipment is not in accordance with <i>ISO 12176</i> . (CSA Z662 13.3.5.5)
10.3.45.1	The fusion-joining procedure for new pipeline installation is not as specified in the standard. (CSA Z662 13.3.5.6)
10.3.50.1	The butt-fusion-joining procedure qualification for HDPE pipe is not as specified in the standard. (CSA Z662 13.3.5.7)
10.3.55.1	The licensee did not approve the butt-fusion-joining procedure for pipe and components of different wall thicknesses greater than one standard dimension ratio (SDR). (CSA Z662 13.3.5.8)
10.3.60.1	For polyethylene pipe, the maximum OD high/low misalignment in the butt-fusion procedure is not less than 10% of the pipe's minimum wall thickness. (CSA Z662 13.3.5.9)
10.3.65.1	Polyethylene electrofusion joints were not made as specified in the standard. (CSA Z662 13.3.5.10)
10.3.70.1	For new pipeline installations, a joining and installation manual was not prepared by the installer for the polyethylene pipeline installation or was not consulted by the fusion supervisor. (CSA Z662 13.3.5.11)
10.3.75.1	Quality control of heat-fusion joints for polyethylene pipelines was not done in accordance with the ITP as specified in the standard. (CSA Z662 13.3.7.1)
10.3.80.1	Records of fusion-joint testing results were not maintained for the life of the pipeline, or pipe test samples were not kept until the completion of the project. (CSA Z662 13.3.7.2)
10.3.85.1	Where an HDPE pipe fusion joint fails the specified test, additional testing was not conducted as specified in the standard. (CSA Z662 13.3.7.3, 13.3.7.4)
10.3.90.1	Either field procedures for destructive testing and visual assessment of HDPE pipelines or the bend test procedure used for fusion-joint testing were not as specified in the standard. (CSA Z662 13.3.7.5, 13.3.7.6)

Manual #	Description
10.3.95.1	HDPE fusion-joining parameters for each joint were not recorded accurately, maintained within the joining procedure, and maintained for the life of the pipeline. (CSA Z662 13.3.7.7)
10.3.100.1	Test joint samples were not completed as specified in the standard. (CSA Z662 13.3.7.8, 13.3.7.9)

## 11 Pipeline Liners

### 11.1 General

Manual #	Description
11.1.5.1	Polymeric or composite pipe was installed as a freestanding liner or freestanding pipe for the purpose of conveying more than 1% hydrogen sulphide (H <sub>2</sub> S) (10 mol/kmol) of natural gas without approval of the AER. ( <i>Pipeline Rules</i> 20(1))
11.1.10.1	The suitability of polymeric or composite pipe for intended service conditions was not verified by the pipe manufacturer or with an EA when it was installed or when the service conditions changed. ( <i>Pipeline Rules</i> 20(2))
11.1.15.1	An expanded liner or thin-film coating applied in situ as internal protection was installed in a sour service pipeline where the hoop strength of the exterior pipeline was not as specified in the rules. ( <i>Pipeline Rules</i> 62)
11.1.20.1	An ITP for polyethylene liner joining was not developed or was not followed. (CSA Z662 13.2.5.2)
11.1.25.1	The licensee did not ensure personnel performing the joining of liners were competent in the joining procedure. (CSA Z662 13.2.5.2)
11.1.30.1	Before the liner was inserted, excess external fusion bead on the liner was not trimmed using proper equipment or procedures prescribed by the liner installer. (CSA Z662 13.2.5.3)

### 11.2 Preparation of Carrier Pipe for Liner

Manual #	Description
11.2.5.1	Before liner insertion, a sizing pig was not run in the thermoplastic-lined pipeline to ensure the internal diameter was unobstructed and suitable for the liner to be installed without damage. (CSA Z662 13.2.4.1)
11.2.10.1	A thermoplastic-lined pipeline was not internally cleaned and pigged free of fluid before liner insertion. (CSA Z662 13.2.4.2)
11.2.15.1	The circumferential welds made to install steel flanges that did not undergo a pressure test before liner insertion were not radiographically inspected for 100% of their circumferences. (CSA Z662 13.2.6.3)

### 11.3 Liner Installation

Manual #	Description
11.3.5.1	Fittings used for venting the annulus between the liner and the carrier pipe were not installed as recommended by the liner installer or manufacturer. (CSA Z662 13.2.2.7)
11.3.10.1	After liner insertion, the liner visible at the exit point was not inspected, or mechanical damage to the visible liner after installation exceeds the manufacturer's recommendations or exceeds 10% of the nominal wall thickness. (CSA Z662 13.2.4.3)
11.3.15.1	Lined flanged joints were not assembled in accordance with the liner installer's procedure. (CSA Z662 13.2.6.1)
11.3.20.1	Installation of continuous-length polyethylene pipe by ploughing was not completed as specified in the standard. (CSA Z662 13.3.4.3)

## 12 Field-Applied Coatings

### 12.1 Coating Applicator Qualification and Competency Records

Manual #	Description
12.1.5.1	The coating applicator was not qualified, or samples were not tested as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 6.1.2.3, 6.1.2.4)
12.1.10.1	Coating applicator competency was not determined, or records of competency determination and retests were not retained as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 6.1.3.3.1, 6.1.3.4)
12.1.15.1	The coating applicator did not have a record of qualification, or the record was not retained as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 6.1.2.5.1–6.5.2.5.3)
12.1.20.1	The coating applicator was not requalified as specified in the standard, or the application company did not assess the applicator to determine if training was required for requalification. (CSA Z662 9.3.2.2; CSA Z245.30 6.1.2.6)
12.1.25.1	The competency of the licensee's coating inspector was not determined based on training on the manufacturer's qualified application procedure, an understanding of the test methods specified, and the assessment of test results. (CSA Z662 9.3.2.2; CSA Z245.30 7.4)

### 12.2 Coating Application and Records

Manual #	Description
12.2.5.1	Coating was not applied as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 6.2.1, 6.2.2, 6.2.3)
12.2.10.1	Coating application records were not as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 6.3)
12.2.15.1	Coatings were not applied, or coating defects were not repaired as specified in the standard. (CSA Z662 9.3.2 to 9.3.5)
12.2.20.1	Bare piping near a weld was not coated after welding or was not coated as specified in the standard. (CSA Z662 9.3.8, 9.3.9)
12.2.25.1	Field-applied coating for repair, maintenance, and tie-in activities on existing pipelines is not as specified in the standard. (CSA Z662 9.3.9.1, 9.3.9.2)

Manual #	Description
12.2.30.1	Coating materials were not transported, handled, or stored in accordance with the manufacturer's qualified application procedure. (CSA Z662 9.3.2.2; CSA Z245.30 10)

### 12.3 Coating Inspection and Testing

Manual #	Description
12.3.5.1	Coated pipe was not inspected during or after installation or before backfilling to detect defects. (CSA Z662 9.3.3, 9.3.4)
12.3.10.1	Testing of applied coating systems did not include physical testing, visual inspection, or holiday inspection. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.1)
12.3.15.1	The testing frequency for each applicator and acceptance criteria was not as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.2.1)
12.3.20.1	Coating was not completely removed, reapplied, or retested when adhesion and peel test do not conform to the test requirements or additional tests were not completed as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.2.2)
12.3.25.1	The coated surface was not visually inspected as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.3.1)
12.3.30.1	The licensee did not review or approve the visual inspection acceptance criteria as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.3.2)
12.3.35.1	Imperfections identified during visual or holiday inspections exceed the applicable limits, and the affected area was not repaired as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.3.3, 7.5.4.4)
12.3.40.1	Holiday detector inspection was not conducted as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.4.1)
12.3.45.1	Visual inspection or holiday detector inspection was not conducted on a coating free of contaminants. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.3.1, 7.5.4.1)
12.3.50.1	Holiday test procedure was not conducted as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.4.2)
12.3.55.1	The holiday detector was not calibrated at least once in a 12-month period. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.4.2)
12.3.60.1	The holiday detector was not verified and tested at the beginning of each day of use and not less than once every 12 hours as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 7.5.4.2)

### 12.4 Coating Repair and Marking

Manual #	Description
12.4.5.1	Coating applications were not marked (date of application and the assigned unique identifier) as specified in the standard. (CSA Z662 9.3.2.2; CSA Z245.30 9.2)
12.4.10.1	Coating repair was not in accordance with manufacturer's qualified application procedure. (CSA Z662 9.3.2.2; CSA Z245.30 8)
12.4.15.1	Coatings were not applied, or coating defects were not repaired as specified in the standard. (CSA Z662 9.3.2.2–9.3.2.4, 9.3.5)

## 13 Licensee Records and Inspections

### 13.1 General

Manual #	Description
13.1.5.1	The standards or specifications of the pipe, components, and bolting materials used in the construction of the pipeline systems were not recorded, or records were not retained. (CSA Z662 5.7.1)
13.1.10.1	The licensee did not perform inspections for new or replacement pipeline construction to ensure the requirements of CSA Z662 were met. (CSA Z662 6.5.2.1)
13.1.15.1	The licensee does not have documented procedures for conducting new or replacement pipeline construction inspections to ensure the requirements of CSA Z662 were met. (CSA Z662 6.5.2.2)
13.1.20.1	Piping defect inspections for new or replacement pipeline construction were not conducted immediately before the application of field-applied coatings, during lowering-in, or during backfilling operations. (CSA Z662 6.5.3)
13.1.25.1	Pipe and components for new or replacement pipeline construction were not inspected for defects, such as pipe deformation, damage, and defective welds. (CSA Z662 6.5.4)
13.1.30.1	Bends for new or replacement pipeline construction were not inspected for conformance with CSA Z662 clause 6.2.3. (CSA Z662 6.5.5)
13.1.35.1	Field-coated pipe was not inspected for defects caused by the cleaning/coating machine. (CSA Z662 6.5.6)
13.1.40.1	Plant-applied coatings were not inspected for integrity immediately after field bending. (CSA Z662 6.5.8)
13.1.45.1	For corrosion-resistant linings, the lining inside each pipe end was not visually inspected for damage before joining, or the damaged lining was not repaired in accordance with the manufacturer's specifications, or the damaged section was cut out. (CSA Z662 6.5.9)
13.1.50.1	The licensee did not confirm the inspection of field and shop welds as specified in the standard. (CSA Z662 6.5.10)
13.1.55.1	Inspection of pipe repairs, replacements, and alterations were not made before backfilling. (CSA Z662 6.5.11)

## 14 Fire Prevention and Environmental Protection

### 14.1 General

Manual #	Description
14.1.5.1	Licensee did not establish effective prevention and control measures to address the potential for uncontrolled fires during installation activities involving welding, grinding, cutting with torches, or operating equipment. (CSA Z662 6.6)
14.1.10.1	Licensee did not establish effective prevention and control measures to manage the effects of pipeline system operations on the environment within acceptable levels. (CSA Z662 10.5.8)

## 15 Ground Disturbance

### 15.1 General

Manual #	Description
15.1.5.1	The licensee did not provide the person who is or proposed to undertake the ground disturbance with the information requested concerning the pipeline. ( <i>Pipeline Act 32(2)</i> )
15.1.10.1	A pipeline licensee that may be, or is, affected by a ground disturbance did not provide reasonable assistance to the person who is or proposed to undertake the ground disturbance. ( <i>Pipeline Act 32(3)</i> )
15.1.15.1	A ground disturbance activity that caused contact with a pipeline was not immediately stopped. ( <i>Pipeline Act 35(2)(a)</i> )
15.1.20.1	The person conducting the ground disturbance activity that caused contact with a pipeline did not immediately notify the pipeline licensee of the contact location or the damage caused. ( <i>Pipeline Act 35(2)(a)</i> )
15.1.25.1	Ground disturbance activity was restarted after a pipeline contact incident without approval from the licensee or the AER. ( <i>Pipeline Act 35(3)</i> )
15.1.30.1	Ground is disturbed in a pipeline ROW without the licensee's or AER's approval. ( <i>Pipeline Act 42</i> )
15.1.35.1	A licensee charged the party undertaking a ground disturbance a fee to locate and mark a pipeline, do inspections, or supervise a ground disturbance. ( <i>Pipeline Rules 42</i> )
15.1.40.1	A ground disturbance was undertaken in the pipeline ROW without approval as specified in the rules. ( <i>Pipeline Rules 43(1)</i> )
15.1.45.1	Ground is disturbed within five metres of the centerline of a pipeline having no ROW without the written approval of the pipeline licensee or the AER. ( <i>Pipeline Rules 43(2)</i> )
15.1.50.1	The licensee did not respond within 21 days of the date approval was requested for the ground disturbance in a pipeline ROW or within 7 working days for a vehicle or equipment crossing a pipeline at a point not within the upgraded and travelled portion of a highway or public road. ( <i>Pipeline Rules 43(3), 49(3)</i> )
15.1.55.1	Licensee is not registered with Utility Safety Partners' damage prevention service or did not register a pipeline before operation or update the pipeline inventory. ( <i>Pipeline Rules 44</i> )
15.1.60.1	Access controls were not installed before starting a ground disturbance in the controlled area of a pipeline where uncontrolled access over the pipeline by equipment may damage the pipeline. ( <i>Pipeline Rules 48(1)</i> )
15.1.65.1	The location of crossings and the precautions to protect pipelines from damage during ground disturbance were not determined and agreed to by the licensee and the person conducting the ground disturbance. ( <i>Pipeline Rules 48(2)</i> )
15.1.70.1	Upon request of the AER, a licensee did not protect, operate at a reduced pressure, or depressurize a pipeline adjacent to a ground disturbance in the controlled area of a pipeline. ( <i>Pipeline Rules 50</i> )



## 15.2 Locating and Marking

Manual #	Description
15.2.5.1	The person conducting the ground disturbance did not take all precautions reasonably necessary to check for pipelines within 30 m of the perimeter of the ground disturbance area. ( <i>Pipeline Act 32(1); Pipeline Rules 45(1)</i> )
15.2.10.1	The person conducting the ground disturbance within the controlled area of a pipeline did not notify the licensee or Utility Safety Partners. ( <i>Pipeline Rules 45(2), (3)</i> )
15.2.15.1	The horizontal position and alignment of the pipeline were not accurately located and marked before starting the ground disturbance, or the licensee of the pipeline did not provide documentation of the markings to the person undertaking the ground disturbance. ( <i>Pipeline Rules 46(1), (3), (4)</i> )
15.2.20.1	Unless otherwise agreed to by the parties, identifying and marking were not completed within three working days after notifying the licensee of the proposed ground disturbance. ( <i>Pipeline Rules 46(2)</i> )
15.2.25.1	The person conducting the ground disturbance did not obtain prior agreement before starting the ground disturbance, or the licensee did not delegate its responsibility for identifying and marking the pipeline and supervising the ground disturbance. ( <i>Pipeline Rules 46(3)</i> )
15.2.30.1	The person conducting the ground disturbance did not keep all pipeline warning signs or markers visible and legible and in the original position for the duration of the ground disturbance or did not replace (if the original position was exactly known) or did not relocate or mark when necessary. ( <i>Pipeline Rules 46(5)</i> )
15.2.35.1	Alternative methods of locating and marking a pipeline were not agreed to by the licensee and the person undertaking the ground disturbance. ( <i>Pipeline Rules 46(6)</i> )

## 15.3 Supervision of Ground Disturbance

Manual #	Description
15.3.5.1	A pipeline licensee notified of a ground disturbance did not inspect the pipeline before starting the ground disturbance to ensure locating and marking were carried out in accordance with the <i>Pipeline Rules 46(1)</i> . ( <i>Pipeline Rules 47(a)</i> )
15.3.10.1	A pipeline licensee notified of a ground disturbance within the ROW did not ensure their representative was on site during the ground disturbance, or the representative did not have a copy of the written approval for the ground disturbance. ( <i>Pipeline Rules 47(b)</i> )
15.3.15.1	A pipeline licensee notified of a ground disturbance did not ensure its representative was certified for supervisory-level ground disturbance. ( <i>Pipeline Rules 47(c)</i> )
15.3.20.1	A pipeline licensee notified of a ground disturbance did not carry out the ground disturbance or document and retain any inspections of the ground disturbance necessary to ensure the continued safety of the pipeline. ( <i>Pipeline Rules 47(d)</i> )

## 15.4 Vehicles Crossing Pipeline

Manual #	Description
15.4.5.1	Approval from the licensee was not obtained before a vehicle or equipment crossed the pipeline at a point not within the upgraded and travelled portion of a highway or public road, or the licensee approved the crossing but was not given at least seven working days' notice. ( <i>Pipeline Rules 49(1), (2)</i> )
15.4.10.1	Licensee did not respond to the person proposing the vehicular crossing within seven working days. ( <i>Pipeline Rules 49(3)</i> )
15.4.15.1	Temporary crossings for vehicular traffic were not suitably prepared or used to protect a pipeline from damage. ( <i>CSA Z662 10.6.4</i> )

## 15.5 Exposing a Pipeline

Manual #	Description
15.5.5.1	Before mechanical excavation, a pipeline within five metres of a proposed ground disturbance was not located by hand excavation, or the hand excavation methods did not provide positive identification or orientation of the pipeline. ( <i>Pipeline Rules 51(1)</i> )
15.5.10.1	Hand excavation of polymeric or composite pipelines using high-pressure water or air excavation methods was not in accordance with the manufacturer's recommendations or industry best practices or was not acceptable to the pipeline licensee. ( <i>Pipeline Rules 51(2)</i> )
15.5.15.1	A representative of the licensee or accepted delegate was not present when the pipeline was exposed, or the representative or designated delegate was not certified in supervisory-level ground disturbance. ( <i>Pipeline Rules 51(3), 47(c)</i> )
15.5.20.1	A pipeline within five metres of an excavation was not fully exposed or the requirements of the <i>Pipeline Rules 47(c)</i> were not met. ( <i>Pipeline Rules 51(4)</i> )
15.5.25.1	Mechanical excavation equipment used within 0.6 metres of a pipeline or at any distance beneath a pipeline was not under the direct supervision of a representative of the licensee or delegate of the pipeline. ( <i>Pipeline Rules 51(5)</i> )
15.5.30.1	Where the tool path was within five metres of a pipeline during trenchless excavation, the ground disturber did not first expose the pipeline to allow for identification and confirmation of direction and depth and to ensure no encroachment during the excavation. ( <i>Pipeline Rules 51(6)</i> )
15.5.35.1	Hand excavation for a trenchless excavation crossing the path of a pipeline was not conducted as specified in the rules. ( <i>Pipeline Rules 51(7)</i> )
15.5.40.1	Hand excavation for a trenchless excavation running parallel or otherwise not crossing the path of an existing pipeline was not conducted as specified in the rules. ( <i>Pipeline Rules 51(8)</i> )
15.5.45.1	Licensee did not submit a written request to the AER for approval to use alternative pipeline exposure procedures. ( <i>Pipeline Rules 51(9)</i> )

## 15.6 Inspection Before Backfilling

Manual #	Description
15.6.5.1	The licensee of a pipeline exposed because of a ground disturbance was not notified at least 24 hours before backfilling. ( <i>Pipeline Rules 52</i> )
15.6.10.1	A licensee notified of a pipeline exposure during a ground disturbance did not have a representative certified in supervisory-level ground disturbance inspect the exposed part of the pipeline for damage before backfilling. ( <i>Pipeline Rules 52</i> )

## 16 Pipeline Pressure Testing

### 16.1 General

Manual #	Description
16.1.5.1	A newly constructed or modified pipeline is in service before a satisfactory pressure test has been conducted as specified in the rules and the standard. ( <i>Pipeline Act 16(2); Pipeline Rules 32(1)</i> )
16.1.10.1	Licensee disregarded the AER's direction or conditions for pressure testing. ( <i>Pipeline Rules 35</i> )
16.1.15.1	No contingency plan for environmental protection was developed as specified in the standard when a liquid test medium other than fresh water is used or when the medium does not otherwise meet any criteria under the <i>Pipeline Rules 39</i> . ( <i>Pipeline Rules 39; Directive 077 5(7); CSA Z662 8.7.2.2</i> )
16.1.20.1	Licensee did not submit an EA and a completed Pipeline Pressure Testing Using Gaseous Test Media form to the AER before conducting a gaseous medium pressure test for volumes greater than 125 m <sup>3</sup> . ( <i>Pipeline Rules 4, 40; Directive 077 6(13)</i> )
16.1.25.1	A record of a satisfactory pressure test was not provided to the AER on request. ( <i>Pipeline Rules 37</i> )
16.1.30.1	The minimum test pressure not used. ( <i>Pipeline Rules 38</i> )
16.1.35.1	Licensee was not approved to pressure test a pipeline or pipeline section for a duration shorter than the minimum specified in the standard. ( <i>Pipeline Rules 41</i> )
16.1.40.1	The venting or flaring of a gaseous pressure test medium was not in accordance with <i>Directive 060</i> . ( <i>Pipeline Rules 70</i> )
16.1.45.1	The licensee did not provide a copy of its contingency plan to the AER on request. ( <i>Pipeline Rules 4(1), 39; Directive 077 5(8)</i> )
16.1.50.1	The pipeline was not cleaned of construction debris and foreign matter before pressure testing. ( <i>CSA Z662 6.2.8</i> )
16.1.55.1	Licensee did not develop a pressure test plan as specified in the standard. ( <i>CSA Z662 8.2.1</i> )
16.1.60.1	A pipeline was tested at a pressure that causes a hoop stress greater than 100% specified minimum yield strength (SMYS), and the licensee did not develop a test procedure or did not create a pressure-volume plot. ( <i>CSA Z662 8.6.1</i> )
16.1.65.1	A leak test was not performed on piping and fabricated assemblies not considered completely accessible for visual inspection immediately after a strength test (minimum pressure of 110% MOP, as specified in clause 8.2.5). ( <i>CSA Z662 8.7.1.2</i> )

