

Alberta  Government

**Code of Practice for the Release of
Hydrostatic Test
Water from Hydrostatic Testing of
Petroleum Liquid and Gas Pipelines**

Effective January 1, 1999

*Made under the Environmental Protection and Enhancement
Act*

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**ALBERTA ENVIRONMENTAL PROTECTION
ENVIRONMENTAL PROTECTION AND ENHANCEMENT
ACT
CODE OF PRACTICE FOR THE RELEASE OF
HYDROSTATIC TEST WATER FROM HYDROSTATIC
TESTING OF PETROLEUM LIQUID AND GAS PIPELINES**

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January 1999

Preface

The Code of Practice for the Release of Hydrostatic Test Water from Hydrostatic Testing of Petroleum Liquid and Gas Pipelines ("Code of Practice") is incorporated under the authority of section 36 of the *Environmental Protection and Enhancement Act* ("Act"). Persons responsible for the release of hydrostatic test water must ensure that they are in compliance with Alberta's environmental laws, including the requirements of the Act, Code of Practice, and all other applicable legislation.

Definitions

- 1(1) All definitions from the Act and Regulations apply except where expressly defined in the Code of Practice.
- (2) In this Code of Practice,
 - (a) "Act" means the *Environmental Protection and Enhancement Act*, S.A. 1992, c.E-13.3, as amended;
 - (b) "additives" means biocides, corrosion inhibitors, detergents, antifreeze, oxygen scavengers, and leak detection tracers;
 - (c) "application" means an application for a registration number submitted in accordance with the Code of Practice;
 - (d) "bog" means an area of land covered by peat that is free of standing water, raised above the surrounding land, and where vegetative cover is pre-dominantly *Sphagnum* moss, black spruce (*Picea mariana*), and labrador tea (*Ledum groenlandicum*);
 - (e) "Code of Practice" means the *Code of Practice for the Release of Hydrostatic Test Water from Hydrostatic Testing of Petroleum Liquid and Gas Pipelines*, Alberta Environmental Protection, 1998, as amended;
 - (f) "Director" means the Director responsible for issuing the registration;
 - (g) "gas pipeline" means a pipeline through which natural gas has passed;
 - (h) "hydrostatic testing" means the use of water for pressure testing a pipeline to determine its integrity;
 - (i) "hydrostatic test water" means water resulting from hydrostatic testing;
 - (j) "new pipeline" means a petroleum liquid or gas pipeline that has never transported any substances;
 - (k) "liquid pipeline" means a pipeline through which petroleum liquid has passed;
 - (l) "peat" means soil composed of organic matter derived from the partial decomposition of vegetation which has grown in shallow water;
 - (m) "person responsible" means
 - (i) any person who undertakes any part of hydrostatic testing as

defined by this Code of Practice, or who supervises any part of hydrostatic testing as described by this Code of Practice; or

- (ii) a person who owns the pipeline that is the subject of the hydrostatic testing; or
 - (iii) a successor, assignee, executor, administrator, receiver, receiver-manager, liquidator or trustee of a person described in (i) or (ii); or
 - (iv) a person who acts as the principal or agent of a person described in (i), (ii) or (iii);
- (n) “pipeline” means a pipe for the transmission of petroleum liquid or gas and any installations, including storage tanks, in connection with that pipeline;
- (o) “receiving water” means:
- (i) a stream or river that has water flowing in it prior to and during release of hydrostatic test water; or
 - (ii) a lake, pond, dugout, or slough that has water standing in it prior to and during release of hydrostatic test water;
- (p) “release” means the release of hydrostatic test water to the environment;
- (q) “representative grab sample” means an individual sample collected from between 0.2 and 0.3 metres below the water surface; and
- (r) “source water” means water that is diverted for use in hydrostatic testing.

Bound by Code of Practice

- 2 A person responsible must meet the requirements set out in the Code of Practice.

