

CAPP Hydraulic Fracturing Operating Practice: FLUID TRANSPORT, HANDLING, STORAGE AND DISPOSAL

OVERVIEW

To support CAPP's Guiding Principles for Hydraulic Fracturing, seven Operating Practices have been developed in collaboration with CAPP member companies. These Operating Practices strengthen industry's commitment to continuous performance improvement in shale gas, tight gas and tight oil development.

The Fluid Transport, Handling, Storage and Disposal Operating Practice supports the Guiding Principle: **“We will continue to advance, collaborate on and communicate technologies and best practices that reduce the potential environmental risks of hydraulic fracturing.”**

WHAT DOES THIS PRACTICE MEAN?

CAPP and its member companies are committed to reducing the risk of potential spills of fracturing fluids, produced water, flowback water and fracturing fluid wastes (referred to hereafter as “fluids”) associated with the hydraulic fracturing process. This practice outlines the requirements for companies to transport, handle, store and dispose of all fluids in a manner that is safe and environmentally responsible.

HOW WILL THIS WORK?

Under this Operating Practice, companies will implement practices and procedures to identify, evaluate and mitigate potential risks related to fluid transport, handling, storage and disposal, and respond quickly and effectively to an accidental spill of fluids (including remediation of the spill site). This practice includes:

- Following applicable federal, provincial and municipal regulations for fluid transport, including Transportation of Dangerous Goods (TDG) regulations.
- Ensure maintenance and safety protocols are in place to address the risks associated with fluid transport by road, rail or pipeline.
- Reducing fluid transport by road in large-scale development projects where possible.
- Constructing and operating pipelines that transport fluids in accordance with applicable regulations.
- Removing natural gas from flowback prior to storage.
- Following applicable regulatory requirements for fluid storage.
- Restricting wildlife access to fluid storage sites.
- Safely disposing of fluids that are no longer needed at approved waste management facilities, including disposal wells.

TECHNICAL DESCRIPTION

The purpose of this practice is to describe minimum requirements for fluid transport, handling, storage and disposal in shale gas, tight gas and tight oil hydraulic fracturing operations.

The objective of this practice is to enable and demonstrate conformance with the following CAPP Guiding Principles for Hydraulic Fracturing:

We will continue to advance, collaborate on and communicate technologies and best practices that reduce the potential environmental risks of hydraulic fracturing.

BACKGROUND

Hydraulic fracturing is a controlled operation that pumps fluid and a propping agent through the wellbore to the target geological formation at high pressure in multiple intervals or stages, in order to create fractures in the formation and facilitate production of hydrocarbons. Hydraulic fracturing is a safe and proven way to develop natural gas and oil; it has been used throughout the oil and gas industry for about 60 years.

To mitigate the risk of a surface release of fracturing fluids, flowback and fracturing fluid waste, a set of operating practices that address the transport, handling, storage and disposal of these fluids has been developed. The practices outlined in this document will address this risk and reduce the potential of the environment being impacted by a surface release of fracturing fluids, produced water, flowback or fracturing fluid waste.

SCOPE

This practice applies to CAPP member companies engaged in the development of shale gas, tight gas or tight oil resources through the application of hydraulic fracturing processes in Canada. While use of this practice is voluntary (subject to applicable laws and regulations), CAPP strongly encourages its use by member companies.

The practice is to be utilized to direct the safe transport, handling, storage and disposal of fracturing fluids, produced water, flowback and fracturing fluid waste.

Operational Requirements

CAPP member companies meet or exceed the following requirements when transporting, handling, storing and disposing of fracturing fluids, produced water, flowback and fracturing fluid waste:

- All road transportation of fracturing fluids, produced water, flowback and fracturing fluid waste will conform to the applicable federal, provincial and municipal regulations, including Transportation of Dangerous Goods (TDG) regulations where required.
- Maintenance and safety protocols will be in place to address the risks associated with the transport of fracturing fluids, produced water, flowback and fracturing fluid waste by road, rail or pipeline. Preventative maintenance programs and safety checks will be in place for fluid transport vessels.
- On large-scale development projects, implement mechanisms and/or procedures, where practical, to reduce road transportation of fracturing fluids, produced water, flowback and fracturing fluid waste.
- Pipeline construction and operation will follow the applicable regulations in the operating jurisdiction.
- Prior to the storage of flowback, entrained gases will be separated and removed from the fluid.
- Storage of fracturing fluids, produced water, flowback and fracturing fluid waste will follow the applicable storage regulations in the operating jurisdiction.
- Fracturing fluids, produced water, flowback and fracturing fluid waste will be stored in a manner which restricts wildlife in the area from accessing it.
- Spent fracturing fluids, produced water, flowback and fracturing fluid waste will be safely disposed of at approved waste management facilities, including disposal wells.
- Disposal well design and construction will follow the applicable regulations in the operating jurisdiction.

Performance Measures

Conformance with this practice will be confirmed by demonstrating that:

- Procedures are in place which identify, evaluate and mitigate potential risks associated with the transport, handling, storage and disposal of fracturing fluids, produced water, flowback and fracturing fluid waste.
- Procedures are in place to respond quickly and efficiently to an accidental surface release of fracturing fluids, produced water, flowback and fracturing fluid waste, including remediation of the spill site.

Reporting Expectations

Companies are expected to make their process for fluid transport, handling, storage and disposal publicly available.



DEFINITIONS

Additive: Any substance or combination of substances comprised of chemical ingredients found in a hydraulic fracturing fluid, including a proppant, which is added to a base fluid in the context of a hydraulic fracturing treatment. Each additive performs a certain function and is selected depending on the properties required.

Base fluid: The base fluid type, such as water or nitrogen foam, used in a particular hydraulic fracturing treatment. Water includes fresh water, brackish or saline water, recycled water or produced water.

Flowback: The flow of fracturing fluid back to the wellbore after treatment is completed.

Fracturing fluid: The fluid used to perform a particular hydraulic fracturing treatment and includes the applicable base fluid and all additives.

Fracturing fluid waste: An unwanted substance or mixture of substances that results from the hydraulic fracturing operation, not including flowback.

Produced water: Water naturally present in the reservoir or injected into the reservoir to enhance production, produced as a co-product when gas or oil is produced.

Propping agent (Proppant): Typically non-compressible material, most commonly sand, added to the fracturing fluid and

pumped into the open fractures to prop them open once the fracturing pressures are removed.

Shale gas, tight gas and tight oil: For the purposes of this practice, shale gas, tight gas and tight oil refers to unconventional resources from low permeability reservoirs being developed using horizontal wells with multi-stage hydraulic fracturing.

Transportation of Dangerous Goods (TDG) Regulations: The Transportation of Dangerous Goods Act, administered by Transport Canada, contains regulations designed to promote public safety when handling or transporting dangerous goods via road, rail, air and marine.