

Leading Energy Services,  
Supply, Manufacturing and Innovation

# **Working Energy Commitment**

# Working Energy Commitment Founding Members



# Working Energy Commitment Statement of Principles

- Operate safely and responsibly
- Meet or exceed all environmental standards
- Act with integrity
- Continually improve our practices and services
- Treat all members of the community with respect, dignity and trust



# Hydraulic Fracturing Overview



Photo: Trican Well Service



# 60 Years of Hydraulic Fracturing

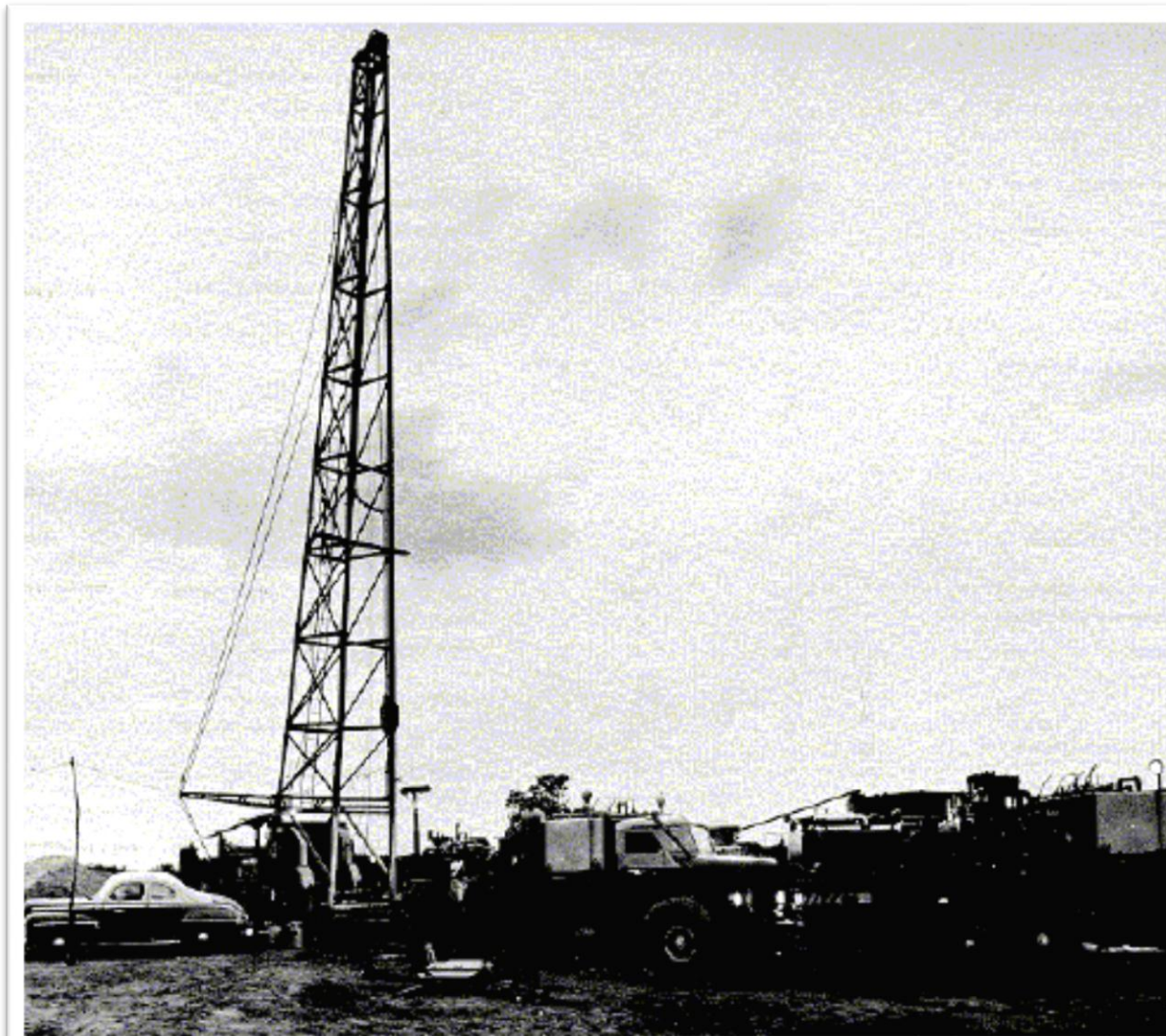


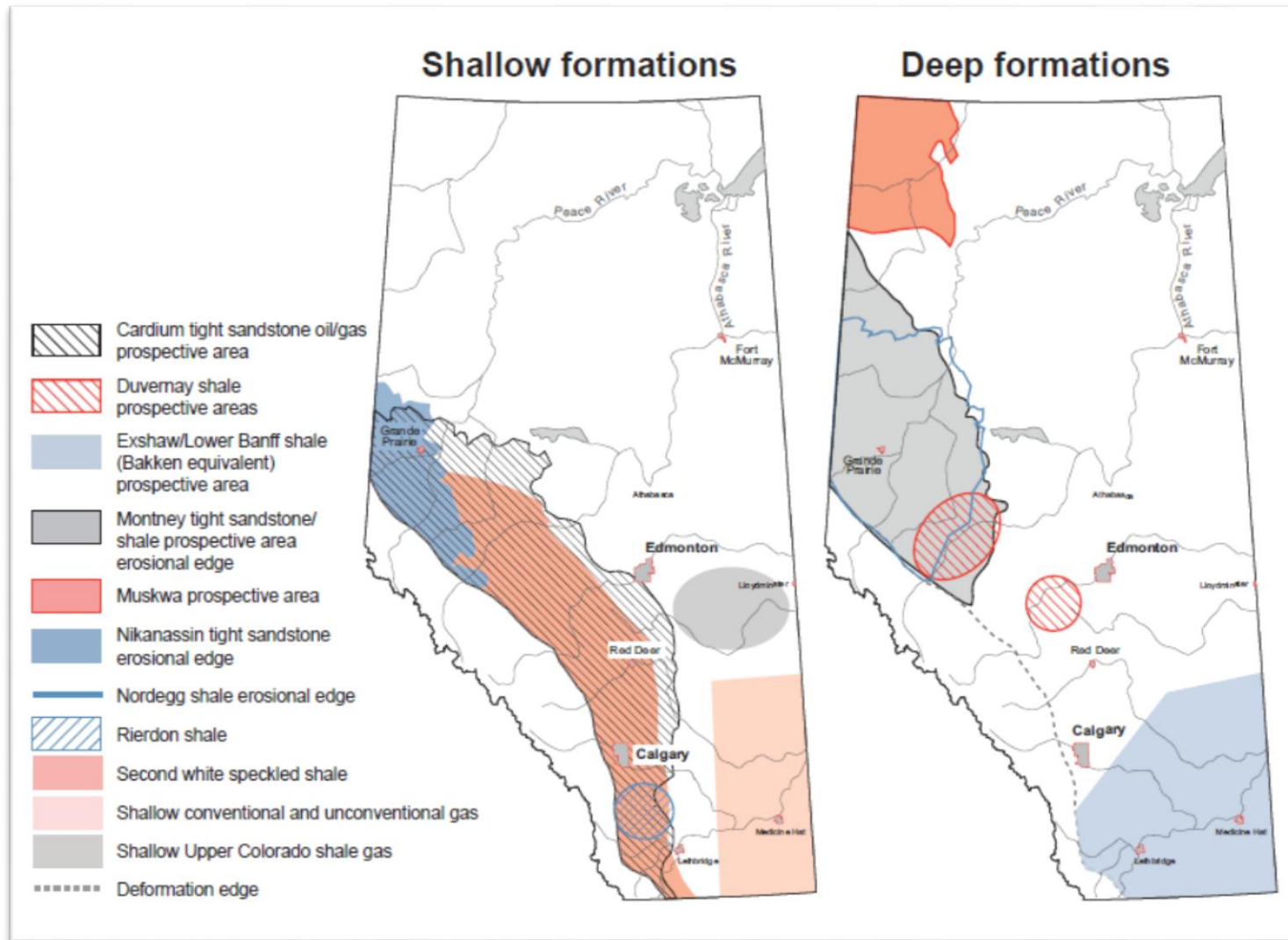
Photo: Halliburton

# Hydraulic Fracturing Today

- R&D centres
- Scientific protocols
- Environmentally friendly chemistries
- Simulators to map out hydraulic fracturing operations
- Equipment to reduce wellsite footprint
- Real-time micro seismic monitoring and interpretation