Registration Process

- 3(1) A person responsible must submit an application to the Director for a registration number at least seven days before commencing the diversion of water for hydrostatic testing which will involve the release of 1000 m³ or more of hydrostatic test water.
- (2) A person responsible must not release hydrostatic test water of 1000 m³ or more until a registration number is obtained from the Director as proof of authorization to release hydrostatic test water.
- (3) For hydrostatic testing involving the release of less than 1000 m³ of

hydrostatic test water:

- (a) no registration is required; and
 - (b) a person responsible must comply with sections 4,5,6,7,8, and schedule 1, and schedule 2 of the Code of Practice.
- (4) The application for a registration number under (1) must include the following information:
- (a) name, address, fax and telephone numbers of the person(s) responsible for the pipeline;
 - (b) information on the proposed hydrostatic test as follows:
 - (i) type of pipeline: new pipeline, gas pipeline, liquid pipeline, or other (provide description);
 - (ii) legal land descriptions for the beginning and end of the pipeline section(s) or storage tanks to be tested;
 - (iii) the total length of pipeline to be tested (km);
 - (iv) the inside diameter of the pipeline (mm) to be tested;
 - (v) the total volume of hydrostatic test water to be used (m³);
 - (vi) the source of the hydrostatic test water: groundwater, surface water, municipal, or other (provide description);
 - (vii) origin or name of source water; and
 - (ix) anticipated date of withdrawal of source water.
 - (c) information on the proposed release of hydrostatic test water as follows:
 - (i) location of release(s) (legal land description);
 - (ii) starting date of release(s);
 - (iii) ending date for release(s);
 - (iv) volume of release(s) (m³);
 - (v) approximate rate of release(s) (m³/hr);
 - (vi) name and location of receptor: land, surface water, injection well, other (provide description);
 - (vii) additives used: (MSDS sheet(s) must be included);
 - (viii) provide a description of the treatment and mitigative methods

to be employed prior to and during the release;

- (ix) provide a map, diagram, or air photo of the release area showing:
 - (A) release location;
 - (B) land that will receive any releases;
 - (C) direction of receiving water flow (if applicable); and
 - (D) sampling locations (soil and water).
- (d) Application must be signed by the person responsible for the pipeline indicating that the hydrostatic test will be conducted in accordance with the Code of Practice.
- (5) The application for a registration number must be submitted to the Director through the:

Regulatory Approvals Centre
Main Floor, Oxbridge Place
9820 - 106 Street
Edmonton, Alberta
T5K 2J6
Fax to: 422-0154 Phone: 427-6311

- (6) A person responsible shall immediately notify the Director in writing of any changes in the information submitted under (4).

General

- 4 (1) All new pipelines must be tested using water that has not previously been used for hydrostatic testing.
- (2) Prior to filling the pipeline, a sample of source water must be obtained by collecting a representative grab sample.
- (3) The source water sample taken in accordance with (2) must be analyzed for:
 - (a) electrical conductivity and sodium adsorption ratio for all releases; and
 - (b) total suspended solids, if releases are to receiving water.
- (4) Collection and analysis stipulated in 4(5) is not required for hydrostatic testing of new pipelines that release hydrostatic test water to land.
- (5) Collection and analysis of hydrostatic test water samples must be conducted as follows prior to release:

- (a) hydrostatic test water from the pipeline must be drained into a holding vessel as follows:
 - (i) the first 10 m³ proposed for release, when the total volume is greater than 10 m³; or
 - (ii) the total volume of hydrostatic test water, when the total volume is less than or equal to 10 m³; and
 - (b) a representative grab sample of hydrostatic test water from the holding vessel must be obtained; and
 - (c) the representative grab sample collected in accordance with (a) and (b) must be analyzed as specified in schedule 1 for releases to land, or schedule 2 for releases to receiving water.
- (6) A person responsible must not release hydrostatic test water to a dugout unless:
- (a) prior written consent from the landowner is obtained; and
 - (b) in compliance with the requirements of schedule 2.
- (7) Hydrostatic test water must not be released to the environment unless it meets the requirements specified in:
- (a) schedule 1 for releases to land; or
 - (b) schedule 2 for releases to receiving water.