Manual #	Description
16.1.70.1	The licensee did not determine and mitigate any adverse effects due to moisture in the pipeline system or downstream facilities as specified in the standard. (CSA Z662 8.11.1, 8.11.2)
16.1.75.1	Testing or pretesting of additional piping used to tie in the completed piping was not done before putting the line in service. (CSA Z662 8.12.1)
16.1.80.1	Nonwelded tie-in joints were not visually inspected or the pressure rise was not monitored closely during initial pressurization. (CSA Z662 8.12.2)
16.1.85.1	A pressure test was conducted on existing piping to significantly higher pressures than the established operating procedure. Either the test pressure or test medium was not determined as appropriate by the EA, or the EA did not include the appropriate requirements as specified in the standard. (CSA Z662 10.3.9.1, 10.3.9.2)
16.1.90.1	Where an EA has deemed it inappropriate, pressure testing was still conducted as specified in CSA Z662 clause 8. (CSA Z662 10.3.9.3)

## 16.2 Test Medium

Manual #	Description
16.2.5.1	For pipelines using a liquid test medium other than fresh water, the licensee did not ensure the contingency measures described in the contingency plan were staged at the worksite and ready to respond to a release or spill of the liquid test medium as specified in the rules and directive. ( <i>Pipeline Rules</i> 4(1), 39, <i>Directive 077</i> 5(9)(a))
16.2.10.1	For pipelines using a liquid test medium other than fresh water, the licensee did not complete the Pipeline Pressure Testing Using Liquid Test Media Other Than Fresh Water form and submit it to the applicable AER field office along with the notification of pressure testing, as required by the <i>Pipeline Rules</i> , at least 48 hours before starting the pressure test as specified in the rules and directive. ( <i>Pipeline Rules</i> 4(1), 39; <i>Directive 077</i> 5(9)(b))
16.2.15.1	For pipelines using a liquid test medium other than fresh water, the licensee did not have a copy of the completed Pipeline Pressure Testing Using Liquid Test Media Other Than Fresh Water form at the test location during pressure testing as specified in the rules and directive. ( <i>Pipeline Rules</i> 4(1), 39; <i>Directive 077</i> 5(9)(c))
16.2.20.1	For pipelines using a liquid test medium other than fresh water, the licensee did not keep a record of the completed form in accordance with the requirements of the licensee's SLMS and IMP as specified in the rules and directive. ( <i>Pipeline Rules</i> 4(1), 39, <i>Directive 077</i> 5(9)(d))
16.2.25.1	No approval for deviation from the requirements of <i>Directive 077</i> was obtained for a pipeline pressure test using a liquid test media other than fresh water as specified in the rules and directive. ( <i>Pipeline Rules</i> 4(1), 39; <i>Directive 077</i> 5(10))
16.2.30.1	For pressure tests with a gaseous test medium, the licensee did not maintain a hold period sufficient to allow the pipeline to fully stabilize after pressurization before beginning the 24-hour test period as specified in the rules and directive. ( <i>Pipeline Rules</i> 4, 40; <i>Directive 077</i> 6(15))
16.2.35.1	For pressure tests with a gaseous test medium, the licensee did not continuously monitor the pipeline's ambient temperature and internal test section temperature during the test as specified in the rules and directive. ( <i>Pipeline Rules</i> 4, 40; <i>Directive 077</i> 6(16))

Manual #	Description
16.2.40.1	For testing using a liquid medium, adverse effects of the liquid were not considered, or the liquid was not treated to protect the pipe against corrosion or prevent other damage to the piping. (CSA Z662 8.1.8)
16.2.45.1	Except as otherwise allowed in CSA Z662, pressure-test mediums other than water were used. (CSA Z662 8.7.2.1)
16.2.50.1	Flammable gas, fluids, or gas containing H <sub>2</sub> S, HVP liquids, or CO <sub>2</sub> in the liquid or quasi-liquid state were used as the pressure-test medium. (CSA Z662 8.7.2.4)
16.2.55.1	Licensee did not take precautions to minimize the adverse effects on the environment when disposing of the pressure-test medium. (CSA Z662 8.10)
16.2.60.1	The pressure-test medium of a reinforced composite pipe was not air, water, or water with freezing point depressant, as appropriate. (CSA Z662 13.1.8.2)
16.2.65.1	For aluminum piping, the test medium used was not in accordance with CSA Z662. (CSA Z662 15.7.2, 15.7.3)

### 16.3 Test Pressure

Manual #	Description
16.3.5.1	Minimum strength test and leak test pressures were not met during testing as specified in the standard. (CSA Z662 8.7.3.1, table 8.1)
16.3.10.1	Strength test pressure on the pipeline or components exceeds the test pressure allowed in the standard. (CSA Z662 8.7.4.1)
16.3.15.1	Leak test pressure using a liquid medium exceeds 100% SMYS. (CSA Z662 8.7.4.4)
16.3.20.1	Pipeline tested below 700 kilopascals (kPa) without approval from the AER or tested less than 1.4 times the MOP for pipelines conveying gas containing more than 10 mol/kmol H <sub>2</sub> S gas. (Pipeline Rules 38; CSA Z662 8.8.3.1)
16.3.25.1	Steel piping in compressor stations, gas pressure-regulating stations, and gas measuring stations was not strength tested to the required pressure or duration. (CSA Z662 8.7.6.2, table 8.1)
16.3.30.1	Steel piping in HVP service in pump stations, tank farms, and terminals was not strength tested to the required pressure or duration. (CSA Z662 8.7.6.3, table 8.1)
16.3.35.1	No leak test or leak test pressure exceeds the test pressure specified in the applicable material standard on any component in the test section on a pipe being operated at 700 kPa or less. (CSA Z662 8.8.4.1)
16.3.40.1	Leak test pressure exceeds 1400 kPa on piping operated at 700 kPa or less. (CSA Z662 8.8.4.2)

### 16.4 Test Duration

Manual #	Description
16.4.5.1	For test volumes greater than 125 m <sup>3</sup> , the licensee did not consider the effect of gas compressibility when determining the length of the test section and the duration of the test. (Pipeline Rules 4, 40; Directive 077 6(13))
16.4.10.1	Strength, leak, or concurrent test does not meet the minimum duration as specified in the standard. (CSA Z662 8.7.5.1, 8.7.5.3, 8.7.5.4, 8.8.5.1)

Manual #	Description
16.4.15.1	Strength tests were not maintained for continuous periods of not less than one hour for piping and fabricated items assemblies that were fully exposed at the time of pressure testing. (CSA Z662 8.7.5.2)

## 16.5 Pressure Test Records and Accuracy

Manual #	Description
16.5.5.1	For pressure tests with a gaseous test medium, the licensee did not use high-resolution pressure measurement instruments as specified in the rules or directive. ( <i>Pipeline Rules 4, 40, Directive 077 6(14)</i> )
16.5.10.1	A licensee's record or chart of a pressure test does not include the information required by the <i>Pipeline Rules</i> and <i>CSA Z662</i> , or the record was not retained until the abandonment of the pipeline. ( <i>Pipeline Rules 36; CSA Z662 10.4.5</i> )
16.5.15.1	The licensee did not document the pressure test in a manner that adequately supports the success of the tests, or the record did not include the reconciliation of any significant pressure deviations experienced during the test. ( <i>CSA Z662 8.8.7.1</i> )
16.5.20.1	Pressures during testing were not accurately recorded and identified by recording equipment. ( <i>CSA Z662 8.7.7.2</i> )
16.5.25.1	The accuracy of the chart recorder was not verified before and after each pressure test, or the accuracy of the other test instruments was not verified periodically. ( <i>Pipeline Rules 36(4); CSA Z662 8.7.7.3, 8.8.7.3</i> )
16.5.30.1	No temperature recorder of the test medium or pipe or did not measure the ambient temperature. ( <i>CSA Z662 8.7.7.4</i> )
16.5.35.1	No records, incomplete records, or description of any repair actions taken, results, and recommendations of a failed pressure test. ( <i>CSA Z662 8.7.7.5, 8.7.7.6, 8.8.7.4, 8.8.7.5</i> )
16.5.40.1	No records or improper records of a successful pressure test. ( <i>CSA Z662 8.7.7.6, 8.8.7.5, 10.4.5</i> )

## 16.6 Pressure Testing Safety

Manual #	Description
16.6.5.1	Pipeline was not buried with earth cover to full depth before pressure testing, where required. ( <i>Pipeline Rules 34</i> )
16.6.10.1	Suitable measures were not taken to keep unauthorized persons out of the area or to eliminate ignition sources during testing with a gaseous medium. ( <i>CSA Z662 8.2.2</i> )
16.6.15.1	The pressure of the test head assembly during testing produced hoop stresses in excess of 75% SMYS of any pipe or fitting or was higher than the cold working pressure of any flange or valve in the test head assembly. ( <i>CSA Z662 8.5.1</i> )

## 16.7 Testing of Liners and Nonmetallic Pipe

Manual #	Description
16.7.5.1	Improper test medium or test medium using air exceeds 2900 kPa for reinforced composite pipe. ( <i>CSA Z662 13.1.8.2</i> )
16.7.10.1	Test pressure of reinforced composite pipe exceeds manufacturer's specifications and recommendations. ( <i>CSA Z662 13.1.8.3</i> )

Manual #	Description
16.7.15.1	The minimum test pressure of reinforced composite pipe is not at least 125% of the MOP. (CSA Z662 13.1.8.4)
16.7.20.1	Reinforced composite pipe pressure test durations were not in accordance with CSA Z662. (CSA Z662 13.1.8.5)
16.7.25.1	Where a licensee did not use manufacturer-approved fittings, the operator did not retest the completed reinforced composite pipe after tying in the pressure-tested sections or test the connector in accordance with the standard (i.e., the fitting was not left exposed for a four-hour visual service test at the highest available operating pressure). (CSA Z662 13.1.8.7)
16.7.30.1	Reinforced composite pipe maximum temperature during pressure testing exceeded the pipeline design temperature rating or the manufacturer's maximum recommended operating temperature. (CSA Z662 13.1.9.2)
16.7.35.1	A newly constructed steel carrier pipeline was not pressure tested immediately before liner installation. (CSA Z662 13.2.2.10)
16.7.40.1	The mechanical integrity of a previously in-service steel carrier pipeline that was lined was not proven as specified in the standard. (CSA Z662 13.2.2.12)
16.7.45.1	A thermoplastic liner pressure test was not in accordance with CSA Z662 following its insertion or after repairs. (CSA Z662 13.2.7.1, 13.2.8.5)
16.7.50.1	Annulus vents were not periodically monitored during pressure testing of thermoplastic-lined pipelines for buildup or flow of liquids. (CSA Z662 13.2.7.2)
16.7.55.1	Pressure test of polyethylene pipeline was not as specified in the standard. (CSA Z662 13.3.8.1)
16.7.60.5	Tie-in joints on polyethylene pipeline were not tested for at least one hour at the highest available operating pressure, or follow-up leak detection was not conducted as specified in the standard. (CSA Z662 13.3.8.2)
16.7.65.1	The maximum test pressure of polyethylene pipelines exceeded manufacturer's recommendation. (CSA Z662 13.3.8.3)

## 17 Operations, Integrity, and Maintenance

### 17.1 General

Manual #	Description
17.1.5.1	Licensee did not operate and maintain their pipeline systems in accordance with documented procedures or did not document the procedures as specified in the standard. (CSA Z662 10.3.2.5, 10.5.1.1, 10.5.1.2)
17.1.10.1	Licensee does not have a documented operating procedure for depressurizing a component fitted with a quick-opening closure (e.g., pig sender). (CSA Z662 10.9.8)
17.1.15.1	Procedures for maintenance welding are not included in the licensee's operating and maintenance procedures. (CSA Z662 10.13.1.2)
17.1.20.1	No management of change process is in place for sour service pipelines. (CSA Z662 16.8.6)

## 17.2 Operations and Maintenance Records

Manual #	Description
17.2.5.1	Licensee did not maintain records and documents pertaining to the design, materials, construction, commissioning, operation, maintenance, repair, EA, and decommissioning of pipelines in accordance with CSA Z662 or did not provide it to the AER when requested. ( <i>Pipeline Rules 12</i> )
17.2.10.1	Licensee did not transfer all available and existing pipeline records and documents on transfer of ownership of a pipeline. ( <i>Pipeline Rules 13(1)</i> )
17.2.15.1	Licensee did not incorporate all records and documents transferred into its SLMS and IMP and determine whether additional work or information was required to manage the pipeline effectively. ( <i>Pipeline Rules 13(2), 14</i> )
17.2.20.1	Licensee did not conduct an EA and did not demonstrate the pipeline is fit for service when the pipeline records were not transferred, lost, damaged, destroyed, or incomplete. ( <i>Pipeline Rules 13(3)</i> )
17.2.25.1	Records of recommendations and dispositions pertaining to indications of imperfections were not maintained. ( <i>Pipeline Rules 15; CSA Z662 3.3, 10.3.1, annex N.1.13.4</i> )
17.2.30.1	No inspection, testing, patrol, or monitoring records are retained, or records are not complete. ( <i>Pipeline Rules 15(4); CSA Z662 3.3, annex N.1.12.7</i> )
17.2.35.1	Licensee did not provide requested materials to the AER as specified in the rules. ( <i>Pipeline Rules 17</i> )
17.2.40.1	Design documents and records were not prepared and maintained for the life of the pipeline system. ( <i>CSA Z662 4.1.13</i> )
17.2.45.1	Pipeline records containing applicable information as specified in the standard are not maintained for the life of the pipeline. ( <i>CSA Z662 10.4.2</i> )
17.2.50.1	The pipe manufacturer did not provide the records for reinforced composite pipelines, or the licensee did not retain the records for the life of the pipeline. ( <i>CSA Z662 13.1.3.3</i> )
17.2.55.1	For sour service pipelines, design information (i.e., drawings, documentation, procedures) approved by the licensee are not kept in a design file for the life of the pipeline. ( <i>CSA Z662 16.3.1</i> )
17.2.60.1	Inspection and construction records related to the sour service design information described in CSA Z662 clause 16.3.1 are not retained by the licensee for the life of the pipeline. ( <i>CSA Z662 16.5.2</i> )
17.2.65.1	For sour service pipelines, records related to the design, materials, construction, modification, operations, and maintenance (in addition to records specified in clause 10.4.2 of the standard) are not maintained for the life of the pipeline. ( <i>CSA Z662 16.8.2</i> )

## 17.3 Design and Operating Conditions

Manual #	Description
17.3.5.1	The substance being transmitted through the pipeline is not authorized by the licence. ( <i>Pipeline Act 17(1)</i> )
17.3.10.1	Pipeline was constructed under a public building, residence, office, warehouse, or factory. ( <i>Pipeline Act 46</i> )



Manual #	Description
17.3.15.1	Control systems in blended gas streams are not as required. ( <i>Pipeline Rules 24 (1), (2)</i> )
17.3.20.1	Inspection, assessment, and test of safety systems in blended gas streams were not conducted and documented, or records were not maintained as specified in the rules. ( <i>Pipeline Rules 24(3)</i> )
17.3.25.1	Stress design levels for a sour gas pipeline (>10 mol/kmol) are greater than 60% SMYS for underground piping or greater than 50% SMYS for aboveground piping. ( <i>Pipeline Rules 26</i> )
17.3.30.1	The class location designation was not correctly determined or upgraded, or an EA was not conducted when a class location changed. ( <i>CSA Z662 4.3.2–4.3.4, 10.7</i> )
17.3.35.1	Components are not designed to withstand operating pressures, thermal expansion ranges, temperature differential, sustained forces, and other specified loadings. ( <i>CSA Z662 4.3.12.1</i> )
17.3.40.1	Suitable precautions (e.g., dampeners and braces) were not taken to minimize and control the vibration of piping during operation. ( <i>CSA Z662 4.9.2.2</i> )
17.3.45.1	Existing pipeline coating was not evaluated before operating the pipeline at a temperature higher than the maximum design operating temperature. ( <i>CSA Z662 10.3.2.4</i> )
17.3.50.1	Licensee did not consult with the manufacturer or consider the operating conditions or the manufacturer's published test data in the design of the reinforced composite pipeline. ( <i>CSA Z662 13.1.2.1, 13.1.2.5</i> )
17.3.55.1	Maximum design temperature or the manufacturer's recommended operating temperature of reinforced composite pipeline is exceeded during operation or testing. ( <i>CSA Z662 13.1.9.2</i> )

## 17.4 Liner Operations and Maintenance

Manual #	Description
17.4.5.1	Provisions were not made for the monitoring and removal of gases that accumulate in the line annulus. ( <i>CSA Z662 13.2.2.8</i> )
17.4.10.1	Before installing a thermoplastic lining in a previously in-service pipeline, the licensee did not repair or replace leaking areas as per clause 10.11 or evaluate imperfections as per clause 10.10 or pressure test as per clause 13.2.2.12. ( <i>CSA Z662 13.2.2.11</i> )
17.4.15.1	The annulus of a thermoplastic-lined pipeline was not routinely checked for pressure buildup or leakage, or the results of the checks were not documented. ( <i>CSA Z662 13.2.8.1</i> )
17.4.20.1	Changes in operating conditions or new service fluid are not compatible with the thermoplastic-lined pipe. ( <i>CSA Z662 13.2.8.2</i> )
17.4.25.1	When a liner breach/failure is suspected to have occurred, the licensee did not take appropriate action to mitigate the risk of a carrier pipe failure. ( <i>CSA Z662 13.2.8.3</i> )
17.4.30.1	A liner breach occurred, confirmation of the ongoing integrity of the carrier pipe was not done before repairing the liner, or the licensee did not demonstrate the integrity of the carrier pipe in accordance with CSA Z662. ( <i>CSA Z662 13.2.8.4</i> )

## 18 Internal Corrosion Mitigation and Monitoring

### 18.1 General

Manual #	Description
18.1.5.1	Methods used to detect corrosive agents in the service fluids or to detect and evaluate internal corrosion imperfections were not documented. <i>(Pipeline Rules 15; CSA Z662 3.3, annex N.1.12.5)</i>
18.1.10.1	Pipeline installed after November 2023 was not constructed to accommodate the passage of maintenance, inspection, and purging pigs where the licensee's IMP or CSA Z662 determined pigging is necessary. <i>(Pipeline Rules 21(1), (2))</i>
18.1.15.1	When operating conditions changed, and the licensee's IMP or CSA Z662 determined pigging was necessary for pipelines installed before November 2023, the pipeline was not reassessed or modified to accommodate the passage of maintenance, inspection, and purging pigs. <i>(Pipeline Rules 21(3))</i>
18.1.20.1	Licensee did not ensure pigs used for pipeline cleaning, corrosion control, and purging are appropriate for the intended purpose, properly sized, and replaced if worn beyond limits specified in the IMP. <i>(Pipeline Rules 22)</i>
18.1.25.1	The licensee did not demonstrate a pipeline system was not considered susceptible to internal corrosion as specified in the standard. <i>(CSA Z662 9.10.1)</i>
18.1.30.1	Licensee of a pipeline considered susceptible to internal corrosion did not implement and maintain one or more methods to mitigate the likelihood of failure associated with internal corrosion. <i>(CSA Z662 9.10.2)</i>
18.1.35.1	Licensee did not monitor the effectiveness of their internal corrosion control programs. <i>(CSA Z662 9.10.3.1)</i>
18.1.40.1	Licensee did not maintain records of the internal corrosion programs as specified in the standard. <i>(CSA Z662 9.11)</i>
18.1.45.1	No mitigation measure was taken to prevent leaks in the pipeline system as determined by an EA. <i>(CSA Z662 10.3.2.2)</i>
18.1.50.1	Metallic risers, short sections of piping, fittings (e.g., couplers), and fabricated assemblies (e.g., headers) used to connect to nonmetallic pipe are not protected from internal or external corrosion, or there is no EA to support not having corrosion protection. <i>(CSA Z662 13.1.2.17–13.1.2.19, 13.3.3.6, 13.3.3.7)</i>
18.1.55.1	Fluids detrimental to a sour service pipeline are not separated for disposal, or no program was designed to mitigate corrosion associated with the conditions or fluids implemented. <i>(CSA Z662 16.7.1)</i>
18.1.60.1	No internal corrosion mitigation program was developed before sour fluids were admitted to the pipeline, or the effectiveness of the corrosion mitigation program was not monitored. <i>(CSA Z662 16.7.2)</i>
18.1.65.1	Pig size or design was not appropriately sized or not maintained for the specified operation. <i>(CSA Z662 16.7.3)</i>
18.1.70.1	New sour gas lines that were activated or where service was restored to lines after repair were not batch treated with a corrosion inhibitor before operation. <i>(CSA Z662 16.10.3.1)</i>