# Exploration in Alberta

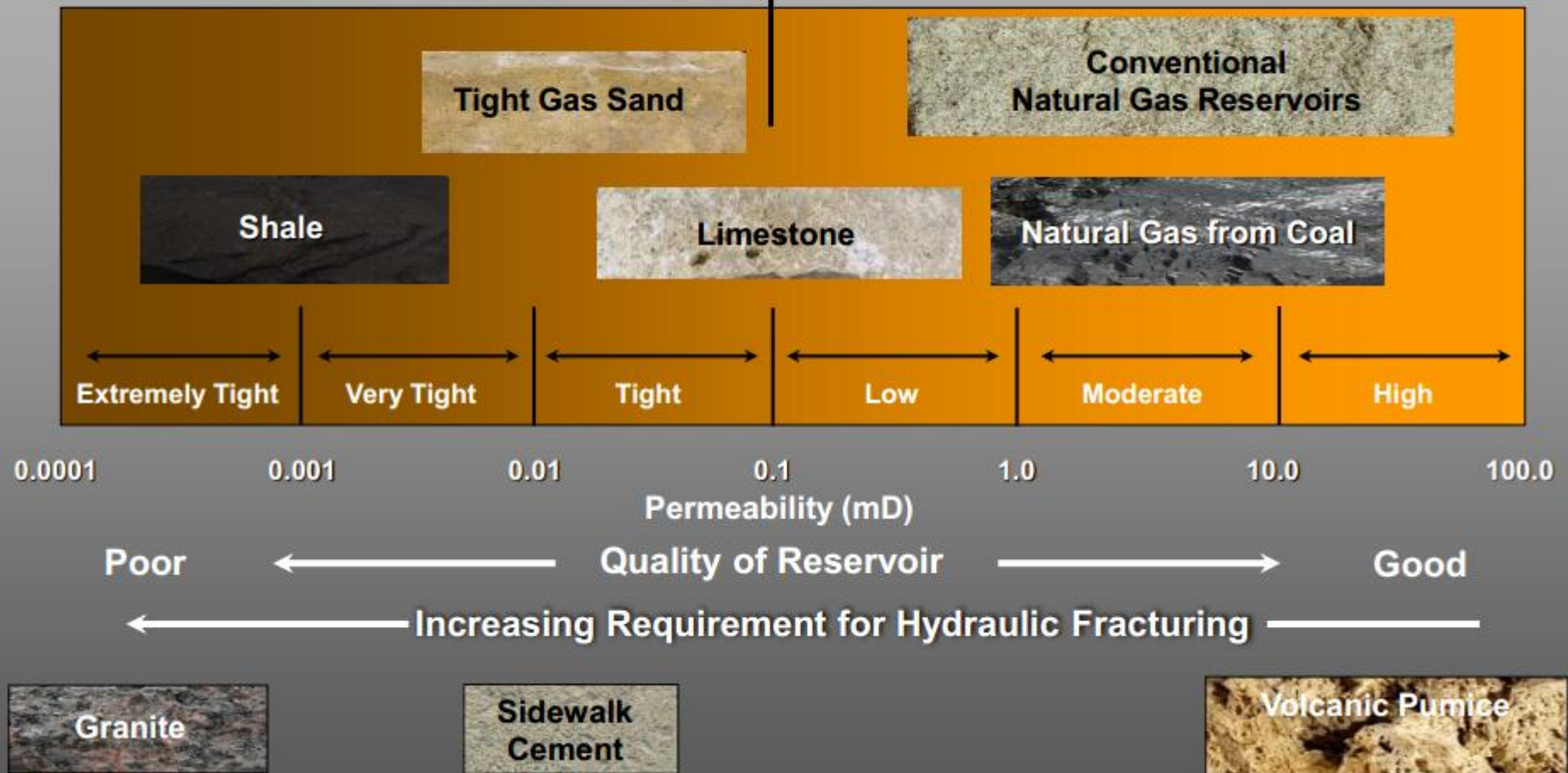




# Hydraulic Fracturing Purpose

## Unconventional Reservoirs

## Conventional Reservoirs



Note: Natural Gas from Coal reservoirs are classified as unconventional due to type of gas storage