Analytical Methods

- 5(1)** Collection, analysis of samples, and reporting must be conducted in accordance with the following, or otherwise as specified in writing by the Director:
- (a) for chemical parameters:
 - (i) *Standard Methods for the Examination of Water and Wastewater, 19th edition*. American Public Health Association, Water Works Association, Water Environment Association, as amended; or
 - (ii) the *Manual on Soil Sampling and Methods of Analysis* Lewis Publishers, 1993, as amended.
 - (b) for toxicity testing:
 - (i) **For rainbow trout:** *Environmental Protection Series Biological Test Method: Reference Method for Determining the Acute Lethality of Effluent to Rainbow Trout*, Environment Canada, Report EPS 1/RM/13, July 1990, as amended;

- (ii) **For *Daphnia magna*:** *Environmental Protection Series Biological Test Method: Reference Method for Determining the Acute Lethality of Effluent to Daphnia magna*, Environment Canada, Report EPS 1/RM/14, July 1990, as amended;
- (iii) **For *Microtox*:** *Environmental Protection Series Biological Test Method: Toxicity Test Using Luminescent Bacteria (Photobacterium phosphoreum)*, Environment Canada, Report EPS 1/RM/24, November 1992, as amended.

Reporting

- 6(1)** A person responsible must immediately report by telephone any contravention of the terms and conditions of the Code of Practice or any breach of the pipeline to the Director of Enforcement and Monitoring at 1-403-422-4505.
- (2)** A person responsible must, within seven days of reporting pursuant to 6(1) or within another time period specified in writing by the Director of Enforcement and Monitoring, provide a written report that includes:
 - (a) a description of the contravention(s);
 - (b) an explanation as to why the contravention(s) occurred;
 - (c) a summary of all preventative measures and actions that were taken prior to the contravention(s);
 - (d) a summary of all measures that were taken to mitigate the contravention(s) and any remaining problems related to the contravention(s);
 - (e) the names, addresses, phone numbers and responsibilities of the persons responsible at the time that the contravention occurred; and
 - (f) proposed preventative measures designed to prevent future contraventions.

Record Keeping and Information Availability

- 7(1)** A person responsible must compile the following information for each hydrostatic test where applicable:
 - (a) a schematic diagram and details of the monitoring and release operations including monitoring points, holding system, conveyance system, hydrostatic test water release flow rate, and area of receiving land or receiving water;
 - (b) where the release is to receiving water:

- (i) the name of the receiving water;
 - (ii) the estimated rate of flow of the receiving water at the time of release; and
 - (iii) photographs taken before, during and after release at:
 - (A) the point of release; and
 - (B) downstream to a distance of at least 100 metres from the point of release for flowing water;
 - (c) photographs of the sampling points, holding system, and conveyance system;
 - (d) where released to land, photographs of the land taken during the release at the point of release;
 - (e) where released to land, photographs of the land taken:
 - (i) 24 hours after the release, if the release is onto land growing annual crops; or
 - (ii) 7 days after the release is complete, if the release is on to land growing perennial crops or native plants; and
 - (f) all analytical results obtained in accordance with the Code of Practice.
- (2) A person responsible must retain all information referred to in 7(1) for a minimum of five years after completion of the hydrostatic testing.
- (3) A person responsible must, within seven days or any other time period specified by the Director, provide any information requested that have been retained in accordance with this Code of Practice.

Effective Date

8 The Code of Practice is effective January 1, 1999.

Schedule 1

Requirements for Release to Land

The following requirements must be met for release of hydrostatic test water to land:

- (1) The representative grab sample of hydrostatic test water collected in accordance with section 4(5) must be analyzed as specified in Table 1.

Table 1: Monitoring Requirements for Release to Land

| Parameter | Type of Pipeline |
|--------------------------------|--|
| Total purgeable hydrocarbons | Gas pipeline, Liquid pipeline |
| Total extractable hydrocarbons | Gas pipeline, Liquid pipeline |
| Microtox (EC ₅₀) | Gas pipeline, Liquid pipeline, and any pipeline in which additives are used. |

- (2) Prior to conducting a hydrostatic test, representative soil samples must be taken as follows:
 - (a) where the receiving land area is less than or equal to three hectares, a minimum of three locations must be sampled;
 - (b) where the receiving land area is greater than 3 hectares, samples must be taken from at least one location per hectare;
 - (c) at each soil sampling location, soil samples must be taken from depth increments of 0-15 cm and 15-30 cm; and
 - (d) no soil sampling is required for peat covered land.
- (3) Soil samples taken in accordance with (2) must be analyzed for electrical conductivity and sodium adsorption ratio.
- (4) Releases of hydrostatic test water to land from liquid or gas pipelines must meet the following:
 - (a) the sum of total purgeable hydrocarbons and total extractable hydrocarbons must be 100 mg/L or less; and
 - (b) the EC₅₀ of a Microtox test shall be greater than or equal to 100%.
- (5) Source water must meet the following limits if it is to be released to land after the hydrostatic test:
 - (a) electrical conductivity must be 2 dS/m or less; and
 - (b) sodium adsorption ratio must be 6 or less.