## 19 External Corrosion Mitigation and Monitoring

### 19.1 General

Manual #	Description
19.1.5.1	Protective coatings or corrosion-resistant alloys were not used to protect atmospherically exposed piping, or the licensee cannot demonstrate that the anticipated corrosion is not detrimental to the pipeline's serviceability. (CSA Z662 9.1.4)
19.1.10.1	Atmospherically exposed piping is not inspected for corrosion at intervals specified in the licensee's IMP. (CSA Z662 9.1.5)
19.1.15.1	No investigations were made to determine the extent and effect of corrosion on existing bare piping or control measures, or remedial action was not taken where the investigation indicated that continuing corrosion could create a hazard. (CSA Z662 9.1.7)
19.1.20.1	Licensee did not maintain records of external corrosion programs as specified in the standard. (CSA Z662 9.11)

### 19.2 Existing External Pipeline Coatings

Manual #	Description
19.2.5.1	Licensee did not ensure a corrosion barrier was installed under the insulation directly on the surface of a steel pipeline or did not apply to the AER for an exemption for no coating on the pipe. ( <i>Pipeline Rules 4; Directive 077 2(1)</i> )
19.2.10.1	Buried or submerged piping is not externally coated as specified in the standard. (CSA Z662 9.1.8)
19.2.15.1	Coatings were not applied, or coating defects were not repaired as specified in the standard. (CSA Z662 9.3.2.2–9.3.2.4, 9.3.5)
19.2.20.1	Licensee does not determine areas where coating is damaged by welding operations and does not address negative effects caused by those operations as specified in the standard. (CSA Z662 9.3.6)
19.2.25.1	No visual inspection was done for corrosion or the coating condition on the pipe after it was exposed. (CSA Z662 10.5.5.5)

### 19.3 Cathodic Protection Installation and Operations

Manual #	Description
19.3.5.1	Licensee did not establish and maintain the procedures for corrosion control necessary to satisfy CSA Z662 clause 9 or did not conduct an EA to determine the necessity for corrosion control practices as specified in the standard. (CSA Z662 9.1.3)
19.3.10.1	Cathodic protection was not installed on a steel pipeline within one year of installation, or protection was not maintained until the pipeline was abandoned. (CSA Z662 9.1.6, 9.5.1)
19.3.15.1	Insulating devices are not properly installed, not properly rated, or installed in enclosed areas where no safeguards exist. (CSA Z662 9.6.1)
19.3.20.1	Electrical contact between pipe and other structures was not considered in the design and maintenance of the cathodic protection system. (CSA Z662 9.6.2)

Manual #	Description
19.3.25.1	No provisions were made to prevent galvanic corrosion between dissimilar metals. (CSA Z662 9.6.3)

#### 19.4 Cathodic Protection for Nonmetallic Pipelines

Manual #	Description
19.4.5.1	For nonmetallic pipelines, no corrosion barrier or cathodic protection was applied to metallic risers, short sections of piping, fittings (e.g., couplers), and fabricated assemblies (e.g., headers), or no EA has been conducted for the alloy materials. (CSA Z662 13.3.3.5)
19.4.10.1	For nonmetallic pipelines, no cathodic protection was applied to the conduit pipe in freestanding pipe applications where the structural integrity of the conduit is required. (CSA Z662 13.3.3.5)
19.4.15.1	For nonmetallic pipelines where either solid corrosion-resistant alloys (CRA) or corrosion-resistant metallic coatings are used and external corrosion protection has not been applied, no EA was conducted as specified in the standard. (CSA Z662 13.3.3.6)
19.4.20.1	Cathodic protection on metallic risers for a polyethylene pipeline is not monitored. (CSA Z662 13.3.3.7)

#### 19.5 Cathodic Protection Monitoring, Testing, and Maintenance

Manual #	Description
19.5.5.1	The cathodic protection system provides insufficient current to satisfy the selected criteria for cathodic protection. (CSA Z662 9.5.2)
19.5.10.1	Direct-current tests were not completed or measures to prevent detrimental effects of stray direct current were not taken. (CSA Z662 9.7.1)
19.5.15.1	The licensee did not verify the satisfactory operation of their cathodic protection systems at regular intervals. (CSA Z662 9.9.1)
19.5.20.1	The licensee did not regularly conduct surveys at regular intervals to verify that cathodically protected pipeline systems meet the criteria selected for cathodic protection. (CSA Z662 9.9.2)
19.5.25.1	The licensee did not take remedial action to correct any deficiencies found in the cathodic protection surveys. (CSA Z662 9.9.2)
19.5.30.1	The cathodic protection surveys did not include verification of the proper operation of impressed current systems, sacrificial anode systems, or operation and effectiveness of devices that ensure proper structure protection. (CSA Z662 9.9.3)
19.5.35.1	Cathodic protection survey data are not documented. (CSA Z662 9.9.4)
19.5.40.1	Cathodic protection is not applied to aluminum piping or maintained during the operating life of the pipeline. (CSA Z662 15.8.2.1–15.8.2.3)

## 20 Valves, Pressure Control, Overpressure Protection

### 20.1 Emergency Valves

Manual #	Description
20.1.5.1	Valves are not at locations accessible for the purpose of isolating the pipeline for maintenance and for responding to operating emergencies. (CSA Z662 4.4.1)
20.1.10.1	Sectionalizing valves for HVP and CO <sub>2</sub> pipelines are not located outside of cities, towns, or villages at the transition from class 1 to higher locations. (CSA Z662 4.4.6)
20.1.15.1	Sectionalizing valves on HVP and CO <sub>2</sub> pipelines are spaced farther than 15 kilometres (km) apart or are not equipped for remote operation in areas where a failure would constitute an extraordinary hazard. (CSA Z662 4.4.7)
20.1.20.1	For HVP or CO <sub>2</sub> pipelines, emergency connections to facilitate depressuring /evacuating of isolated pipeline sections are not as specified in the standard. (CSA Z662 4.4.8)
20.1.25.1	Valves not installed on HVP and LVP pipelines on both sides of major water crossings or other locations appropriate for the terrain to limit damage from accidental discharge. (CSA Z662 4.4.9)
20.1.30.1	Pipeline valves that have been deemed necessary for emergency purposes are not inspected and partially operated at least once per calendar year. (CSA Z662 10.9.6.2)
20.1.35.1	Vault housing pressure control or limiting or relieving devices are not regularly inspected, adequately vented, or maintained in a safe condition. (CSA Z662 10.9.7)

### 20.2 Emergency Shutdowns (Gas >1% H<sub>2</sub>S)

Manual #	Description
20.2.5.1	Pipeline is not equipped with automatic emergency shutdown devices or check valves as specified in the rules. ( <i>Pipeline Rules</i> 23(1))
20.2.10.1	An EA was not conducted to define the pipeline operating conditions and closure parameters of the emergency shutdown devices, or a record of the EA and the actions taken were not maintained. ( <i>Pipeline Rules</i> 23(2), (6), (7))
20.2.15.1	The automatic shutdowns or check valves do not isolate the pipeline into volume segments as specified in the licence application or do not automatically close as defined by the EA. ( <i>Pipeline Rules</i> 23(3))
20.2.20.1	Automatic shutdowns do not close and remain closed as specified in the rules. ( <i>Pipeline Rules</i> 23(4))
20.2.25.1	Licensee allows pipeline or shutdown devices to operate outside of the conditions defined in the EA. ( <i>Pipeline Rules</i> 23(5))
20.2.30.1	Preventive maintenance is not conducted, or records are not maintained. ( <i>Pipeline Rules</i> 23(8))
20.2.35.1	Emergency shutdown devices are not inspected, assessed, and tested annually, or the records are not maintained. ( <i>Pipeline Rules</i> 23(9); CSA Z662 10.9.6.2)

## 20.3 Pressure Control / Overpressure Protection

Manual #	Description
20.3.5.1	A pressure control system and overpressure protection system are not installed where two or more pipelines are connected, and their licensed MOPs differ by more than 5% of the lowest MOP. ( <i>Pipeline Rules 31(3)</i> )
20.3.10.1	For pipelines where artificial lift can supply pressure exceeding the pipeline's MOP, the licensee did not ensure either option 1 or option 2 was implemented as specified in the rules or directive. ( <i>Pipeline Rules 4; Directive 077 4(4)</i> )
20.3.15.1	Defective or inoperative overpressure protection devices were not repaired or replaced before continuing pipeline operation. ( <i>Pipeline Rules 4; Directive 077 4(5)</i> )
20.3.20.1	Licensee of the pipeline did not maintain adequate records related to the inspection, assessment, and testing in accordance with the IMP or did not submit the information to the AER on request. ( <i>Pipeline Rules 4; Directive 077 4(6)</i> )
20.3.30.1	Pressure control systems are not installed or properly set to prevent a pipeline from exceeding the licensed MOP. ( <i>Pipeline Rules 31(1), (2); CSA Z662 4.18.1.1</i> )
20.3.35.1	Pressure control and overpressure protection system are not designed as specified in the standard. ( <i>CSA Z662 4.18.2</i> )
20.3.40.1	Discharge stacks and vents of pressure-relieving installations are not protected by rain caps to prevent water entry, where applicable, or are not located where fluid can be safely discharged and dispersed into the atmosphere or to containment. ( <i>CSA Z662 4.18.3.1</i> )
20.3.45.1	Pressure-relieving devices and components, including vent lines, pipe, and openings, are inadequately sized to prevent hammering of the valves and impairment of relief capacity. ( <i>CSA Z662 4.18.3.2</i> )
20.3.50.1	Pressure control/limiting systems (or devices) or pressure-relieving systems (or devices) are not inspected, assessed, tested, or replaced as specified in the standard. ( <i>CSA Z662 10.9.5.2–10.9.5.4</i> )
20.3.55.1	Records of pressure control and pressure-relieving system tests and inspections and any corrective action taken have not been retained. ( <i>CSA Z662 10.9.5.6</i> )

## 21 Leak Detection

### 21.1 General

Manual #	Description
21.1.5.1	For sales quality liquid hydrocarbon pipelines, the licensee did not develop, document, and implement leak detection in accordance with <i>CSA Z662, annex E</i> . ( <i>CSA Z662 4.20, 10.3.3.1</i> )
21.1.10.1	For gas and CO <sub>2</sub> pipeline systems, the licensee does not have a leak detection program that includes regular and effective surveys or analyses. ( <i>CSA Z662 4.20, 10.3.4.1</i> )
21.1.15.1	For gas and CO <sub>2</sub> pipeline systems, the licensee did not perform a periodic review of their leak detection program, or the review did not confirm the adequacy or effectiveness of the program. ( <i>CSA Z662 4.20, 10.3.4.3</i> )
21.1.20.1	For multiphase, saltwater, and wet condensate lines (excluding freshwater pipelines), the licensee did not develop a leak detection program that includes objectives and targets; leak detection methods; intervals for surveys, inspections, or tests; competency and training; recordkeeping requirements; maintenance requirements (if applicable); and testing and validation procedures. ( <i>CSA Z662 4.20, 10.3.5.1</i> )

Manual #	Description
21.1.25.1	Indications of leaks were not promptly investigated. (CSA Z662 10.3.3.2, 10.3.4.2, 10.3.5.2)
21.1.30.1	The licensee did not perform periodic reviews of leak detection programs, or the review did not confirm the adequacy or effectiveness of the programs. (CSA Z662 4.20, 10.3.5.3)

## 22 Signage

### 22.1 General

Manual #	Description
22.1.5.1	Pipeline warning signs are not installed at the locations required or in strategic areas as specified in the rules or standard. ( <i>Pipeline Rules 53; CSA Z662 10.5.3.1, 10.5.3.2</i> )
22.1.10.1	Pipeline warning signs are not installed as specified in the rules. ( <i>Pipeline Rules 54, 57</i> )
22.1.15.1	Pipeline warning signs are not maintained or replaced when defaced, worn, illegible, missing, or destroyed or not removed once the pipeline has been removed. ( <i>Pipeline Rules 55</i> )
22.1.20.1	A change in pipeline warning sign information as required by Schedule 1, other than the telephone number, is not updated within 180 days. ( <i>Pipeline Rules 55(d)</i> )
22.1.25.1	No approval was obtained from the AER to install pipeline warning signs that were not in accordance with Schedule 1. ( <i>Pipeline Rules 56</i> )
22.1.30.1	HVP pipeline warning signs do not clearly indicate the name of the highest HVP product that may be conveyed. ( <i>Pipeline Rules 58</i> )
22.1.35.1	Group pipeline warning signs are not installed as required. ( <i>Pipeline Rules 59</i> )
22.1.40.1	Pipeline installation signage was not installed or did not contain the appropriate information as required. ( <i>Pipeline Rules 60</i> )

## 23 Pipeline Installations (Compressors, Pumps)

### 23.1 General

Manual #	Description
23.1.5.1	Piping is not made of steel (exception: instrument, control, and sampling piping) for compressor stations over 750 kilowatt (kW) and for pump stations over 375 kW. (CSA Z662 4.14.2.11(a))
23.1.10.1	Emergency valves and controls at compressor stations are not clearly identified by signs. (CSA Z662 4.14.2.11(b))
23.1.15.1	Aboveground piping at compressor stations was not clearly identified to indicate its function. (CSA Z662 4.14.2.11(b))
23.1.20.1	Flare and drain systems of pump stations over 375 kW are not in accordance with CSA Z662. (CSA Z662 4.14.3.2)
23.1.25.1	Licensee did not maintain access or prevent unauthorized operation of pipeline installations requiring access on ROWs. (CSA Z662 10.6.4)

Manual #	Description
23.1.30.1	Shutdown devices and systems are not inspected and tested periodically to ensure proper functionality. (CSA Z662 10.9.1.2)
23.1.35.1	Adequate procedures for inspection, repair, and replacement are not in place to ensure piping/equipment integrity for stations with corrosive conditions. (CSA Z662 10.9.1.3)
23.1.40.1	Procedures for inspection, testing, and maintenance of pipe-type or bottle-type gas holders or pipe-type storage vessels do not conform to requirements (related to corrosion detection, sampling/testing of gas, inspection safety controls, and recordkeeping). (CSA Z662 10.9.4)

## 24 Right-of-Way Surveillance

### 24.1 General

Manual #	Description
24.1.5.1	Licensee did not inspect, monitor, and maintain the pipeline ROW to identify conditions that can lead to failure or take corrective action when conditions were identified. (CSA Z662 10.3.1)
24.1.10.1	Timing or frequency of ROW inspections and the rationale used to determine inspection frequency was not documented, or ROW inspections were not conducted. (CSA Z662 10.6.2.1, 10.6.2.2, <i>annex N.1.12.2</i> )
24.1.15.1	Vegetation on the pipeline ROW is not controlled (where the terms of the easement permit) to maintain clear visibility from the air. (CSA Z662 10.6.3)
24.1.20.1	Underwater crossings are not periodically inspected to ensure the safety or integrity of the crossing. (CSA Z662 10.6.5.2)

## 25 Incidents, Repairs, and Integrity

### 25.1 Incident Reporting

Manual #	Description
25.1.5.1	The licensee did not inform the AER of the correct location of a pipeline leak or break. ( <i>Pipeline Act 35(1)</i> )
25.1.10.1	Licensee did not immediately report to the AER by telephone a leak, break, test failure, or contact damage on a pipeline, its isolation valves, or at an installation. ( <i>Pipeline Act 35(2)(b)</i> ; <i>Pipeline Rules 5(2), 67(1), (2)</i> )
25.1.15.1	Licensee did not immediately report a leak or break occurring during pressure testing. ( <i>Pipeline Rules 33(3)</i> )
25.1.20.1	Licensee did not submit a written report of a leak, break, or contact damage to the AER as requested. ( <i>Pipeline Rules 67(3)</i> )



## 25.2 Incident Response

Manual #	Description
25.2.5.1	Licensee does not take immediate steps to stop the source of release and contain and clean up the substances. ( <i>Pipeline Rules 68</i> )
25.2.10.1	Following a failed pressure test, the pipeline was not repaired and retested as specified in the standard. ( <i>CSA Z662 8.9.1, 8.9.2</i> )

## 25.3 Incident Investigation

Manual #	Description
25.3.5.1	A leak or rupture during pressure testing was not investigated. ( <i>CSA Z662 8.9.3</i> )
25.3.10.1	Licensee did not investigate damage incidents related to external interference or failure incidents to determine their causes or identify or implement measures to prevent incidents due to similar causes from occurring. ( <i>CSA Z662 10.3.6</i> )
25.3.15.1	Records of incidents related to external interference and failure incidents were not prepared, or the incident response, incident investigation, repairs, and changes made were not documented. ( <i>CSA Z662 10.4.4</i> )

## 25.4 Pipe Repair

Manual #	Description
25.4.5.1	Pipe manufacturing defects found during installation were not repaired following manufacturer specifications or cut out as a cylinder, or in the case of a component, replaced with another component. ( <i>CSA Z662 6.3.1</i> )
25.4.10.1	Pipe repairs, replacement, or alterations were not inspected before backfilling. ( <i>CSA Z662 6.5.11</i> )
25.4.15.1	Weld imperfections (field circumferential welds or mill welds) found on in-service piping were not subject to an EA and deemed acceptable or were not repaired using acceptable methods. ( <i>CSA Z662 10.10.6, 10.10.7</i> )
25.4.20.1	Proper bonding and grounding procedures were not used to eliminate sources of ignition caused by impressed currents from cathodic protection when pipe sections were removed. ( <i>CSA Z662 10.11.1.2</i> )
25.4.25.1	External coating was not applied following cleaning, evaluation, or repair of the pipe. ( <i>CSA Z662 10.11.1.3</i> )
25.4.30.1	Pipe found to contain leaks was not repaired using an acceptable repair method. ( <i>CSA Z662 10.11.1.4</i> )
25.4.35.1	Grinding repairs are not as specified in the standard. ( <i>CSA Z662 10.11.2.2, 10.11.2.3</i> )
25.4.40.1	Pipeline replacements cut outs were not as specified in the standard ( <i>CSA Z662 10.11.3.(a)</i> )
25.4.45.1	Where a repair was made by pipe replacement, the minimum replacement length requirements were not met. ( <i>CSA Z662 10.11.3(b)</i> )
25.4.50.1	The pretested pipe used for a repair replacement was not properly stored, or the pretesting documentation was not retained. ( <i>CSA Z662 10.11.3(c)</i> )

Manual #	Description
24.5.55.1	Composite reinforced pipeline was not repaired in accordance with manufacturer's recommendations or as specified in the standard. (CSA Z662 13.1.10.1)
24.5.60.1	Permanent repairs to polyethylene pipelines with defects were not made by cutting out the defective portions as cylinders and replacing them using heat-fusion joining or by fusing a saddle patch repair fitting over the entire damaged area in accordance with the fitting manufacturer's recommendation. (CSA Z662 13.3.9.2)
24.5.65.1	For sour service pipelines, internal corrosion defects were not repaired by pipe replacement, repairs were not performed using materials and procedures as specified in the standard or were not deemed acceptable by the EA. (CSA Z662 16.8.3, 16.9.4)