modified from US DOE

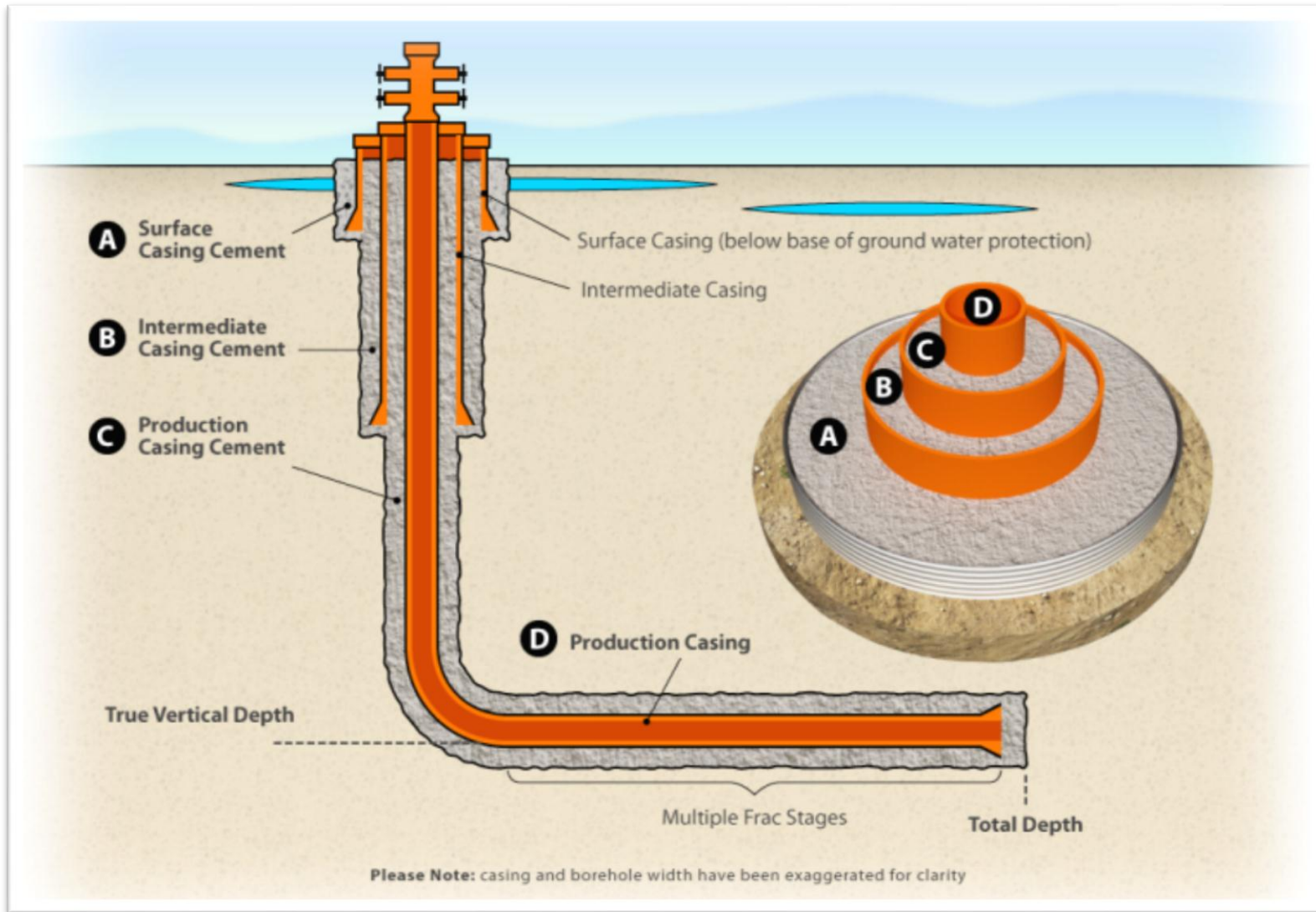


# Hydraulic Fracturing Process

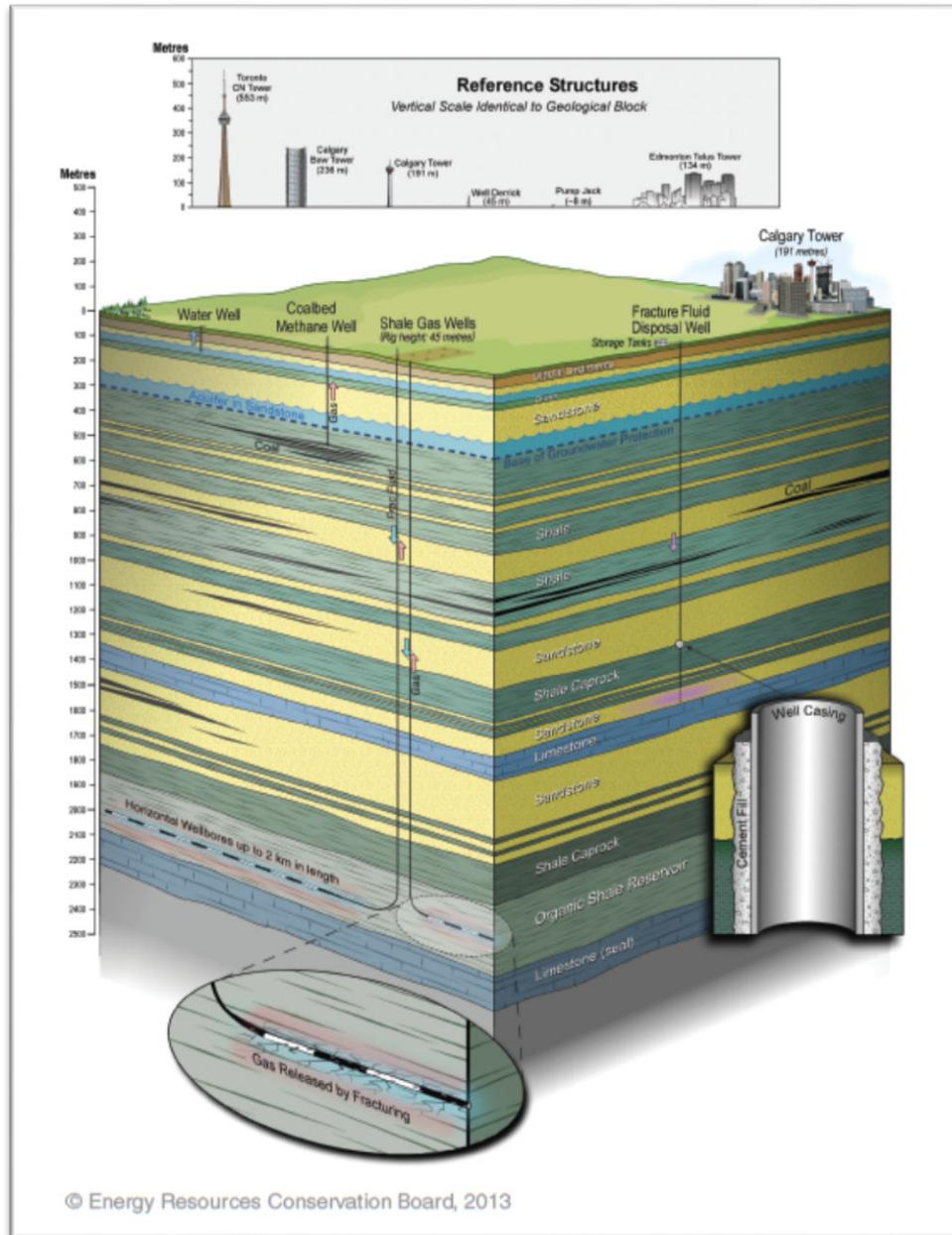
- Pump fluid into a wellbore to create enough pressure to crack, or fracture, the rock layer
- Causes existing fractures to open or new fractures to be created
- Proppant, usually sand or ceramics, helps keep the fractures open to allow oil and gas to flow to the well