- (6) Hydrostatic test water must not be released to bogs, but may be released to other peat covered land.
- (7) Hydrostatic test water must be controlled to prevent soil erosion.
- (8) Hydrostatic test water must not be released to land where surface runoff of the hydrostatic test water directly mixes with receiving water, unless the hydrostatic test water meets the limits outlined in (4) and the requirements in schedule 2.
- (9) Hydrostatic test water must not be released to land that has the following characteristics:
 - (a) soil with an electrical conductivity greater than 4 dS/m; or
 - (b) soil with a sodium adsorption ratio greater than 9.
- (10) Hydrostatic test water must not remain standing on the land without written landowner consent:
 - (a) for more than 24 hours where annual crops are growing; or
 - (b) for more than 7 days where perennial crops or native plants are growing.

Schedule 2

Requirements for Release to Receiving Water

The following requirements must be met for release of hydrostatic test water to receiving water:

- (1) The representative grab sample of hydrostatic test water collected in accordance with section 4(5) must be analyzed as specified in Table 2.

Table 2: Monitoring Requirements for Release to Receiving Water

| Parameter | Type of Pipeline |
|--|---|
| Total Suspended Solids | New pipeline, Gas pipeline, Liquid pipeline |
| Benzene | Gas pipeline, Liquid Pipeline |
| Ethylbenzene | Gas pipeline, Liquid Pipeline |
| Toluene | Gas pipeline, Liquid Pipeline |
| Xylenes | Gas pipeline, Liquid Pipeline |
| Free chlorine residual | New pipeline, Gas pipeline, Liquid pipeline |
| pH | New pipeline, Gas pipeline, Liquid pipeline |
| Iron, dissolved | New pipeline, Gas pipeline, Liquid pipeline |
| Oil and Grease | New pipeline, Gas pipeline, Liquid pipeline |
| Additives | New pipeline, Gas pipeline, Liquid pipeline |
| Acute Toxicity test using Rainbow trout, or Daphnia Magna, or Microtox | Liquid pipeline, and any pipeline in which additives are used for hydrostatic testing |

- (2) Releases of hydrostatic test water to receiving water must not exceed the limits specified in Table 3.

Table 3: Limits for Release to Receiving Water

| Parameter | Limit (in mg/L unless otherwise stated) | Limit where release involves mixing of 2 or more parts receiving water for every 1 part hydrostatic test water (in mg/L unless otherwise stated) |
|--|---|---|
| TSS | Less than or equal to 20 mg/L above ambient receiving water level | Less than or equal to 20 mg/L above ambient receiving water level |
| Benzene | 0.3 | 0.6 |
| Ethylbenzene | 0.7 | 1.4 |
| Toluene | 0.3 | 0.6 |
| Xylenes | 0.3 | 0.6 |
| Free chlorine residual | 0.1 | 0.2 |
| pH | 6.0 to 9.5 units | 6.0 to 9.5 units |
| Iron, dissolved | 1.0 | 2.0 |
| Oil and Grease | No visible sheen | No visible sheen |
| Additives | Non-toxic concentration | Non-toxic concentration |
| Acute Toxicity test using Rainbow trout, or Daphnia Magna, or Microtox | LC ₅₀ , EC ₅₀ or IC ₅₀ greater than or equal to 100% | LC ₅₀ , EC ₅₀ or IC ₅₀ greater than or equal to 100% |

- (3) For Tables 2 and 3, free chlorine residual monitoring is only required when hydrostatic testing involves the use of chlorine products or chlorinated water.

- (4) Hydrostatic testing of new pipelines are exempt from the monitoring and limits of schedule 2, if the pipeline:

- (a) has an internal liner;
- (b) no additives have been used; and
- (c) the hydrostatic test water is released to the source.

(5) Subject to meeting the requirements of section 4(5) and schedule 2, source water that fails to meet the limits of schedule 1, may be released:

- (a) at the point of water withdrawal; or
- (b) to receiving water with an electrical conductivity and sodium adsorption ratio equal to or greater than the source water.