## 25.5 Defects, Dents, and Gouges

Manual #	Description
25.5.5.1	Gouges, grooves, or dents found during installation were not removed or repaired as specified in the standard. (CSA Z662 6.3.2, 6.3.3)
25.5.10.1	Gouges, grooves, or arc burns found on operating steel pipes were not repaired using acceptable repair methods. (CSA Z662 10.10.3, table 10.2)
25.5.15.1	Dents or pipe body surface cracks considered defects as per CSA Z662 were not repaired using an acceptable method. (CSA Z662 10.10.4.2, 10.10.5)
25.5.20.1	A defect removed by hot tapping was not done in accordance with clause 10.11.5 or performed as specified in clause 10.14. (CSA Z662 10.11.5)
25.5.25.1	Dents in aluminum pipe considered defects as per CSA Z662 clause 15.9.1.1 were not removed by cutting out as a cylinder or repaired as specified. (CSA Z662 15.5.6.2, 15.5.6.3, 15.9.1.1)

## 25.6 Sleeves and Temporary Repairs

Manual #	Description
25.6.5.1	Permanent repair sleeves do not extend at least 50 mm beyond the ends of the defects, or a reinforcement sleeve has been used for permanent repair without internal corrosion being arrested. (CSA Z662 10.11.4.1)
25.6.10.1	Permanent repair sleeves on steel pipe were not installed as specified in the standard. (CSA Z662 10.11.4.2–10.11.4.4)
25.6.15.1	Temporary repair method is not based on an EA, or the record containing the EA assessment information was not kept as specified in the standard. (CSA Z662 10.12.1.1)
25.6.20.1	Temporary repair was not replaced with a permanent repair within one year or was not monitored as specified by an EA. (CSA Z662 10.12.1.2)
25.6.25.1	Full-encirclement clamps used for temporary repairs on polyethylene pipelines were not approved by the pipe manufacturer or were not permanently repaired within one year. (CSA Z662 13.3.9.3)
25.6.30.1	Repair sleeves on aluminum pipelines are not as specified in the standard. (CSA Z662 15.9.1.3)

## 25.7 Evaluation and Testing

Manual #	Description
25.7.5.1	Evaluations of imperfections found in steel piping are not made in accordance with CSA Z662 clause 10.10.1 to determine the suitability of or restrictions to continued service. (CSA Z662 10.10.1.1, 10.10.1.2, 10.10.1.5)
25.7.10.1	Corrosion imperfections in steel pipe were not properly assessed or were not repaired using an acceptable repair method when required. (CSA Z662 10.10.2.1, 10.10.2.6, 10.10.2.7)
25.7.15.1	Dents in pipe were not inspected or measured in accordance with CSA Z662. (CSA Z662 10.10.4.1)
25.7.20.1	Cuts to a pipeline containing flammable mixtures were not made with mechanical cutters. (CSA Z662 10.11.1.1)
25.7.25.1	After repairing a composite reinforced pipeline, the tie-in connections were not left exposed for the minimum four-hour visual service test at the highest available operating pressure. (CSA Z662 13.1.10.3)
25.7.30.1	Polyethylene pipe used for repairs was not pretested to 1.25 times the MOP for at least one hour (or entire line is pressure tested). (CSA Z662 13.3.9.4)
25.7.35.1	Polyethylene pipe not left exposed following repair and subjected to a one-hour leak test at normal operating pressure. (CSA Z662 13.3.9.4)
25.7.40.1	For polyethylene gas gathering pipelines, an additional leak detection test was not performed using flame ionization, or proven equivalent, after a minimum of 48 hours and within one month of the pipeline going into service. (CSA Z662 13.3.9.4)

## 26 Surface Pipelines

### 26.1 General

Manual #	Description
26.1.5.1	Licensee's SLMS does not include temporary surface pipelines (TSPs). (Pipeline Rules 14(2)(b))
26.1.10.1	Licensee did not obtain AER approval for a surface pipeline before construction. (Pipeline Rules 30(1))
26.1.15.1	Licensee did not install a surface pipeline with a required pressure-relieving device as specified in the rules. (Pipeline Rules 30(2)(a))
26.1.20.1	Licensee did not install a surface pipeline with a system to allow for adequate expansion or contraction due to temperature changes. (Pipeline Rules 30(2)(b))
26.1.25.1	Licensee did not install a surface pipeline with temperature monitoring equipment as specified in the rules. (Pipeline Rules 30(2)(c))
26.1.30.1	Licensee did not install a surface pipeline with suitable restraints to adequately control lateral or vertical movement or any other appropriate safety or operational systems. (Pipeline Rules 30(2)(d)(e))
26.1.35.1	A surface pipeline is not buried at a road or trail crossing, or pipeline warning signs are not installed as required. (Pipeline Rules 30(3), (4))

## 27 Temporary Surface Pipelines for Well Testing or Bypass

### 27.1 General

Manual #	Description
27.1.5.1	A TSP for well testing or bypass has been in operation for more than the approved 21 days. ( <i>Pipeline Rules 4; Directive 077 7</i> )
27.1.10.1	Duty holder did not obtain written AER approval before construction or deployment of a TSP for well testing or bypass. ( <i>Pipeline Rules 4; Directive 077 7(17)</i> )
27.1.15.1	Duty holder did not keep a copy of the Temporary Surface Pipeline for Well Testing or Bypass form and the AER's consent at the pipeline location during installation through to remediation and reclamation of the pipeline ROW. ( <i>Pipeline Rules 4; Directive 077 7(19)</i> )
27.1.20.1	Duty holder did not remove the TSP used for well testing or bypass or did not remediate or reclaim the pipeline ROW as specified in the directive. ( <i>Pipeline Rules 4; Directive 077 7(20)</i> )
27.1.25.1	Duty holder did not ensure that all components comply with the requirements in sections 25 and 30(2)(4) of the <i>Pipeline Rules</i> as specified in the directive. ( <i>Pipeline Rules 4, 25(a), 30(2); Directive 077 7</i> )
27.1.30.1	Duty holders using a TSP for well testing or bypass did not comply with the requirements of CSA Z662, including the sour service requirements specified in clause 16 as specified in the directive ( <i>Pipeline Rules 4, 25(a); Directive 077 7</i> )

## 28 Temporary Surface Pipelines for Water Conveyance

### 28.1 General

Manual #	Description
28.1.5.1	Water containing constituents at levels that could be an immediate human health hazard if released was conveyed through a temporary surface pipeline for water conveyance (TSPW). ( <i>Directive 077 8</i> )
28.1.10.1	The duty holder did not know the chemical composition of a mixture of water groups ( <i>Pipeline Rules 4; Directive 077 8(21)</i> )
28.1.15.1	Water designated as group 1 and used in a TSPW did not meet group 1 criteria. ( <i>Pipeline Rules 4; Directive 077 8, table 1</i> )
28.1.20.1	Water designated as group 2 and used in a TSPW did not meet group 2 criteria. ( <i>Pipeline Rules 4; Directive 077 8, table 1</i> )
28.1.25.1	Water designated as group 3 and used in a TSPW did not meet group 3 criteria. ( <i>Pipeline Rules 4; Directive 077 8, table 1</i> )
28.1.30.1	Group 1 TSPW deployment notification was not as required. ( <i>Directive 077 8.1.1</i> )
28.1.35.1	Group 2 and 3 TSPW approval was not as required. ( <i>Pipeline Rules 4; Directive 077 8.1.2</i> )
28.1.40.1	Group 2 and 3 TSPW deployment notification was not as required. ( <i>Pipeline Rules 4; Directive 077 8.1.3</i> )
28.1.45.1	TSPW route map was not as required. ( <i>Pipeline Rules 4; Directive 077 8.1.4</i> )

Manual #	Description
28.1.50.1	TSPW extension requests and amendments were not as required. ( <i>Pipeline Rules 4; Directive 077 8.2</i> )
28.1.55.1	TSPW landowner consent and notification was not as required. ( <i>Pipeline Rules 4; Directive 077 8.3</i> )
28.1.60.1	TSPW documentation was not as required. ( <i>Pipeline Rules 4; Directive 077 8.4</i> )
28.1.65.1	TSPW route selection and placement were not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.1</i> )
28.1.70.1	TSPW materials were not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.2</i> )
28.1.75.1	TSPW deployment was not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.3</i> )
28.1.80.1	TSPW commissioning was not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.4</i> )
28.1.85.1	TSPW operations were not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.5</i> )
28.1.90.1	TSPW operations surveillance was not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.6</i> )
28.1.95.1	TSPW incident response and reporting were not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.7</i> )
28.1.100.1	TSPW decommissioning was not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.8.1</i> )
28.1.105.1	TSPW site restoration was not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.8.2</i> )
28.1.110.1	TSPW closeout reporting was not as required. ( <i>Pipeline Rules 4; Directive 077 8.5.8.3</i> )

## 29 Inactive Pipelines, Discontinuation, Abandonment, Removal, and Resumption

### 29.1 General

Manual #	Description
29.1.5.1	Pipeline not physically isolated or disconnected from an operating pipeline (dead leg or stagnant fluids trap) is not maintained as an operating pipeline according to the licensee's IMP. ( <i>Pipeline Rules 72(1), (2)</i> )
29.1.10.1	Application for approval was not submitted to the AER to resume operation of a pipeline or part of a pipeline that was transferred to a licensee by the direction of the AER. ( <i>Pipeline Rules 82</i> )

### 29.2 Inactive Pipelines (Operating Status–Not Operating)

Manual #	Description
29.2.5.1	Licensee's SLMS does not include inactive pipelines. ( <i>Pipeline Rules 14(2)(c)</i> )
29.2.10.1	Licensee did not provide records demonstrating an inactive pipeline is managed in accordance with their SLMS or IMP. ( <i>Pipeline Rules 14(2)(c), 71(3)</i> )
29.2.15.1	Pipeline is not discontinued, abandoned, or returned to service after 24 months of inactivity. ( <i>Pipeline Rules 71(1)</i> )

Manual #	Description
29.2.20.1	Licensee did not manage an inactive pipeline in accordance with their IMP. ( <i>Pipeline Rules 71(2)(3)</i> )
29.2.25.1	Application for approval was not submitted to the AER to resume operation of a pipeline or part of a pipeline that was inactive for the past 24 months. ( <i>Pipeline Rules 82</i> )

### 29.3 Discontinued Pipelines

Manual #	Description
29.3.5.1	Pipeline was not discontinued when directed by the AER. ( <i>Pipeline Act 23(1)</i> )
29.3.10.1	Application for the discontinuation of a pipeline or entire pipeline system was not conducted in accordance with <i>Directive 056</i> . ( <i>Pipeline Rules 73</i> )
29.3.15.1	Discontinuation of an entire pipeline system was not conducted as specified in the rules. ( <i>Pipeline Rules 74</i> )
29.3.20.1	Discontinued pipeline was not pigged or cleaned to remove any free-conveyed substances and debris as thoroughly as reasonably possible. ( <i>Pipeline Rules 75(a)</i> )
29.3.25.1	Discontinued pipeline was not protected effectively against internal corrosion by purging with air or inert gas, or fresh water suitable for the pipeline materials, with any remaining pressure not exceeding 103 kPag. ( <i>Pipeline Rules 75(b)</i> )
29.3.30.1	Licensee did not protect a discontinued pipeline against external corrosion by maintaining effective cathodic protection. ( <i>Pipeline Rules 75(c)</i> )
29.3.35.1	Discontinued pipeline was not physically isolated or disconnected from any pressure source, well, facility or other pipeline and plugged and capped. ( <i>Pipeline Rules 75(d)</i> )
29.3.40.1	Licensee did not isolate or disconnect a pipeline from an adjoining operating pipeline to prevent having connection points that could be subject to internal corrosion due to stagnant fluid traps or dead legs. ( <i>Pipeline Rules 75(e)</i> )
29.3.45.1	Discontinued pipeline was not left in a safe condition that does not pose a threat to the environment or to persons who may come into proximity to the pipeline. ( <i>Pipeline Rules 75(f)</i> )
29.3.50.1	Discontinued pipeline was not individually identified as discontinued with its own line number on the amended licence. ( <i>Pipeline Rules 75(g)</i> )
29.3.55.1	Application for approval was not submitted to the AER to resume operation of a pipeline or part of a pipeline that was discontinued. ( <i>Pipeline Rules 82</i> )

### 29.4 Abandoned Pipelines

Manual #	Description
29.4.5.1	Pipeline was not abandoned when directed by the AER. ( <i>Pipeline Act 23(1)</i> )
29.4.10.1	Licensee's SLMS does not include abandoned pipelines. ( <i>Pipeline Rules 14(2)(a)</i> )
29.4.15.1	An application for the abandonment of a pipeline or entire pipeline system was not conducted in accordance with <i>Directive 056</i> . ( <i>Pipeline Rules 73</i> )
29.4.20.1	Abandonment of an entire pipeline system was not conducted as specified in the rules. ( <i>Pipeline Rules 74</i> )

Manual #	Description
29.4.25.1	Abandoned pipeline was not pigged or cleaned to remove any free-conveyed substances and debris as thoroughly as reasonably possible. ( <i>Pipeline Rules 76(a)</i> )
29.4.30.1	Abandoned pipeline was not physically isolated or disconnected from any pressure source, well, facility. ( <i>Pipeline Rules 76(b)</i> )
29.4.35.1	Surface equipment (including pig traps, risers, block valves, line heaters, support structures and pipe racks) was not removed when the pipeline was abandoned. ( <i>Pipeline Rules 76(c), 81(2)</i> )
29.4.40.1	Abandoned pipeline was not cut off at the pipeline level or as close to the pipeline level as practical. ( <i>Pipeline Rules 76(d)</i> )
29.4.45.1	Abandoned pipeline was not plugged or capped by mechanical or welded means. ( <i>Pipeline Rules 76(e)</i> )
29.4.50.1	Abandoned pipeline was isolated/disconnected and resulted in a connection point allowing a stagnant fluid trap or dead leg to remain. ( <i>Pipeline Rules 76(f)</i> )
29.4.55.1	Corrosion inhibition or cathodic protection were not removed from the abandoned pipeline. ( <i>Pipeline Rules 76(g)</i> )
29.4.60.1	Abandoned pipeline released hazardous gases from polymeric components, causing flammable or toxic hazards. ( <i>Pipeline Rules 76(h)</i> )
29.4.65.1	Abandoned pipeline was not left in a safe condition that does not pose a threat to the environment or to persons who may come into proximity to the pipeline. ( <i>Pipeline Rules 76(i)</i> )
29.4.70.1	Abandoned pipeline was not individually identified as abandoned with its own line number on the amended licence. ( <i>Pipeline Rules 76(j)</i> )
29.4.75.1	Mandatory abandonment of a pipeline was not conducted as specified in the rules. ( <i>Pipeline Rules 79</i> )
29.4.80.1	Application for approval was not submitted to the AER to resume operation of a pipeline or part of a pipeline that was abandoned. ( <i>Pipeline Rules 82</i> )

## 29.5 Removed Pipelines

Manual #	Description
29.5.5.1	Removal of a pipeline or entire pipeline system was not conducted in accordance with <i>Directive 056</i> . ( <i>Pipeline Rules 74</i> )
29.5.10.1	Pipeline that was removed was not pigged or cleaned to remove any free-conveyed substances and debris as thoroughly as reasonably possible. ( <i>Pipeline Rules 81(1)(a)</i> )
29.5.15.1	Pipeline was removed and resulted in a connection point allowing a stagnant fluid trap or dead leg to remain. ( <i>Pipeline Rule 81(1)(b)</i> )
29.5.20.1	Removed pipeline was not individually identified as removed with its own line number on the amended licence. ( <i>Pipeline Rules 81(1)(c)</i> )
29.5.25.1	Surface equipment (including pig traps, risers, block valves, line heaters, support structures and pipe racks) was not removed when the pipeline was removed. ( <i>Pipeline Rules 81(2)</i> )
29.5.30.1	After removal of a pipeline, any remaining discontinued or abandoned pipeline was not appropriately capped or plugged by mechanical or welded means at the terminated end. ( <i>Pipeline Rules 81(3)</i> )

Manual #	Description
29.5.35.1	After a pipeline has been removed, the removed pipeline and equipment was not transported from the ROW within 60 days. ( <i>Pipeline Rules</i> 81(4))

## 29.6 Pipeline Resumption

Manual #	Description
29.6.5.1	The licensee resuming the operation of a pipeline with a status of discontinued, abandoned, or a pipeline with an operating status that had a period of “non use,” did not confirm the pipeline’s integrity by conducting an EA, inspection, or a pressure test as specified in the rules and standard. ( <i>Pipeline Rules</i> 32(2); <i>CSA Z662</i> 10.15.2.1, 16.10.3.2))
29.6.10.1	Where an EA was conducted for the reactivation of a pipeline that indicated the pipeline would not be suitable for its intended service, the licensee did not implement the measures necessary to make it suitable before reactivating the piping. ( <i>CSA Z662</i> 10.15.2.2)

## 30 Directive 071: Emergency Preparedness and Response

Section 11 of the *Pipeline Rules* applies to all the noncompliance statements in this section.

### 30.1 Information

Manual #	Description
30.1.1.1	Failure to provide information as requested by the regulator. ( <i>OGCR</i> 8.002–8.005)

### 30.3 Hazard Identification and Consequence Analysis

Manual #	Description
30.3.1.1	Failure to ensure the actual size and shape of the EPZ. ( <i>OGCR</i> 8.003, 8.004; <i>Directive 071</i> 3.1(1))
30.3.2.1	Failure to use the AERH2S model before filing an emergency response plan (ERP) for operations with an H <sub>2</sub> S concentration of 0.1 moles/kmol or greater. ( <i>OGCR</i> 8.003, 8.004; <i>Directive 071</i> 3.1(2))
30.3.3.1	Failure to submit CSV batch report file from AERH2S. ( <i>OGCR</i> 8.003, 8.004; <i>Directive 071</i> 3.1(3))
30.3.4.1	Failure to calculate the size of the EPZ for operations with HVP products. ( <i>OGCR</i> 8.004, 8.005; <i>Directive 071</i> 3.1(4))
30.3.5.1	Failure to ensure that on-site supervisory personnel are aware of the size of the EPZ. ( <i>OGCR</i> 8.004, 8.005; <i>Directive 071</i> 3.1(5))

### 30.4 Public and Appropriate Authority Involvement

Manual #	Description
30.4.1.1	Failure to notify and consult with the public and appropriate authority in the situations identified in table 1 of <i>Directive 071</i> . ( <i>OGCR</i> 8.002–8.005 <i>Directive 071</i> 4.1(7), (8))



Manual #	Description
30.4.2.1	Failure to identify all residents and appropriate authority within the EPZ plus those within 25 m outward of the EPZ boundary. (OGCR 8.002–8.005; <i>Directive 071 4.2(9)</i> )
30.4.3.1	Failure to confirm EPZ intersects an urban density development—the duty holder is required to include the entire development within the EPZ to conduct the public involvement program. (OGCR 8.004, 8.005; <i>Directive 071 4.2(10)</i> )
30.4.4.1	Failure to notify director of emergency management when an EPZ intersects an urban centre. (OGCR 8.004, 8.005; <i>Directive 071 4.2(11)</i> )
30.4.5.1	Failure to confirm and coordinate roles and responsibilities in accordance with the protocols established with the appropriate authority. (OGCR 8.002–8.005; <i>Directive 071 4.2(12)</i> )
30.4.6.1	Failure to attempt to reach a mutual understanding with the appropriate authority on each party's specific needs, roles, and responsibilities during an emergency. (OGCR 8.002–8.005; <i>Directive 071 4.2(13)</i> )
30.4.7.1	Failure to notify or notify and consult the public as indicated in table 2 of <i>Directive 071</i> . (OGCR 8.002–8.005; <i>Directive 071 4.3(14)</i> )
30.4.8.1	Failure to advise the public within the EPZ of the appropriate public protection measures. (OGCR 8.002–8.005; <i>Directive 071 4.3(15)</i> )
30.4.9.1	Failure to notify residents of urban centres that they are within the EPZ and provide details of the public protection measures available in the event of an emergency. (OGCR 8.002–8.005; <i>Directive 071 4.3(16)</i> )
30.4.10.1	Failure to contact the persons listed in table 2 of <i>Directive 071</i> to arrange a suitable meeting place and time to address any questions and concerns (e.g., registered mail) with an offer to meet. (OGCR 8.004, 8.005; <i>Directive 071 4.3(17)</i> )
30.4.11.1	Failure to develop a public information package for distribution during the public involvement program and provide all persons identified in table 2 of <i>Directive 071</i> . (OGCR 8.004, 8.005; <i>Directive 071 4.9(19)</i> )
30.4.12.1	Failure to provide the requisite information in the public information package. (OGCR 8.004, 8.005; <i>Directive 071 4.4(20)</i> )
30.4.13.1	Failure to provide public information package to local AER field centre. (OGCR 8.004, 8.005; <i>Directive 071 4.4(21)</i> )
30.4.14.1	Failure to attempt to obtain the public involvement program information required in section 4.5 and incorporate it into the ERP. (OGCR 8.002–8.005; <i>Directive 071 4.5(22)</i> )
30.4.15.1	Failure to consider residents unwilling to provide personal information as having special needs. (OGCR 8.004, 8.005; <i>Directive 071 4.5(23)</i> )

### 30.5 Preparation of Emergency Response Plans

Manual #	Description
30.5.1.1	Failure to submit an ERP and the ERP Application form to the AER using the DDS system when an AER-approved ERP is required. (OGCR 8.004, 8.005; <i>Directive 071 5.1(26)</i> )
30.5.2.1	Failure to have a copy of all applicable ERPs and approval letters available on site before operating sour wells. (OGCR 8.004, 8.005; <i>Directive 071 5.1(27)</i> )
30.5.3.1	Failure to have an ERP approved before starting operations. (OGCR 8.003; <i>Directive 071 5.1(28)</i> )

<b>Manual #</b>	<b>Description</b>
30.5.4.1	Failure to submit the AER-approved ERP supplement to the AER for approval via the DDS system before starting operations. (OGCR 8.002–8.005; <i>Directive 071</i> 5.1(30))
30.5.5.1	Failure to have a corporate ERP. (OGCR 8.002; <i>Directive 071</i> 5.2(33))
30.5.6.1	Failure to demonstrate the plan management system ensures up-to-date ERPs. (OGCR 8.002–8.005; <i>Directive 071</i> 5.3(34))
30.5.7.1	Failure to conduct a public awareness program (table 1 of <i>Directive 071</i> ) every two years with residents within the EPZ. (OGCR 8.002–8.005; <i>Directive 071</i> 5.3(35) (36))
30.5.8.1	Failure to correct errors in the ERP upon discovery or when reported to the licensee or operator. (OGCR 8.004, 8.005; <i>Directive 071</i> 5.3(37))
30.5.9.1	Failure to distribute copies of the AER-approved ERP or supplement to required and requested plan holders within the specified time. (OGCR 8.002–8.005; <i>Directive 071</i> , 5.3.1(39))

### 30.6 Emergency Response Plan Contents

<b>Manual #</b>	<b>Description</b>
30.6.1.1	Failure to include the AER’s incident classification matrix. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.1 (41))
30.6.2.1	Failure to include the appropriate actions to be taken for each incident level. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.1(42))
30.6.3.1	Failure to include all communications plan components. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.2(43))
30.6.4.1	Failure to include all telephone list components. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.3(44))
30.6.5.1	Failure to include a summary of mutual aid understandings with third parties. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.4(45))
30.6.6.1	Failure to include a bridging statement summary for operations tied together. (OGCR 8.002–8.005; <i>Directive 071</i> Section 6.1.4(46))
30.6.7.1	Failure to identify the roles and responsibilities of personnel and titles. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.5(47))
30.6.8.1	Failure to include procedures to manage response and roles and responsibilities at command facilities. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.6(48))
30.6.9.1	Failure to include procedures for activating the reception centre and meeting and registering evacuees. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.7(49))
30.6.10.1	Failure to include a list of equipment for use in incident response. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.8(50))
30.6.11.1	Failure to include a list of all plan holders and ERP recipients. (OGCR 8.002–8.005; <i>Directive 071</i> 6.1.9(51))
30.6.12.1	Failure to include an overview and other high-level information. (OGCR 8.004, 8.005; <i>Directive 071</i> 6.2.1(52))
30.6.13.1	Failure to ensure the AER-approved ERP includes operational information. (OGCR 8.004, 8.005; <i>Directive 071</i> 6.2.2(53))

<b>Manual #</b>	<b>Description</b>
30.6.14.1	Failure to include maps appropriate in size and content. (OGCR 8.004, 8.005; <i>Directive 071 6.2.3(54)</i> )
30.6.15.1	Failure to include procedures for incident detection, notification, and confirmation. (OGCR 8.004, 8.005; <i>Directive 071 6.2.4(55)</i> )
30.6.16.1	Failure to include specific procedures for notification within the EPZ. (OGCR 8.004, 8.005; <i>Directive 071 6.2.4(56)</i> )
30.6.17.1	Failure to include procedures to activate air and dispersion monitoring. (OGCR 8.002–8.005; <i>Directive 071 6.2.5(57)</i> )
30.6.18.1	Failure to specify the type and number of hazard monitoring devices. (OGCR 8.002–8.005; <i>Directive 071 6.2.5(58)</i> )
30.6.19.1	Failure to include procedures to restrict entry into response zones during an incident. (OGCR 8.002–8.005; <i>Directive 071 6.2.6(59)</i> )
30.6.20.1	Failure to include procedures to address highways and railways passing through the EPZ. (OGCR 8.002–8.005; <i>Directive 071 6.2.6(60)</i> )
30.6.21.1	Failure to include procedures to address highways and railways passing through the EPZ. (OGCR 8.002–8.005; <i>Directive 071 6.2.7(61)</i> )
30.6.22.1	Failure to include procedures for evacuating public facilities, including transportation and notification. (OGCR 8.004, 8.005; <i>Directive 071 6.2.7(62)</i> )
30.6.23.1	Failure to include shelter-in-place instructions. (OGCR 8.004, 8.005; <i>Directive 071 6.2.7(63)</i> )
30.6.24.1	Failure to include discussion on how notification and evacuation will occur outside the EPZ with the appropriate authority. (OGCR 8.004, 8.005; <i>Directive 071 6.2.7(64)</i> )
30.6.25.1	Failure to include sour gas and HVP ignition procedures and ignition authority. (OGCR 8.002–8.005; <i>Directive 071 6.2.8(65)</i> )
30.6.26.1	Failure to include sour gas ignition procedures, including approach and external factors. (OGCR 8.002–8.005; <i>Directive 071 6.2.8(66)</i> )
30.6.27.1	Failure to include specific HVP ignition procedures and a copy of figure 2. (OGCR 8.002–8.005; <i>Directive 071 6.2.8(67)</i> )

### 30.7 Training, Exercises and Review Meetings

<b>Manual #</b>	<b>Description</b>
30.7.1.1	Failure to provide training sessions to ensure response personnel competency. (OGCR 8.002–8.005; <i>Directive 071 7.1(68)</i> )
30.7.2.1	Failure to test the ERP through tabletop or major exercises. (OGCR 8–8.005; <i>Directive 071 7.2(70)</i> )
30.7.3.1	Failure to notify the appropriate AER field centre 30 days in advance of a scheduled exercise. (OGCR 8.002–8.005; <i>Directive 071 7.2(71)(a)</i> )
30.7.4.1	Failure to invite other government agencies to participate and or observe at major exercises. (OGCR 8.002–8.005; <i>Directive 071 7.2(71)(b)</i> )
30.7.5.1	Failure to conduct a meeting within 96 hours before entering first sour zone. (OGCR 8.004, 8.005; <i>Directive 071 7.3(72)</i> )

Manual #	Description
30.7.6.1	Failure to conduct a critical sour meeting before entering the critical sour zone. (OGCR 8.004, 8.005; <i>Directive 071 7.3(73)</i> )
30.7.7.1	Failure to notify the AER through the DDS system at least four business days before the meeting for critical sour zone work. (OGCR 8.004, 8.005; <i>Directive 071 7.3(74)</i> )
30.7.8.1	Failure to provide at least four business days notice of the meeting for critical sour zone work to the appropriate authority so that they may participate. (OGCR 8.004, 8.005 <i>Directive 071 7.3(75)</i> )
30.7.9.1	Failure to post signage with its 24-hour emergency telephone number at the primary entrance to all wells and facilities. (OGCR 8.002–8.005; <i>Directive 071 7.4(76)</i> )

### 30.8 Spill Preparedness and Response

Manual #	Description
30.8.1.1	Failure to have a spill response contingency plan to address the release of hazardous products onto land or water. (OGCR 8.006; <i>Directive 071 8.1(77)</i> )
30.8.2.1	Failure of a nonmember of an oil spill cooperative to meet spill response equipment requirements. (OGCR 8.006; <i>Directive 071 8.1(79)</i> )
30.8.3.1	Failure to ensure good standing with an oil spill cooperative as required. (OGCR 8.006, 8.052; <i>Directive 071 8.2.1 (80)</i> )
30.8.4.1	Failure of a member of oil spill cooperative to attend a training exercise or complete a spill responder course. (OGCR 8.006; <i>Directive 071 8.2.1(81)</i> )
30.8.5.1	Failure of a nonmember of an oil spill cooperative to conduct exercise. (OGCR 8.006, 8.052; <i>Directive 071 8.2.2 (82)</i> )

### 30.9 Incident Response Requirements

Manual #	Description
30.9.1.1	Failure to have an up-to-date copy of the applicable corporate ERP and any AER-approved ERPs (hard copy or electronic) available at a response location. (OGCR 8.002–8.005; <i>Directive 071 9(85)</i> )
30.9.2.1	Failure to review the ERP assigned roles and responsibilities with personnel. (OGCR 8.004, 8.005; <i>Directive 071 9(86)</i> )
30.9.3.1	Failure to follow and implement the procedures and response actions outlined in its corporate ERPs and any AER-approved ERPs. (OGCR 8.004, 8.005; <i>Directive 071 9(87)</i> )
30.9.4.1	Failure to ensure a call to the licensee’s 24-hour emergency number initiated immediate action. (OGCR 8.002–8.005; <i>Directive 071 9.1(88)</i> )
30.9.5.1	Failure to respond immediately if notified of an incident by an alarm or other type of incident notification. (OGCR 8.002–8.005; <i>Directive 071 9.1(89)</i> )
30.9.6.1	Failure to suspend operations with overlapping EPZ containing residents during an emergency. (OGCR 8.002–8.005; <i>Directive 071 9.1(90)</i> )
30.9.7.1	Failure to use the assessment matrix to classify an incident. (OGCR 8.002–8.005; <i>Directive 071 9.2(91)</i> )

Manual #	Description
30.9.8.1	Failure to take appropriate actions as described in appendix 4 of <i>Directive 071</i> , including public protection measures, for each level of emergency. (OGCR 8.002–8.005; <i>Directive 071</i> 9.2(92))
30.9.9.1	Failure to contact the AER immediately after it has communicated with and activated internal response resources. (OGCR 8.002–8.005; <i>Directive 071</i> 9.2(93))
30.9.10.1	Failure to notify the appropriate authorities, stakeholders, and support services to assist with the response. (OGCR 8.002–8.005; <i>Directive 071</i> 9.3(94))
30.9.11.1	Failure to provide the information in appendix 5 of <i>Directive 071</i> to the public as soon as possible during an incident. (OGCR 8.002–8.005; <i>Directive 071</i> 9.3(95))
30.9.12.1	Failure to ensure hazard monitoring is in place in accordance with the ERP (see section 6.2.5) and meet the additional requirements in this section. (OGCR 8.004, 8.005; <i>Directive 071</i> 9.4(96))
30.9.13.1	Failure to provide at least two mobile air quality monitors to monitor the EPZ for a critical sour well that includes a portion of an urban density development or urban centre. (OGCR 8.004, 8.005; <i>Directive 071</i> 9.4(97))
30.9.14.1	Failure to meet the air quality monitoring requirements if entering a critical sour zone and control is lost and in determining travel time to location. (OGCR 8.004, 8.005; <i>Directive 071</i> 9.4(98))
30.9.15.1	Failure to meet the air quality monitoring requirements for noncritical sour wells. (OGCR 8.004, 8.005; <i>Directive 071</i> 9.4(99))
30.9.16.1	Failure to ensure that manned access control points are in place to restrict unauthorized entry into the response zones during an incident. (OGCR 8.002–8.005; <i>Directive 071</i> 9.5(100))
30.9.17.1	Failure to notify persons in the EPZ during a release. (OGCR 8.002–8.005; <i>Directive 071</i> 9.6.1(102))
30.9.18.1	Failure to continuously assess and act on the need to expand the evacuation area and take the actions noted in table 4 of <i>Directive 071</i> . (OGCR 8.002–8.005; <i>Directive 071</i> 9.6.2(106))
30.9.19.1	Failure to activate a reception centre in an appropriate location or meet and register evacuees. (OGCR 8.002–8.005; <i>Directive 071</i> 9.6.4 (111))
30.9.20.1	Failure to take into account the specified factors when making the decision to ignite an HVP release. (OGCR 8.002–8.005; <i>Directive 071</i> 9.6.5.2(115))
30.9.21.1	Failure to ensure equipment identified in the ERP is located where specified before starting operations. (OGCR 8.004, 8.005; <i>Directive 071</i> 9.7.1(117))
30.9.22.1	Failure to ensure that company equipment is operational and calibrated. (OGCR 8.002–8.005; <i>Directive 071</i> 9.7(118))
30.9.23.1	Failure to consult with the AER before making the decision to downgrade or stand down an incident. (OGCR 8.002–8.005; <i>Directive 071</i> 9.8(119))

### 30.10 Recordkeeping

Manual #	Description
30.10.1.1	Failure to have a process for recording the information for the activities in section 4.1 of <i>Directive 071</i> . (OGCR 8.002–8.005; <i>Directive 071</i> 10(121))

Manual #	Description
30.10.2.1	Failure to have a process for recording the information for the activities in section 10(122) of <i>Directive 071</i> . (OGCR 8.002–8.005; <i>Directive 071</i> 10(122))

### 30.11 Licence Transfer

Manual #	Description
30.11.1.1	Failure of the new licensee to contact the AER within 30 days of the transfer of licence. (OGCR 8.002–8.005; <i>Directive 071</i> 11(123))
30.11.2.1	Failure of the new duty holder to provide notification to the AER within seven business days from the date of transfer. (OGCR 8.002–8.005; <i>Directive 071</i> 11(124))
30.11.3.1	Failure to ensure the emergency response procedures in place will not be compromised before approval of a new ERP. (OGCR 8.002–8.005; <i>Directive 071</i> 11(125))

## 35 *Directive 055: Storage Requirements*

### 35.1 Pre-1996 AST and UST Exemptions

Manual #	Description
35.1.5.1	Aboveground storage tanks (ASTs) holding materials other than fresh water do not meet pre-1996 dike requirements. ( <i>Directive 055</i> 1.6.3(2))
35.1.10.1	The mechanical integrity of a single-walled AST was not appropriately verified within the past five years. ( <i>Directive 055</i> 1.6.3(3))
35.1.25.1	AST replacement or addition does not meet the requirements. ( <i>Directive 055</i> 1.6.3(5), 1.6.3(6))
35.1.30.1	An underground storage tank (UST) that failed a mechanical integrity test is still in service. ( <i>Directive 055</i> 1.6.3(8))

### 35.2 General

Manual #	Description
35.2.5.1	No notification was given as required by <i>Directive 055</i> . ( <i>Directive 055</i> 2.1.1(13), 2.1.2(14), 3.4(50), 4.5(171)(c))
35.2.10.1	An alternative storage method, system, device, or location was not approved by the AER. (OGCR 8.030(3); <i>Directive 055</i> 2.1.3(16), 2.5(21), 2.5(22), 3.4(51), 3.7(67), 3.8(94))
35.2.15.1	Storage exceeds a one-year duration. ( <i>Directive 055</i> 2.4(19))
35.2.20.1	Alternative water volume withdrawn within 12 months does not equal or is greater than the volume going into the storage device. ( <i>Directive 055</i> 2.4(20))
35.2.25.1	Storage systems and/or associated equipment do not meet spacing requirements specified in <i>Directive 055</i> . ( <i>Directive 055</i> 2.6(23), 4.2.1(145))
35.2.30.1	Concrete is being used as primary containment. ( <i>Directive 055</i> 1.6.4(9), 1.6.4(10), 1.6.4(11), 3(26), 3.6(58))
35.2.35.1	Storage system differential settlement, freeze-thaw cycles, subgrade movement (including sinking, low spots, slumping, sloughing), or slope instability has occurred due to inadequate civil works. ( <i>Directive 055</i> 4.6(173))

### 35.3 Temporary Storage Operations

Manual #	Description
35.3.5.1	No diking or 1 m impervious berm for storage where diking is not optional, exceeds three months, or where combined storage capacity exceeds 3000 m <sup>3</sup> . ( <i>Directive 055 4.2.2(146), 4.2.2(148)</i> )
35.3.10.1	Temporary storage duration exceeds one year. ( <i>Directive 055 4.2.2(146), 4.2.2(150)</i> )
35.3.15.1	Contaminated materials or materials possessing the potential to leach are stored directly on the ground. ( <i>Directive 055 4.2.2(147)</i> )
35.3.20.1	Temporary storage area synthetic liner is not a minimum of 15 mil thick. ( <i>Directive 055 4.2.2(149)(a)</i> )
35.3.25.1	Temporary storage area synthetic liner is not extended over the dike or keyed into the outside of the dike. ( <i>Directive 055 4.2.2(149)(a)</i> )
35.3.30.1	Leachate in temporary storage area is not managed. ( <i>Directive 055 4.2.2(149)(b)</i> )
35.3.35.1	Underlying soil not assessed for a temporary storage area used for more than three months. ( <i>Directive 055 4.2.2(149)(c)</i> )

### 35.4 Containers Device Specific

Manual #	Description
35.4.5.1	On-site volume of containers exceeds 1 m <sup>3</sup> without secondary containment. ( <i>Directive 055 3.1(27)</i> )
35.4.10.1	Secondary containment for containers does not meet the requirements. ( <i>Directive 055 3.1(28)(a)(b)(c)</i> )
35.4.15.1	Container storage in trailers or buildings does not meet the requirements. ( <i>Directive 055 3.1(28)(d)(e)(f)</i> )
35.4.20.1	No or inadequate weather protection for containers. ( <i>Directive 055 3.1(29)</i> )

### 35.5 AST/UST Device Specific

Manual #	Description
35.5.5.1	No secondary containment for AST where required. ( <i>Directive 055 3.2(34)</i> )
35.5.10.1	AST not constructed, designed, or operated as required. ( <i>Directive 055 3.2(30), 3.2(37), 3.2(38)</i> )
35.5.15.1	Open-topped tank mechanical integrity was not appropriately verified within the past five years. ( <i>Directive 055 3.2(36)</i> )
35.5.20.1	Tank foundation and supports do not meet the requirements. ( <i>Directive 055 3.2(33)</i> )
35.5.25.1	UST was not constructed or operated appropriately. ( <i>Directive 055 3.3(40), 3.3(41), 3.3(44), 5.1(177)</i> )
35.5.30.1	Flare/incinerator knockout or separator integrity testing does not meet the requirements. ( <i>Directive 055 3.3(42)</i> )
35.5.35.1	Newly installed UST and associated piping integrity testing was not conducted. ( <i>Directive 055 3.3(43)</i> )
35.5.36.1	Automatic shutdown system not checked or documented monthly or maintained to ensure functionality. [ <i>Directive 055 3.2(32)</i> ]

### 35.6 Liners and Dikes (All Storage Systems)

Manual #	Description
35.6.5.1	No dike and/or impervious liner present where required. ( <i>Directive 055 3.2(39), 3.7.1.2(71) 3.7.1.3(75), 4.1(109), 4.2(132), 4.2(139)</i> )

Manual #	Description
35.6.10.1	Liner does not meet the requirements. ( <i>Directive 055</i> 3.4(47), 3.7(62), 3.7.1.1(69), 3.7.1.2(70), 3.7.1.2(73), 3.7.1.3(75)(a), 4.1(107)–(109), 4.1.1.1(115), 4.1.2(121), 4.2(140), 4.2(141))
35.6.15.1	Liner is not protected from damage, degradation, or unauthorized access. ( <i>Directive 055</i> 4.1(110), 4.1.1(114), 4.1.2(129))
35.6.20.1	Dike contains openings or is not designed to contain fluids. ( <i>Directive 055</i> 4.2(133)(a)–(c))
35.6.25.1	Aboveground synthetically lined walled storage systems (AWSS) dike is not designed to withstand wave impact from storage device failure. ( <i>Directive 055</i> 4.2(134))
35.6.30.1	Diked area volumetric capacity does not meet the requirements. ( <i>Directive 055</i> 4.2(135)–(137))
35.6.35.1	Dike and secondary containment areas are not maintained in good condition or kept free from weeds, debris, and extraneous combustible material. ( <i>Directive 055</i> 4.2(138))
35.6.40.1	Diked area is not graded to a sump or low-lying area. ( <i>Directive 055</i> 4.2(142))

### 35.7 Leak Detection (All Storage Systems)

Manual #	Description
35.7.5.1	No leak detection is present where required. ( <i>Directive 055</i> 1.6.4(9), 1.6.4(11), 3.2(39), 3.6(58), 3.7.1.2(73), 3.7.1.3(75)(b)(c), 3.8.(100)(e), 4.3.3(156), 4.3.7(163))
35.7.10.1	Monitoring or sampling of collected leak detection liquids does not meet <i>Directive 055</i> . ( <i>Directive 055</i> 1.6.3(4), 1.6.3(7), 1.6.4(10), 1.6.4(11), 3.2(31), 4.3.1(152), 4.3.1(153), 4.3.3(157), 4.3.4(158), 4.3.5(160), 4.3.6(162), 5.6(194); <i>Directive 058</i> 7.4(120))
35.7.15.1	Leak detection for storage devices within a diked area does not allow the preferential movement of leakage through the layer to a collection area. ( <i>Directive 055</i> 4.3.2(155))

### 35.8 Operational Controls (All Storage Systems)

Manual #	Description
35.8.5.1	Loading and unloading areas are not designed to contain leaks or spills. ( <i>Directive 055</i> 5.1(175))
35.8.10.1	Spill control or spill control devices are not used or are inadequate where required. ( <i>Directive 055</i> 3.2(39), 5.1(176), 5.1(180), 5.1(181))
35.8.15.1	Storage device is not protected from damage. ( <i>Directive 055</i> 2.3(18))
35.8.20.1	Required measures not incorporated to prevent overfilling of tanks. ( <i>Directive 055</i> 5.1(178))
35.8.25.1	Double-walled AST is not equipped with a valve as close as practical to the tank. ( <i>Directive 055</i> 5.1(179))
35.8.30.1	Wildlife fatalities or wildlife contact was not reported. ( <i>Directive 055</i> 5.2(182)(c))

### 35.9 Withdrawal of Storage Devices from Service

Manual #	Description
35.9.5.1	A tank taken out of service is not appropriately isolated or maintained. ( <i>Directive 055</i> 5.6(192), 5.6(193))
35.9.10.1	Tank out of service for 180 days or less was not emptied, or the fluid level was not recorded monthly. ( <i>Directive 055</i> 5.6(194))



Manual #	Description
35.9.15.1	Tank taken out of service for more than 180 days was not clearly marked as empty and out of service. ( <i>Directive 055 5.6(195)</i> )
35.9.20.1	Tank taken out of service for more than 180 days does not have all fluids, solids, and gases removed. ( <i>Directive 055 5.6(195)</i> )
35.9.25.1	Tank out of service for more than one year was not verified for integrity before it went back in service. ( <i>Directive 055 5.6(196)</i> )
35.9.30.1	Nonpermanent storage device was not removed, suspended, or verified as required. ( <i>Directive 055 3.7(65), 5.6.1</i> )
35.9.35.1	Soil contamination assessment or confirmatory soil sampling was not conducted. ( <i>Directive 055 1.6.4(12), 5.6(197), 5.6.2(199–202)</i> )

### 35.10 Inspections and Documentation

Manual #	Description
35.10.5.1	Storage system inspections are not conducted at least monthly. ( <i>Directive 055 3.2(35), 5.7(204)</i> )
35.10.10.1	Storage device inspections, monitoring, or documentation does not meet the requirements. ( <i>Directive 055 3.2(32), 3.8(96), 4.2.1(144), 4.3(151), 4.3.1(154), 4.3.4(158), 5.7(206), 5.7(207)(a), 5.7(208), 5.8(211)</i> )
35.10.15.1	No or inadequate storage device corrective actions were taken. ( <i>Directive 055 1.6.4(12), 4.3.1(154), 5.7(205), 5.7(207)(b), 5.7(209)</i> )
35.10.20.1	Inventory records are not maintained or retained on site or at the local field office for two years. ( <i>Directive 055 5.8(210)</i> )
35.10.25.1	Required documentation was not retained for a minimum of five years. ( <i>Directive 055 5.8(211)</i> )

## 40 Directive: 058 Oilfield Waste Management

Section 4 of the *Pipeline Rules* applies to all the noncompliance statements in this section.

### 40.1 Oilfield Waste

Manual #	Description
40.1.5.1	Site is not maintained in a clean condition. ( <i>OGCR 8.150(4)</i> )
40.1.10.1	No AER approval where required was given for a waste management activity. ( <i>Pipeline Rules 4(3); Directive 058 5, 7.2(107)–(109), 7.3(113), 7.4(115), 7.5(126)(127), 7.6(130), 7.6.1(131), 7.6.2(142), 7.7(147), 9(163), 9.4(170), 10.3(198)</i> )
40.1.15.1	Waste management activity AER approval condition are not met. ( <i>OGCR 8.150(2)(f),(3)(a); specific application and/or approval</i> )
40.1.20.1	Waste was sent to a site not authorized to accept it. ( <i>Pipeline Rules 4(3); Directive 058 7.5(125),10.3(197)</i> )
40.1.25.1	Waste characterization was not completed or inadequate to classify the waste. ( <i>Pipeline Rules 4(3); Directive 058 2(3); Waste Control Regulation</i> )
40.1.30.1	Oilfield waste was not properly classified as either dangerous (DOW) or non-dangerous (non-DOW). ( <i>Pipeline Rules 4(3); Directive 058 2(3)(4); Waste Control Regulation</i> )
40.1.35.1	Oilfield waste was not characterized or classified before adding amendments, mixing, or diluting. ( <i>Pipeline Rules 4(3); Directive 058 2(5-6)</i> )

Manual #	Description
40.1.40.1	Oilfield waste generator did not disclose characteristics or classification of oilfield waste to waste carriers or receivers. (OGCR 8.150(2)(e))
40.1.45.1	Waste tracking system is not in place or tracking system does not maintain accurate and complete documentation and records. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3.3(19-20))
40.1.50.1	Oilfield waste was not properly identified (waste code). ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3(9), appendix 2)
40.1.55.1	Shipping document was not used during transportation of waste. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3(7))
40.1.60.1	Shipping document does not include adequate information, including the waste code, waste source, and waste generator's contact information. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3(9), 3.1(12))
40.1.65.1	AER's waste form was not used or was incomplete or inadequate. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3.1(10)–(13))
40.1.70.1	Oilfield waste generator does not notify the AER as required for discrepancy. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3.2(15), 3.2.1(17))
40.1.75.1	Oilfield waste generator does not investigate, reconcile, or take corrective action as required for serious discrepancy. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3.2(14), 3.2.1(17))
40.1.80.1	Shipping documents or tracking information is not retained by generator for a minimum of two years. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 3.3(21))
40.1.85.1	Storage or consolidation of small volumes of waste in bin/bag system does not meet the requirements. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 7.2(107))
40.1.90.1	Oilfield waste is being burned. ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 5)
40.1.95.1	Not monitoring or managing waste containing NORMs in accordance with the <i>Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM)</i> . ( <i>Pipeline Rules</i> 4(3); <i>Directive 058</i> 10.3(197))

## 45 **Directive 050: Drilling Waste Management**

Section 4 of the *Pipeline Rules* applies to all the noncompliance statements in this section.

### 45.1 Notifications and Approvals

Manual #	Description
45.1.5.1	Failure to obtain AER approval where required. ( <i>Directive 050</i> 4.3(37)(b), 6.6(79), 7.2(82)(e), 15.1, 15.2(139))
45.1.10.1	Failure to follow AER approval requirements. (OGCR 8.151(4)(c), 8.152; Specific Approval)
45.1.15.1	Failure to notify the AER as required. ( <i>Directive 050</i> 3.5(15), 6.6(79), 14(137), 16.2(143), 16.2(144), 17.3(149); <i>Directive 058</i> 4.1(33), 4.2.1(61), 4.2.1(63), 7.6.2(b), 7.2(81)(c)(vii))
45.1.20.1	Failure to document or maintain information required in <i>Directive 050</i> for drilling waste generated from directional drilling activities. ( <i>Directive 050</i> 13(133), 17.2(147))
45.1.25.1	Detailed map of the disposal area was not documented or retained as required. ( <i>Directive 050</i> 17.1(145)(d)(iii))

Manual #	Description
45.1.30.1	Drilling waste volumes accepted and managed in a tailings pond were not recorded. ( <i>Directive 050 15.3(140)</i> )
45.1.35.1	Failure to obtain a written consent or agreement from a landowner or department agency where required. ( <i>Directive 050 1.5(1), 6.4(70), 16.1(142)(i)</i> )
45.1.40.1	Failure to disclose, communicate, or provide information to a landowner, department, or agency as required. ( <i>Directive 050 1.5(2), 4.5(49)(b), 11.3.3(121)(h)</i> )

## 45.2 Spacing

Manual #	Description
45.2.5.1	Exterior walls of the drilling waste storage system are within 100 m of a water body. ( <i>OGCR 2.120(1)(b); Directive 050 6.7(80)(c)</i> )
45.2.10.1	Exterior walls of the drilling waste storage system are within 50 m of a water body that is up-gradient, or the landscape creates a physical barrier. ( <i>Directive 050 6.7(80)(d)</i> )
45.2.15.1	Exterior walls of the drilling waste storage system are within 50 m of an off-site water well. ( <i>Directive 050 6.7(80)(b)</i> )
45.2.20.1	Exterior walls of the drilling waste storage system are within 20 m of an on-site rig water well. ( <i>Directive 050 6.7(80)(a)</i> )
45.2.25.1	Disposal was conducted within 100 m of a water body. ( <i>Directive 050 3.6(16)(c)</i> )
45.2.30.1	Disposal was conducted within 50 m of a water body that is up-gradient, or the landscape creates a physical barrier. ( <i>Directive 050 3.6(16)(d)</i> )
45.2.35.1	Disposal was conducted within 10 m of a road ditch or property line. ( <i>Directive 050 3.6(16)(a)</i> )
45.2.40.1	Disposal was conducted within 50 m of a water well. ( <i>Directive 050 3.6(16)(b)</i> )

## 45.3 Storage General

Manual #	Description
45.3.5.1	Failure to appropriately store drilling mud and waste at the entry and exit points of the drilling activity. ( <i>Directive 050 6.3(68)</i> )
45.3.10.1	Failure to remove the drilling waste from pits immediately upon completion of drilling or backfill/reclaim the pits. ( <i>Directive 050 6.3(69)</i> )
45.3.15.1	More than one licensee is contributing drilling waste to a drilling waste storage system. ( <i>Directive 050 6.1(60)</i> )
43.3.20.1	Failure to inspect storage system for additional materials before disposal of camp sewage or other oilfield waste into the drilling waste storage system. ( <i>Directive 050 4.2(29), 6.1(56)</i> )
45.3.25.1	Storage system does not prevent the entrance of surface water runoff. ( <i>OGCR 8.151(2)(a); Directive 050 6.1(62)</i> )
45.3.30.1	Failure to maintain a minimum freeboard of 0.5 m. ( <i>Directive 050 6.1(63)</i> )
45.3.35.1	Facility is not maintained in a clean condition. ( <i>OCGR 8.150(4); Directive 050 6.1(58)</i> )
45.3.40.1	Storage system is not physically closed within the required timeframe. ( <i>Directive 050 6.1(64)</i> )
45.3.45.1	Pipeline and well drilling waste are not stored or disposed of separately. ( <i>Directive 050 6.1(61)</i> )
45.3.50.1	Remote site is being used beyond five years without AER approval. ( <i>OCGR 8.152; Directive 050 6.4(73)</i> )

#### 45.4 Storage – Signs and Security

Manual #	Description
45.4.5.1	Remote storage site does not have signage at the site entrance identifying location, licensee, linked well licence or pipeline licence and line number, or 24-hour emergency phone number. ( <i>Directive 050 6.4(71)</i> )
45.4.10.1	Remote site with multiple sumps and contributing licences does not have signage for each sump indicating the type of drilling waste or licence number of the first contributing well or pipeline for that sump. ( <i>Directive 050 6.4(71)</i> )
45.4.15.1	Failure to ensure that a call to the licensee's 24-hour emergency telephone number initiated immediate action. ( <i>Directive 071 (2.1(3))</i> )
45.4.20.1	Drilling waste storage system or remote site is not secured to prevent public or wildlife access. ( <i>Directive 050 6.1(59)</i> )

#### 45.5 Storage – Sump and Earthen-Bermed Specific Requirements

Manual #	Description
45.5.5.1	Soil conservation practices are not followed. ( <i>Directive 050 6.2(67), 6.5(74)(b)</i> )
45.5.10.1	Sump site investigation was not conducted as required or site does not have minimum clayey soil deposits. ( <i>Directive 050 6.2(65), 6.2(66)</i> )
45.5.15.1	Sump contains hydraulic defects such as gravel lenses, silt lenses, sand lenses, cracks, fissures, or root channels. ( <i>OGCR 8.151(2)(b); Directive 050 6.2(65)</i> )
45.5.20.1	Berm does not meet the requirements. ( <i>Directive 050 6.5(75)</i> )
45.5.25.1	Earthen-bermed storage system is not on a well site or remote drilling waste storage site. ( <i>Directive 050 6.5(74)(b)</i> )
45.5.30.1	Shallow subsoils assessment was not conducted as required, or the results did not confirm minimum limited permeability requirements. ( <i>Directive 050 6.5(75)</i> )
45.5.35.1	Reuse of an earthen-bermed storage system. ( <i>Directive 050 6.6(77)</i> )

#### 45.6 Disposal – Landspray and Landspray While Drilling (LWD)

Manual #	Description
45.6.5.1	Disposal on a slope greater than 5% during summer operations (unfrozen ground) or greater than 3% during winter operations (frozen and snow covered). ( <i>Directive 050 11.2(109)</i> )
45.6.15.1	Drilling waste spray rate exceeded 40 m <sup>3</sup> /ha during summer operations. ( <i>Directive 050 11.3.3(121)(b)</i> )
45.6.20.1	Drilling waste spray rate exceeded 20 m <sup>3</sup> /ha during winter operations. ( <i>Directive 050 11.3.3(121)(c)</i> )
45.6.25.1	Failure to determine maximum spray rate as required or calculated spray rate exceeded. ( <i>Directive 050 11.3.1(111), 11.3.1(112)(c), 11.3.2(115)</i> )
45.6.30.1	Drilling waste disposal rate was less than the required minimum rate of 10 m <sup>3</sup> /ha. ( <i>Directive 050 11.3.3(121)(a)</i> )
45.6.35.1	Failure to determine spray rates using the calculations for no soil incorporation where required. ( <i>Directive 050 11.3(112)(c), 11.3(113), 11.3.2(116)(f)</i> )
45.6.40.1	Solids application rate exceeded 6 t/ha when sprayed onto vegetated land, disposal smothered/stressed the vegetation, or uneven application resulted in coating vegetation. ( <i>Directive 050 11.3.3(121)(g)</i> )
45.6.45.1	Sodium application rate exceeded 250 kg/m <sup>3</sup> , or the nitrogen application rate was exceeded. ( <i>Directive 050 11.3.3(121)(f)</i> )
45.6.50.1	Landspray or LWD results in clumping or pooling of waste on the land, migrated off the disposal area, or causes land erosion. ( <i>Directive 050 11.3.3(121)(e)</i> )

Manual #	Description
45.6.55.1	Using landspray or LWD disposal for drilling waste with hydrocarbons. ( <i>Directive 050 11.3.2(114), 11.3.2(116)(c)</i> )
45.6.60.1	Landspray is used to dispose of cement or separated solids and cuttings. ( <i>Directive 050 11.3.3(119) 11.3.3(120)</i> )
45.6.65.1	Failure to prepare a snow-covered area to receive waste during winter operations. ( <i>Directive 050 11.3.3(121)(d)</i> )
45.6.70.1	Failure to incorporate drilling waste into the receiving soil to a maximum depth of 15 centimetres (cm) within 60 days of disposal. ( <i>Directive 050 11.3.1(113)</i> )
45.6.75.1	LWD to dispose of drilling waste is not suited for this disposal option. ( <i>Directive 050 11.3.2(116)</i> )
45.6.80.1	Failure to separate and handle drilling waste from different sections of the well as required in <i>Directive 050</i> . ( <i>Directive 050 11.3.2(117)</i> )
45.6.85.1	Failure to ensure LWD disposal operations occur within 48 hours of rig release. ( <i>Directive 050 11.3.2(118)</i> )
45.6.90.1	Failure to retest drilling waste when LWD operations are being conducted between 48 hours and 96 hours after rig release. ( <i>Directive 050 11.3.2(118)</i> )
45.6.95.1	Drilling waste disposed on a pipeline ROW from activities other than the construction of that ROW. ( <i>Directive 050 2(4)</i> )

#### 45.7 Disposal – Pump-off

Manual #	Description
45.7.5.1	Pump-off results in pooling, erosion, or migration of the drilling waste. ( <i>Directive 050 9.3(99)</i> )
45.7.10.1	Pump-off disposal method was used for water-based drilling waste that does not qualify as clear liquid based on <i>Directive 050</i> criteria. ( <i>Directive 050 9.3(96), 9.3(97)</i> )
45.7.15.1	Actual application rate of 1000 m <sup>3</sup> /ha was exceeded. ( <i>Directive 050 9.3(98)</i> )
45.7.20.1	The sodium application rate exceeded 250 kg/ha, and/or the nitrogen application rate was exceeded. ( <i>Directive 050 9.3(97)(d)</i> )

#### 45.8 Disposal – Mix-Bury-Cover (MBC)

Manual #	Description
45.8.5.1	Failure to conduct MBC on the well site, pipeline ROW, or remote drilling waste storage site. ( <i>Directive 050 10.2(101)</i> )
45.8.10.1	MBC disposal was not conducted within deeper subsoils. ( <i>Directive 050 10.2(101)</i> )
45.8.15.1	Failure to mix at a ratio of at least three parts subsoil to one part waste. ( <i>Directive 050 10.3(105)</i> )
45.8.20.1	Conducting MBC operations when predictive/calculated mix ratio exceeds seven parts subsoil to one part waste. ( <i>Directive 050 10.3(105)(b)</i> )
45.8.25.1	Failure to use predictive lab mixes to determine the soil/waste mix ratio where required. ( <i>Directive 050 10.3(104), 10.3(105)(a)</i> )
45.8.30.1	Failure to cover subsoil/waste mixture with a minimum of 1 m of clean fill that meets <i>Tier 1 Soil and Groundwater Remediation Guidelines</i> for the applicable soil rating category and depth. ( <i>Directive 050 10.3(107)</i> )
45.8.35.1	Hydrocarbon-based mud system that has not undergone biodegradation being managed by MBC. ( <i>Directive 050 2.0(3)</i> )
45.8.40.1	MBC on an area of the site previously used for drilling waste disposal or a site with multiple disposals exceeds five years. ( <i>Directive 050 2.0(5)(b)</i> )
45.8.45.1	MBC or landspraying disposal method used on an area of a pipeline ROW that does not have a disturbed surface. ( <i>Directive 050 10.1, 12.1</i> )

Manual #	Description
45.8.50.1	Drilling waste disposed on a pipeline ROW from activities other than the construction of that ROW. ( <i>Directive 050 2(4)</i> )

## 45.9 Disposal – Landspreading

Manual #	Description
45.9.5.1	Landspreading not conducted within shallow soils with a maximum depth profile of 1 m. ( <i>Directive 050 12.2(124)</i> )
45.9.10.1	Failure to conduct landspreading on the well site, pipeline ROW, or remote drilling waste storage site. ( <i>Directive 050 12.2(124)</i> )
45.9.15.1	Waste application rate exceeds 1000 m <sup>3</sup> /ha, or waste exceeds a thickness of 10 cm. ( <i>Directive 050 12.3(129)</i> )
45.9.20.1	The sodium application rate or the nitrogen application rate exceeds maximum allowable in <i>Directive 050</i> . ( <i>Directive 050 12.3(130)</i> )
45.9.25.1	Failure to mix subsoil and drilling waste at a ratio of at least three parts subsoil to one part drilling waste. ( <i>Directive 050 12.3(128)</i> )
45.9.30.1	Landspreading conducted when predicted lab or calculated mix ratios exceed seven parts soil to one part waste. ( <i>Directive 050 12.3(128)(b)</i> )
45.9.35.1	Failure to use predictive lab mixes to determine the soil/waste mix ratio where required. ( <i>Directive 050 12.3(126)</i> , <i>12.3(128)(a)</i> )
45.9.40.1	Landspreading drilling waste from hydrocarbon-based mud systems that have not undergone biodegradation. ( <i>Directive 050 2.0(3)</i> )
45.9.45.1	Landspreading on an area of the site previously used for drilling waste disposal or a site with multiple disposals exceeds five years. ( <i>Directive 050 2.0(5)(b)</i> )
45.9.50.1	MBC or landspreading disposal method used on an area of a pipeline ROW that does not have a disturbed surface. ( <i>Directive 050 10.1</i> , <i>12.1</i> )
45.9.55.1	Drilling waste disposed on a pipeline ROW from activities other than the construction of that ROW. ( <i>Directive 050 2(4)</i> )

## 45.10 Disposal – Disposal Onto Forested Public Lands (DFPL)

Manual #	Description
45.10.5.1	Disposal on a slope greater than 5%. ( <i>Directive 050 8.2(85)(b)</i> )
45.10.10.1	Drilling waste spread rate exceeded 80 m <sup>3</sup> /ha. ( <i>Directive 050 8.3(92)(b)</i> )
45.10.15.1	Drilling waste disposal rate was less than the required minimum rate of 10 m <sup>3</sup> /ha. ( <i>Directive 050 8.3(92)(a)</i> )
45.10.20.1	Drilling waste analysis results were not used to calculate the spread rate, or the actual spread rate exceeded the calculated spread rate to prevent the receiving soil from exceeding endpoints. ( <i>Directive 050 8.3(86)</i> )
45.10.25.1	Solids application rate exceeded 6 t/ha when sprayed onto vegetated land, disposal smothered/stressed the vegetation, or uneven application resulted in coating vegetation. ( <i>Directive 050 8.3(92)(e)</i> )
45.10.30.1	The sodium application rate exceeded 250 kg/ha, and/or the nitrogen application rate was exceeded. ( <i>Directive 050 8.3(92)(d)</i> )
45.10.35.1	DFPL results in clumping or pooling of waste on the land, migrated off the disposal area, or causes land erosion. ( <i>Directive 050 8.2(85)(c)</i> , <i>8.3(92)(c)</i> )
45.10.40.1	Using DFPL disposal for drilling waste with hydrocarbons. ( <i>Directive 050 8.3(89)</i> , <i>(90)(c)</i> )
45.10.45.1	Vegetative indicators (e.g., tamarack) indicate unsuitable soil conditions for DFPL, such as muskeg or mineral soil horizon greater than 30 cm. ( <i>Directive 050 8.2(85)(d)</i> )
45.10.50.1	Drilling waste disposal was conducted in ditches. ( <i>Directive 050 8.2(84)</i> )

Manual #	Description
45.10.55.1	Failure to clearly mark all stop and start points of the spray area before or during disposal. ( <i>Directive 050 8.3(93)</i> )
45.10.60.1	Failure to conduct DFPL on lands where the AER has issued an MSL or LOC. ( <i>Directive 050 8.2(83), 8.2(85)(a)</i> )
45.10.65.1	DFPL was used to dispose of drilling waste unsuited for this disposal option. ( <i>Directive 050 8.3(87), 8.3(88), 8.3(90)</i> )
45.10.70.1	Failure to follow requirements for minimum-ground-disturbance disposal. ( <i>Directive 050 8.2(84)</i> )
45.10.75.1	Proceeding with DFPL without storing, sampling, and testing drilling waste where required. ( <i>Directive 050 8.3(91)</i> )

## 45.11 Sampling and Analysis

Manual #	Description
45.11.5.1	Failure to follow the sample collection criteria for assessing pre- or post-disposal soil conditions. ( <i>Directive 050 3.5(13), 9.2(95), 10.2(102), 12.2(125)</i> )
45.11.10.1	Field-screening test methods were not limited to assessments outlined in <i>Directive 050</i> . ( <i>Directive 050 3.5(14)(a), 5(51), 5(52)</i> )
45.11.15.1	Failure to ensure the field-screening program was supported by an ongoing quality assurance/quality control program. ( <i>Directive 050 4.4(46), 5(54), 5(55)</i> )
45.11.20.1	Failure to follow the sample collection criteria for assessing drilling waste as per <i>Directive 050</i> requirements. ( <i>Directive 050 4.2(19)–(24), 4.2(26), 4.2(27), 4.2(31), 11.3.1(110)</i> )
45.11.25.1	Failure to sample and analyze the drilling waste for pH, EC, SAR, Na, or N, as required. ( <i>Directive 050 4.3(32), 8.3(86), 9.3(97), 10.3(104), 11.3.1(111), 11.3.2(115), 12.3(126)</i> )
45.11.30.1	Failure to test drilling waste or additives for metals, hydrocarbons, toxicity, or salinity as required. ( <i>Directive 050 4.3(33)–(36), 4.3(37)(a), 4.3(38), 4.3(40), 4.3(42), 8.3(91), 9.3(97), 10.3(104), 11.3.1(111), 11.3.2(116), 12.3(126)</i> )
45.11.35.1	Failure to develop, test, or use a generic mud system as required. ( <i>Directive 050 4.4, 4.4(43), 4.4(45), 4.4(46), 4.4(48)</i> )
45.11.40.1	Failure to ensure mud system passed appropriate testing for the disposal option as required in <i>Directive 050</i> . ( <i>Directive 050 4.4(44), 11.3.1(111), (112)</i> )
45.11.45.1	Failure to re-evaluate disposal method knowing changes to the drilling mud/waste system occurred or sampling identified exceedance. ( <i>Directive 050 4.4(45), 4.4(48)</i> )
45.11.50.1	Sampling for receiving soil not representative or appropriate. ( <i>Directive 050 3.2(7), 3.5(12), 10.2(103)</i> )
45.11.55.1	Failure to analyze receiving soil sample to verify that electrical conductivity and sodium adsorption ratio values are within the initial criteria specified in <i>Directive 050</i> . ( <i>Directive 050 3.2(7)</i> )
45.11.60.1	Receiving soil exceeds initial limiting criteria outlined in <i>Directive 050</i> . ( <i>Directive 050 3.2(7)</i> )
45.11.65.1	Failure to adequately determine the background soil conditions for remix. ( <i>Directive 050 16.1(142)(c)</i> )
45.11.70.1	Failure to conduct post-disposal sampling as required. ( <i>Directive 050 3.5(14), 4.4(47), 8.4(94), 9.4(100), 10.2(102), 10.4(108), 11.4.1(122), 11.4.2(123), 12.4(131)</i> )
45.11.75.1	Failure to ensure drilling waste disposal does not exceed the endpoints specified in <i>Directive 050</i> . ( <i>Directive 050 3.1(6), 3.2(8), 3.3(9), table 2, 3.4(11), table 5, 3.5(14), 4.4(47), 10.3(104)</i> )

## 47 Directive 038: Noise Control

### 47.1 General

Manual #	Description
47.1.5.1	A licensee did not operate a pipeline facility or did not conduct pipeline construction and operations within the maximum noise level limits specified in <i>Directive 038. (Pipeline Rules 27)</i>

## 49 Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting

Section 4 of the *Pipeline Rules* applies to all the noncompliance statements in this section.

### 49.1 General

Manual #	Description
49.1.5.1	No flare or incinerator stacks where one is required. ( <i>Directive 060 6.2(2)</i> )
49.1.10.1	Stack height or design does not meet the requirements. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 6.2(2), 7.4</i> )
49.1.15.1	Pilot/ignition devices are not available/operable where required. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 7.3</i> )
49.1.20.1	No flame arrester, equivalent safety device, or appropriate engineering and operating practices to prevent back flash where required. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 6.1, 7.7, 8.7</i> )
49.1.25.1	No knockout drum or flare separator where required. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 7.6, 8.7</i> )
49.1.30.1	Knockout drum or flare separator controls, equipment, or design does not meet the requirements. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 6.1(3)</i> )
49.1.35.1	Exposed flame from an incinerator. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 6.1(3), 7.1.2 (1)(a)</i> )
49.1.40.1	Venting practices are not conducted in accordance with the requirements. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 6, 8.7</i> )
49.1.45.1	Failure to conduct dispersion modelling for flaring or incinerating gas with greater than 10 mol/kmol H <sub>2</sub> S or 1 t/d of sulphur. ( <i>Pipeline Rules 4(2); 70(3), (5); Directive 060 3.6(1), (2), 7.12(1), (2)</i> )
49.1.50.1	Decision tree was not used to evaluate pipeline flares, incinerators, and vents, or evaluations were not updated before a planned event. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 6.1, figure 7, 7.11(5)</i> )
49.1.55.1	Failure to keep flaring, incinerating, and venting logs as required. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 5.3(3), 5.5(4), 10.1(1)(b)–(e), (2)</i> )
49.1.60.1	Flaring or incinerating sour gas containing more than 50 mol/kmol H <sub>2</sub> S without a permit where required. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 6.2(3)</i> )
49.1.65.1	Failure to comply with any condition of the flaring permit or approval (temporary permits, volume allowance threshold exceedance permits, and blanket permits). ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 3.3</i> )
49.1.70.1	Failure to notify the appropriate AER field centre of flaring, incinerating, or venting events. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 3.8(1), 6.4(1-3), table 2</i> )



Manual #	Description
49.1.75.1	No resident notification and/or consultation. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060. 3.8(1), 6.4(1), table 2</i> )
49.1.80.1	Public information packages or resident notification information do not meet the requirements. ( <i>Pipeline Rules 4(2), 70(3), (5); Directive 060 2.10.1</i> )

## 50 Public Lands Act

### General

Manual #	Description
50.1.1	Unauthorized use, no approval, or disposition associated with disturbance or use of public land. ( <i>Public Lands Act 20(1), 47(1)(a)</i> )
50.2.1	Unauthorized use (purpose), disposition being used for purpose other than for which it was approved. ( <i>Public Lands Act 20(1)(e); Public Lands Administration Regulation 173(1); Approval</i> )
50.3.1	Disposition not built as per approved survey plan/sketch. ( <i>Public Lands Act 20(1)(b); Public Lands Administration Regulation 173(1); Approval</i> )
50.4.1	Erosion on site is not being controlled or cuts/fills are not recontoured to a stable slope. ( <i>Public Lands Act 54(1)(f); Public Lands Administration Regulation 173(1); Approval</i> )
50.5.1	Timber is not salvaged as per the approval. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
50.6.1	Berming requirements outlined in the approval are not met. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
50.7.1	Brush/debris disposal is not completed within two growing seasons or as required by the approval. ( <i>SD 2010-02, Public Lands Administration Regulation 173(1)</i> )
50.8.1	Waste material, debris, refuse, or garbage is accumulating on site. ( <i>Public Lands Act 54(1)(a); Public Lands Administration Regulation 21(1)(h)</i> )
50.9.1	Fencing is not installed or maintained as required by the approval. ( <i>Public Lands Administration Regulation 173(1)</i> )
50.10.1	Weeds are not actively being managed. ( <i>Public Lands Act 63(b); Public Lands Administration Regulation 173(1); Approval</i> )
50.11.1	Compaction and/or admixing of soil profile occurring on site due to rutting. ( <i>Public Lands Act 54(e); Public Lands Administration Regulation 173(1); Approval</i> )
50.12.1	Prohibited species identified in Approval used for revegetation ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
50.13.1	Operating within restricted time period identified in the approval. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
50.14.1	Access control requirements outlined in the approval are not met. ( <i>Public Land Administration Regulation 173(1)</i> )
50.15.1	Cuts/fills are not recontoured to a stable slope. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )

### Water Management

Manual #	Description
51.1.1	Deleterious material was deposited into a water body or watercourse or onto ice. ( <i>Public Lands Act 54(1)(e); Public Lands Administration Regulation 173(1); Approval</i> )
51.2.1	Unsatisfactory crossing of a permanent or fish-bearing watercourse. ( <i>Public Lands Act 54(1)(e)(f); Public Lands Administration Regulation 21(1)(j); Approval</i> )

Manual #	Description
51.3.1	Unsatisfactory crossing of an ephemeral or intermittent watercourse, wetland, cross-drain, or other non-fish-bearing water body. ( <i>Public Lands Act 54(1)(e)(f); Public Lands Administration Regulation 173(1); Approval</i> )
51.4.1	Crossing type is not as per approval. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
51.5.1	Operation or infrastructure on disposition is interfering with natural drainage, other than what has been approved. ( <i>Public Lands Act 54(1)(d)–(f)</i> )
51.6.1	Disturbance to bed and shore of water bodies other than what is approved through Approval. ( <i>Public Lands Act 53(a), 54(e)</i> )

## Conservation and Reclamation

Manual #	Description
52.1.1	Proper soil conservation techniques are not being used. ( <i>Public Lands Act 63(d); Public Lands Administration Regulation 21(f), 173(1); Approval</i> )
52.2.1	Interim reclamation is not implemented on disposition within the required timeframe. ( <i>SD 2010-02</i> )
52.3.1	Rollback requirements outlined in approval are not met. ( <i>Public Lands Administration Regulation 173(1)</i> )
52.4.1	Site is not constructed to a minimal disturbance standard as required by the disposition approval.

## EAP Dispositions

Manual #	Description
53.1.1	Regulator is not notified of entry within 72 hours. ( <i>Public Lands Administration Regulation 173(1)</i> )
53.2.1	Site is not located as per siting requirements in the approval. ( <i>Public Lands Administration Regulation 173(1)</i> )
53.3.1	Site is built beyond size limitations in the approval. ( <i>Public Lands Administration Regulation 173(1)</i> )
53.4.1	Class of road built is greater than maximum outlined in the approval. ( <i>Public Lands Administration Regulation 173(1)</i> )
53.5.1	Required wildlife survey was not completed. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.6.1	Wildlife signage is not installed as required. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.7.1	A 100 m wildlife sweep was not appropriately conducted before construction. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.8.1	More than 10 m elevation difference exists from the well centre to the corner of the disposition. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.9.1	Disposition conflicts with the Higher Level Plan. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.10.1	Access to a nonproducing well off a public grade road was not closed to highway traffic within one year. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.11.1	Chemical herbicide was sprayed within 30 m of a watercourse or water body. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.12.1	Temporary activities are not located adjacent to all-weather access or existing disposition. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.13.1	Incidental activities are not built according to table C of <i>Public Lands Administration Regulation</i> approvals and Authorizations Administrative Procedures (TFA Guidelines). ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.14.1	Maximum crown (roach) height exceeded (60 cm for frozen, 30 cm for nonfrozen). ( <i>Public Lands Administration Regulation 173(1); Approval</i> )

Manual #	Description
53.15.1	HDD containment and cleanup specialist not on site during bore or HDD of permanent watercourse. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
53.16.1	Pipeline width greater than maximum outlined in approval. ( <i>Public Lands Administration Regulation 173(1)</i> )

#### Other

Manual #	Description
59.1.1	Other contravention of approval conditions. ( <i>Public Lands Administration Regulation 173(1); Approval</i> )
59.2.1	Other contravention of act or regulation. (Specified in comments)

## 60 Environmental Protection and Enhancement Act (EPEA)

### 60.1 EPEA General

Manual #	Description
60.1.1.1	Failure to report a release as required. ( <i>EPEA 110(1)(2)</i> )
60.1.2.1	Release notifications requirements are not met. ( <i>EPEA 111(1); Release Reporting Regulation 4</i> )
60.1.3.1	Failure to take remedial action. ( <i>EPEA 112</i> )

### 60.3 Storage

Manual #	Description
60.3.1.1	Hazardous substances not stored in a manner to prevent contact with plants, animals, food, or drink. ( <i>EPEA 155</i> )

### 60.6 Other

Manual #	Description
60.6.1.1	Noncompliant with other <i>EPEA</i> item. (Specified in comments)

## 61 EPEA Approval

### 61.1 Approval and Registration Requirements

Manual #	Description
61.1.1.1	No <i>EPEA</i> approval where required. ( <i>EPEA 61</i> )
61.1.2.1	Change in activity, process, or equipment made without amendment to approval. ( <i>EPEA 67</i> )
61.1.3.1	Approval or registration was not transferred. ( <i>EPEA 75</i> )

## 61.2 Releases

Manual #	Description
61.2.2.1	Failure to report a release in excess of approval or registration requirements. (EPEA 108; Approval)

## 61.3 Records and Reporting

Manual #	Description
61.3.1.1	Approval reporting conditions not met. (EPEA 227E)
61.3.2.1	7 Day Report conditions not met as per approval. (EPEA 111; 227E)
61.3.4.1	Application/plans/proposals approval conditions not met. (EPEA 227E)
61.3.5.1	Monthly/annual/special/other report approval conditions not met. (EPEA 227E)
61.3.6.1	Notification approval conditions not met. (EPEA 227E)

## 61.4 Construction Equipment and Operations

Manual #	Description
61.4.4.1	Land conservation approval not met. (EPEA 227E; Approval)

## 61.5 Air Management

Manual #	Description
61.5.1.1	Analytical conditions not met. (EPEA 227E; Approval)
61.5.2.1	Air effluent limits exceeded. (EPEA 227E; Approval)
61.5.3.1	Air emission sources do not correspond to the approval. (EPEA 227E; Approval)
61.5.4.1	Equipment/systems conditions not met. (EPEA 227E; Approval)
61.5.5.1	Operating limit parameters/equipment downtime exceeded. (EPEA 227E; Approval)
61.5.6.1	Source monitoring conditions not met. (EPEA 227E; Approval)
61.5.7.1	Ambient monitoring conditions not met. (EPEA 227E; Approval)
61.5.8.1	Pollution abatement equipment conditions not met. (EPEA 227E; Approval)
61.5.9.1	Fugitive emissions not controlled in accordance with the approval. (EPEA 227E; Approval)
61.5.11.1	Monthly/annual/other report conditions not met. (EPEA 227E; Approval)

## 61.6 Industrial Wastewater

Manual #	Description
61.6.1.1	Sampling conditions not met. (EPEA 227E; Approval)
61.6.2.1	Storage approval conditions not met. (EPEA 227E; Approval)

Manual #	Description
61.6.3.1	Discharge/disposal conditions not met. (EPEA 227E; Approval)
61.6.4.1	Action leakage rate limits/requirements not met. (EPEA 227E; Approval)
61.6.5.1	Analytical conditions not met. (EPEA 227E; Approval)
61.6.7.1	Substance release/control system limits exceeded. (EPEA 227E; Approval)
61.6.8.1	Control system monitoring conditions not met. (EPEA 227E; Approval)
61.6.9.1	Pollution minimization conditions not met. (EPEA 227E; Approval)
61.6.11.1	Monthly/annual/other report conditions not met. (EPEA 227E; Approval)

### 61.7 Industrial Runoff

Manual #	Description
61.7.1.1	Sampling conditions not met. (EPEA 227E; Approval)
61.7.2.1	Storage conditions not met. (EPEA 227E; Approval)
61.7.3.1	Discharge/disposal approval not met. (EPEA 227E; Approval)
61.7.4.1	Analytical conditions not met. (EPEA 227E; Approval)
61.7.6.1	Substance release/control system limits exceeded. (EPEA 227E; Approval)
61.7.7.1	Control system monitoring conditions not met. (EPEA 227E; Approval)
61.7.8.1	Before release monitoring, conditions not met. (EPEA 227E; Approval)
61.7.10.1	Notification conditions not met. (EPEA 227E; Approval)
61.7.11.1	Monthly/annual/other report conditions not met. (EPEA 227E; Approval)

### 61.8 Domestic Wastewater/Sanitary Sewage

Manual #	Description
61.8.2.1	Analytical conditions not met. (EPEA 227E; Approval)
61.8.4.1	Substance release limits exceeded. (EPEA 227E; Approval)
61.8.5.1	Untreated wastewater monitoring conditions not met. (EPEA 227E; Approval)
61.8.6.1	Treated wastewater monitoring conditions not met. (EPEA 227E; Approval)
61.8.9.1	Monthly/annual/other report conditions not met. (EPEA 227E; Approval)

### 61.9 Groundwater

Manual #	Description
61.9.2.1	Analytical conditions not met. (EPEA 227E; Approval)

Manual #	Description
61.9.3.1	Monitoring wells do not exist/placed inappropriately. (EPEA 227E; Approval)
61.9.4.1	Monitoring wells not locked, protected, or repaired as required. (EPEA 227E; Approval)
61.9.5.1	Groundwater monitoring conditions not met. (EPEA 227E; Approval)
61.9.6.1	Groundwater remediation requirements not met. (EPEA 227E; Approval)
61.9.8.1	Monthly/annual/other report conditions were not met. (EPEA 227E; Approval)

### 61.10 Soil/Land Management

Manual #	Description
61.10.2.1	Analytical conditions not met. (EPEA 227E; Approval)
61.10.3.1	Soil monitoring program conditions not met. (EPEA 227E; Approval)
61.10.4.1	Soil management program conditions not met. (EPEA 227E; Approval)
61.10.6.1	Monthly/annual/other report conditions not met. (EPEA 227E; Approval)

### 61.11 Waste Management

Manual #	Description
61.11.1.1	Waste not disposed at waste management facility. (EPEA 176(a), 227E)
61.11.2.1	Sampling requirements not met. (EPEA 227E; Approval)
61.11.3.1	Analytical requirements not met. (EPEA 227E; Approval)
61.11.4.1	Waste classification/characterization conditions not met. (EPEA 227E; Approval)
61.11.5.1	Generated waste not measured/estimated as per requirements. (EPEA 227E; Approval)
61.11.6.1	Daily waste inventory not conducted as per requirements. (EPEA 227E; Approval)
61.11.7.1	Storage requirements not met. (EPEA 227E; Approval)
61.11.9.1	Monthly/annual/other report conditions not met. (EPEA 227E; Approval)

### 61.12 Approval Other

Manual #	Description
61.12.1.1	Noncompliant with other approval requirements. (EPEA 227E; Approval)

## 62 EPEA Codes of Practice

### 62.2 Release of Hydrostatic Test Water

Manual #	Description
62.2.1.1	No code of practice registration where required. ( <i>EPEA 61, 83(1)</i> )
62.2.2.1	Transfer of approval or registration not in accordance with requirements. ( <i>EPEA 75</i> )
62.2.3.1	Failure to report a release in excess of approval or registration requirements. ( <i>EPEA 108</i> )
62.2.4.1	Registration and administration requirements were not met. ( <i>EPEA 227E; Code of Practice 3</i> )
62.2.5.1	General hydrostatic testing requirements not met. ( <i>EPEA 227E; Code of Practice 4</i> )
62.2.6.1	Analytical requirements not met. ( <i>EPEA 227E; Code of Practice 5</i> )
62.2.7.1	Reporting requirements not met. ( <i>EPEA 227E; Code of Practice 6</i> )
62.2.8.1	Recordkeeping requirements not met. ( <i>EPEA 227E; Code of Practice 7</i> )
62.2.9.1	Release of hydrostatic test water to land requirements not met. ( <i>EPEA 227E; Code of Practice 8</i> )
62.2.10.1	Noncompliant with other <i>Code of Practice</i> item. ( <i>EPEA 227E; Code of Practice</i> (specified in comments))

## 70 Water Act Approval

### 70.1 Approval Conditions

Manual #	Description
70.1.1.1	No <i>Water Act</i> approval obtained for activity. ( <i>Water Act 36</i> )
70.1.2.1	Approval/plans/reports not retained, posted, produced as required. ( <i>Water Act 39, 142(1)(e); Approval</i> )
70.1.3.1	Contravention reporting/written report not submitted as required by approval. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.4.1	Work conducted does not meet the approval activity description. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.5.1	The activity is not undertaken as described in the approval plans/reports. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.6.1	The activity is not undertaken as described in the approval particulars. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.7.1	The activity is not undertaken to meet the siltation and erosion control requirements. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.8.1	The activity does not meet the wetland compensation requirements as described in the approval. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.9.1	Reports/drawings/information not submitted as required in the approval. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.10.1	Noncompliant with other conditions/clauses in the approval. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.11.1	Construction timing/methods or plans/reports/manuals/safety review submissions not completed as required in the approval. ( <i>Water Act 142(1)(e); Approval</i> )
70.1.12.1	Monitoring methodology or reporting does not meet the requirements of the approval. ( <i>Water Act 142(1)(e); Approval</i> )

## 72 Water Act Licence

### 72.1 Licence Conditions

Manual #	Description
72.1.1.1	No <i>Water Act</i> licence was obtained for diversion. ( <i>Water Act</i> 49(1))
72.1.2.1	Contravention reporting/written reports not completed as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.3.1	Deposit of a substance that has or may have the potential to adversely affect the source water. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.4.1	Diverted water from location other than point of diversion described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.5.1	Diverted water from source other than source of water described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.6.1	Point of use not as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.7.1	Diverting water for purposes other than described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Water Ministerial Regulation</i> 11; <i>Licence</i> )
72.1.8.1	The works used to divert the water are not as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.9.1	Exceeded the diversion limit/rate described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.10.1	Screen on pump intake not as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.11.1	Pump intake position in the production wells not as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.12.1	Measuring diversion source water and calibration requirements not completed as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.13.1	Monitoring frequencies not completed as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.14.1	In-stream objectives not met as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.15.1	Recording and reporting requirements not met as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.16.1	Water use reporting requirements not completed as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.17.1	Licensee did not investigate all written complaints as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.18.1	Licensee did not conduct/complete water sampling as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.19.1	Licensee did not abandon/reclaim wells/holes related to the diversion as described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )
72.1.20.1	Noncompliant with other unique conditions/clauses in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )

## 73 Water Act Temporary Diversion Licence (TDL)

### 73.1 TDL Conditions

Manual #	Description
73.1.1.1	No TDL was obtained for the activity. ( <i>Water Act</i> 49, 142(1)(e))
73.1.1.1	Notification was not submitted before the water diversion activity described in the licence. ( <i>Water Act</i> 142(1)(e); <i>Licence</i> )



<b>Manual #</b>	<b>Description</b>
73.1.2.1	Contraventions were not reported immediately. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.3.1	Deposit of a substance that has or may have the potential to adversely affect the source water. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.4.1	Licence not kept at the point of water diversion. ( <i>Water Act 65, 142(1)(e)</i> )
73.1.5.1	Licence not kept in the vehicle that transports the water. ( <i>Water Act 65, 142(1)(e)</i> )
73.1.6.1	Diverted water from a location other than the point of diversion described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.7.1	Diverted water from a source other than the source of water described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.8.1	Point of use not as described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.9.1	Diverting water for purposes other than that described in the licence. ( <i>Water Act 142(1)(e); Water Ministerial Regulation 11; Licence</i> )
73.1.10.1	The works used to divert the water not as described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.11.1	Volume allowed exceeded. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.12.1	Rate of diversion greater than what was described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.13.1	Screen on pump intake not as described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.14.1	Pump intake position in the production wells not as described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.15.1	Total volume of water diverted on each occasion not monitored/measured as described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.16.1	Recording and reporting requirements not met as described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.17.1	Licencee did not abandon/reclaim wells/holes related to the diversion as described in the licence. ( <i>Water Act 142(1)(e); Licence</i> )
73.1.19.1	Noncompliant with other unique condition/clause in the licence. ( <i>Water Act 142(1)(e); Licence</i> )

## 74 Water Act Codes of Practice

### 74.1 Pipelines Crossing a Water Body

<b>Manual #</b>	<b>Description</b>
74.1.1.1	No <i>Water Act Code of Practice</i> obtained for activity. ( <i>Water Ministerial Regulation 1(3)</i> )
74.1.2.1	Pipeline and telecommunication lines crossing a waterbody, activity requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 2</i> )
74.1.3.1	Notice of activity requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 3</i> )
74.1.4.1	Emergency works not completed as required. ( <i>Water Ministerial Regulation 1(3); Code of Practice 5</i> )
74.1.5.1	Work plans not prepared as required. ( <i>Water Ministerial Regulation 1(3); Code of Practice 6, Schedule 2</i> )
74.1.6.1	Class of water body not classified as per the <i>Code of Practice</i> requirements. ( <i>Water Ministerial Regulation 1(3); Code of Practice 7, Schedule 6</i> )
74.1.7.1	Design and construction standards requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 8, Schedule 3</i> )

Manual #	Description
74.1.8.1	Restricted activity periods not adhered to. ( <i>Water Ministerial Regulation 1(3); Code of Practice 9</i> )
74.1.9.1	Certification of works requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 10</i> )
74.1.10.1	Contraventions/written report requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 11</i> )
74.1.11.1	Records not compiled or retained as required. ( <i>Water Ministerial Regulation 1(3); Code of Practice 12</i> )
74.1.12.1	Monitoring of works requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 13</i> )

## 74.2 Watercourse Crossings

Manual #	Description
74.2.1.1	No <i>Water Act Code of Practice</i> was obtained for the activity. ( <i>Water Ministerial Regulation 1(3)</i> )
74.2.2.1	Watercourse crossing activity requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 2</i> )
74.2.3.1	Notice of activity requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 3, 4</i> )
74.2.4.1	Emergency works requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 6</i> )
74.2.5.1	Watercourse crossing work plans not prepared/followed/changed as required. ( <i>Water Ministerial Regulation 1(3); Code of Practice 7, Schedule 2</i> )
74.2.6.1	Class of water body not classified as per the requirements. ( <i>Water Ministerial Regulation 1(3); Code of Practice 8</i> )
74.2.7.1	Watercourse crossing types or replacements (except temporary crossings) requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 9, 11, Schedule 2, Schedule 3</i> )
74.2.8.1	Temporary crossings not constructed in accordance with applicable parts of Schedules 2 and 3 and the written specifications and recommendations of a qualified aquatic environment specialist. ( <i>Water Ministerial Regulation 1(3); Code of Practice 10, Schedule 2, Schedule 3</i> )
74.2.9.1	Restricted activity periods not adhered to. ( <i>Water Ministerial Regulation 1(3); Code of Practice 9, 11</i> )
74.2.10.1	Certification of works requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 12</i> )
74.2.11.1	Reporting requirements not met. ( <i>Water Ministerial Regulation 1(3); Code of Practice 13</i> )
74.2.12.1	Records were not created, compiled, and retained as required. ( <i>Water Ministerial Regulation 1(3); Code of Practice 14</i> )
74.2.13.1	Compliance monitoring (over crossing lifespan) not completed in accordance with the prepared plan. ( <i>Water Act 142(1)(e); Water Ministerial Regulation 1(3); Code of Practice 7, 15</i> )

## 74.3 Diversion of Water for Hydrostatic Testing

Manual #	Description
74.3.1.1	No <i>Water Act Code of Practice</i> obtained for activity. ( <i>Water Ministerial Regulation 2(6)</i> )
74.3.2.1	Watercourse crossing activity requirements not met. ( <i>Water Ministerial Regulation 2(6); Code of Practice 3</i> )
74.3.3.1	Water released not used in accordance with the <i>Water Act</i> . ( <i>Water Ministerial Regulation 2(6); Code of Practice 4</i> )

Manual #	Description
74.3.4.1	Operating standard requirements not met. ( <i>Water Ministerial Regulation 2(6); Code of Practice 5</i> )
74.3.5.1	Work plan requirements not met. ( <i>Water Ministerial Regulation 2(6); Code of Practice 6</i> )
74.3.6.1	Post test certification requirements not met. ( <i>Water Ministerial Regulation 2(6); Code of Practice 7</i> )
74.3.7.1	Contravention/leakage reporting requirements not met. ( <i>Water Ministerial Regulation 2(6); Code of Practice 8</i> )
74.3.8.1	Recordkeeping requirements not met. ( <i>Water Ministerial Regulation 2(6); Code of Practice 9</i> )

## 75 Water (Ministerial) Regulation

### 75.2 Dam and Canal Safety Part 6

Manual #	Description
75.2.1.1	The dam owner is not following the Alberta <i>Dam and Canal Safety Directive</i> (dam safety directive). ( <i>Water Ministerial Regulation 28</i> )
75.2.2.1	The dam owner has not ensured that the design and construction of the dam was done in a manner that effects or maintains the safety of the dam. ( <i>Water Ministerial Regulation 29(1)(a); Alberta Dam and Canal Safety Directive 5.14</i> )
75.2.3.1	The dam owner has not ensured that the dam was operated in a manner that effects or maintains the safety of the dam. ( <i>Water Ministerial Regulation 29(1)(a)</i> )
75.2.4.1	The dam owner has not ensured that the decommissioning, closure, and abandonment of the dam was done in a manner that effects or maintains the safety of the dam. ( <i>Water Ministerial Regulation 29(1)(a)</i> )
75.2.5.1	The dam owner has not ensured that there is sufficient surveillance, maintenance, and repairs. ( <i>Water Ministerial Regulation 29(1)(c)</i> )
75.2.6.1	The dam owner does not have a dam safety management plan. ( <i>Water Ministerial Regulation 29(1)(d); Alberta Dam and Canal Safety Directive 4.1, 4.2</i> )
75.2.7.1	The dam owner has not ensured that all safety deficiencies have been identified, tracked, and managed until corrected. ( <i>Water Ministerial Regulation 29(1)(e); Alberta Dam and Canal Safety Directive 4.5(1)</i> )
75.2.8.1	The dam owner has not addressed all critical safety deficiencies in accordance with the <i>dam safety directive</i> . ( <i>Water Ministerial Regulation 29(1)(f); Alberta Dam and Canal Safety Directive 4.5(2)</i> )
75.2.9.1	The dam owner has not exercised reasonable care and due diligence to risk factors that can increase the inherent risk of the approved dam. ( <i>Water Ministerial Regulation 29(2)</i> )
75.2.10.1	The owner has not ensured the dam is designed and constructed by a qualified professional. ( <i>Water Ministerial Regulation 30(1); Alberta Dam and Canal Safety Directive 5.2</i> )
75.2.11.1	The owner has not ensured that the construction of the dam conforms to the accepted drawings and the <i>dam safety directive</i> . ( <i>Water Ministerial Regulation 30(1)(b)(ii); Alberta Dam and Canal Safety Directive 5.14</i> )
75.2.12.1	The owner has not conducted investigations, surveillance, assessments, and evaluations by qualified individuals. ( <i>Water Ministerial Regulation 30(2); Alberta Dam and Canal Safety Directive 5.4, 5.18</i> )

<b>Manual #</b>	<b>Description</b>
75.2.13.1	The owner has not prepared, maintained, reviewed, and updated an operations, surveillance, and maintenance manual. ( <i>Water Ministerial Regulation 31(1)(a); Alberta Dam and Canal Safety Directive 6.1</i> )
75.2.14.1	The owner has not conducted operations, surveillance, and maintenance of the dam in accordance with the operation, maintenance, and surveillance manual. ( <i>Water Ministerial Regulation 31(1)(b)</i> )
75.2.15.1	The dam owner has not installed, operated, or maintained instrumentation as required by the operation, maintenance, and surveillance manual. ( <i>Water Ministerial Regulation 31(3)</i> )
75.2.16.1	The dam owner has not prepared, maintained, reviewed, and updated the emergency management plan for the dam by a qualified individual. ( <i>Water Ministerial Regulation 32(2); Alberta Dam and Canal Safety Directive 7.1, 7.3</i> )
75.2.17.1	The dam owner has not shared all relevant up-to-date information with those potentially impacted by an emergency. ( <i>Water Ministerial Regulation 32(3); Alberta Dam and Canal Safety Directive 7.1(4)</i> )
75.2.18.1	The dam owner has not operated the dam in accordance with the emergency management plan when there is an increased risk to factors at risk. ( <i>Water Ministerial Regulation 32(4)(a)</i> )
75.2.19.1	The dam owner has not notified the director of the nature of the conditions, any actions undertaken, and any information provided to persons on those conditions that increased the risk to factors at risk. ( <i>Water Ministerial Regulation 32(4)(b)</i> )
75.2.20.1	The dam owner has not notified the director of hazardous condition, safety deficiency, potential safety hazard, major repairs, significant changes to operations, or surveillance/inspection plans and outcomes in response to a hazardous condition. ( <i>Water Ministerial Regulation 33(1); Alberta Dam and Canal Safety Directive 8.1</i> )
75.2.21.1	The dam owner has not provided the requested information or resources as required to the director. ( <i>Water Ministerial Regulation 33(2)</i> )
75.2.22.1	The dam owner has not prepared or submitted a decommissioning closure abandonment plan. ( <i>Water Ministerial Regulation 34(1); Alberta Dam and Canal Safety Directive 9.6</i> )
75.2.23.1	The dam/canal owner shall not implement a plan referred to in subsection (1) unless the director has confirmed in writing that the plan meets the criteria set out in the dam safety directive. ( <i>Water Ministerial Regulation 34(2); Alberta Dam and Canal Safety Directive 9.9</i> )
75.2.24.1	The dam owner has not conducted a consequence classification of the dam. ( <i>Water Ministerial Regulation 34.1(3); Alberta Dam and Canal Safety Directive 3.1, 3.4</i> )
75.2.25.1	The dam owner has not reported a change in the consequence classification to the director. ( <i>Water Ministerial Regulation 34.1(5); Alberta Dam and Canal Safety Directive 3.3, 3.4</i> )
75.2.26.1	The dam owner has not conducted a systematic risk assessment in accordance with the dam safety directive. ( <i>Water Ministerial Regulation 34.3; Alberta Dam and Canal Safety Directive 5.22</i> )
75.2.27.1	Noncompliant with other <i>Water Ministerial Regulation</i> item. ( <i>Water Ministerial Regulation (specified in comments)</i> )

### 75.3 Dam and Canal Safety Directive

Manual #	Description
75.3.1.1	The owner has not submitted the required information for an application or authorization for a dam. ( <i>Alberta Dam and Canal Safety Directive 2.1, 2.2, 2.3</i> )
75.3.2.1	The owner has not prepared or submitted a construction completion report as required. ( <i>Alberta Dam and Canal Safety Directive 5.17</i> )
75.3.3.1	The owner has not undertaken an annual engineering inspection as required. ( <i>Alberta Dam and Canal Safety Directive 5.19</i> )
75.3.4.1	The owner has not undertaken an annual performance review as required. ( <i>Alberta Dam and Canal Safety Directive 5.20</i> )
75.3.5.1	The owner has not undertaken a dam safety review as required. ( <i>Alberta Dam and Canal Safety Directive 5.21(1)</i> )
75.3.6.1	The owner has not held an orientation workshop, emergency drill, or conducted an exercise as required. ( <i>Alberta Dam and Canal Safety Directive 7.4</i> )
75.3.7.1	The owner has not developed a cessation/resumption plan as required. ( <i>Alberta Dam and Canal Safety Directive 9.1(1)</i> )
75.3.8.1	The owner has not notified the director of the cessation/resumption as required. ( <i>Alberta Dam and Canal Safety Directive 9.2(1)(2)</i> )
75.3.9.1	The owner has not submitted the post implementation report. ( <i>Alberta Dam and Canal Safety Directive 9.5</i> )
75.3.10.1	The owner has not notified the director of deviation from the accepted decommissioning, abandonment, closure plan. ( <i>Alberta Dam and Canal Safety Directive 9.9</i> )
75.3.11.1	The owner has not submitted the completion report of decommissioning, closure, and abandonment of a dam. ( <i>Alberta Dam and Canal Safety Directive 9.10</i> )
75.3.12.1	Noncompliant with other <i>Alberta Dam and Canal Safety Directive</i> item. ( <i>Alberta Dam and Canal Safety Directive (specified in comments)</i> )

### 99 Related to Other AER Requirements

Manual #	Description
99.6.1	Noncompliant with other AER requirement(s). See comments for details. Refer to the applicable AER requirement.



## Appendix 1      **References and Contacts**

### AER Documents

#### **Acts and Rules**

[Pipeline Act](#)

[Pipeline Rules](#)

#### **Directives**

[Directive 038: Noise Control](#)

[Directive 050: Drilling Waste Management](#)

[Directive 055: Storage Requirements for the Upstream Petroleum Industry](#)

[Directive 056: Energy Development Applications and Schedules](#)

[Directive 058: Oilfield Waste Management Requirements for the Upstream Petroleum Industry](#)

[Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting](#)

[Directive 071: Emergency Preparedness and Response](#)

[Directive 077: Pipelines – Requirements and Reference Tools](#)

#### **Manuals**

[Manual 002: Drilling Waste Inspections](#)

### AER Contacts

#### **Customer Contact Centre and the Energy and Environmental Emergency 24-Hour Response Line**

Customer Contact Centre: 403-297-8311 or 1-855-297-8311

Energy and Environmental Emergency 24-Hour Response Line: 1-800-222-6514

#### **Compliance and Liability Management Branch**

Compliance Assurance: [ComplianceCoordination@aer.ca](mailto:ComplianceCoordination@aer.ca)

#### **Field Centres and Offices**

##### Field Operations, South

- Medicine Hat: 403-527-3385
- Midnapore: 403-297-8303

##### Field Operations, West

- Drayton Valley: 780-542-5182
- Red Deer: 403-340-5454

##### Field Operations, Central

- Edmonton 780-642-9310

- Slave Lake: 780-843-2050

Field Operations, East

- Bonnyville: 780-826-5352
- Wainwright: 780-842-7570

Field Operations, Northeast

- Fort McMurray: 780-743-7214

Field Operations, Northwest

- Grande Prairie: 780-538-5138
- High Level: 780-926-5399

## Other Contacts

Utility Safety Partners (formerly Alberta One Call), Locate Request Inquiries

Phone: 1-800-242-3447

Fax: 1-800-940-3447

Online: [Submit a Locate Request](#)

Website: [utilityafety.ca](http://utilityafety.ca)

Alberta Utilities Commission Complaint Line: [Make a Complaint](#)

Workplace Health and Safety: 1-866-415-8690