# Many Steps in Hydraulic Fracturing

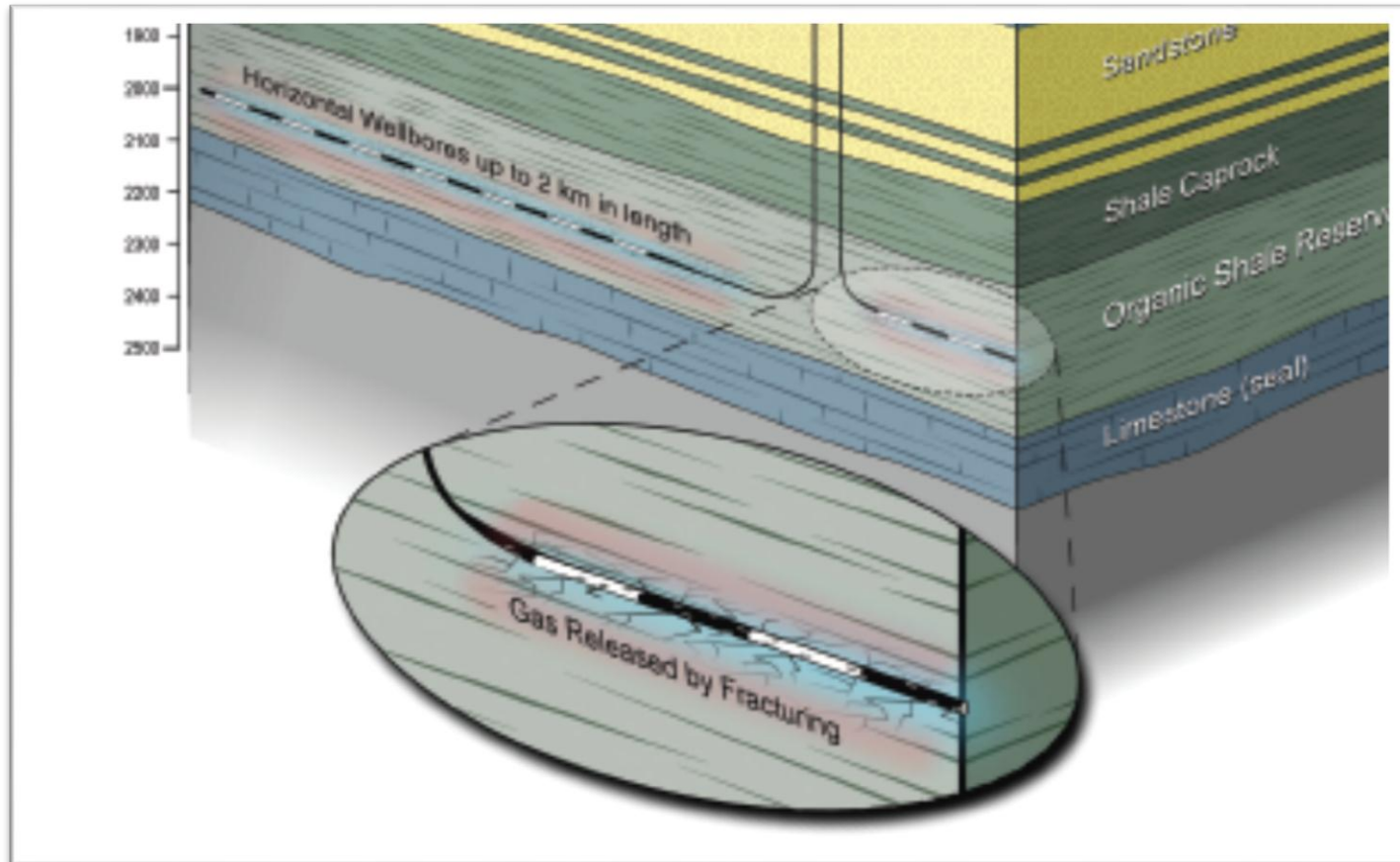


# Many Steps in Hydraulic Fracturing



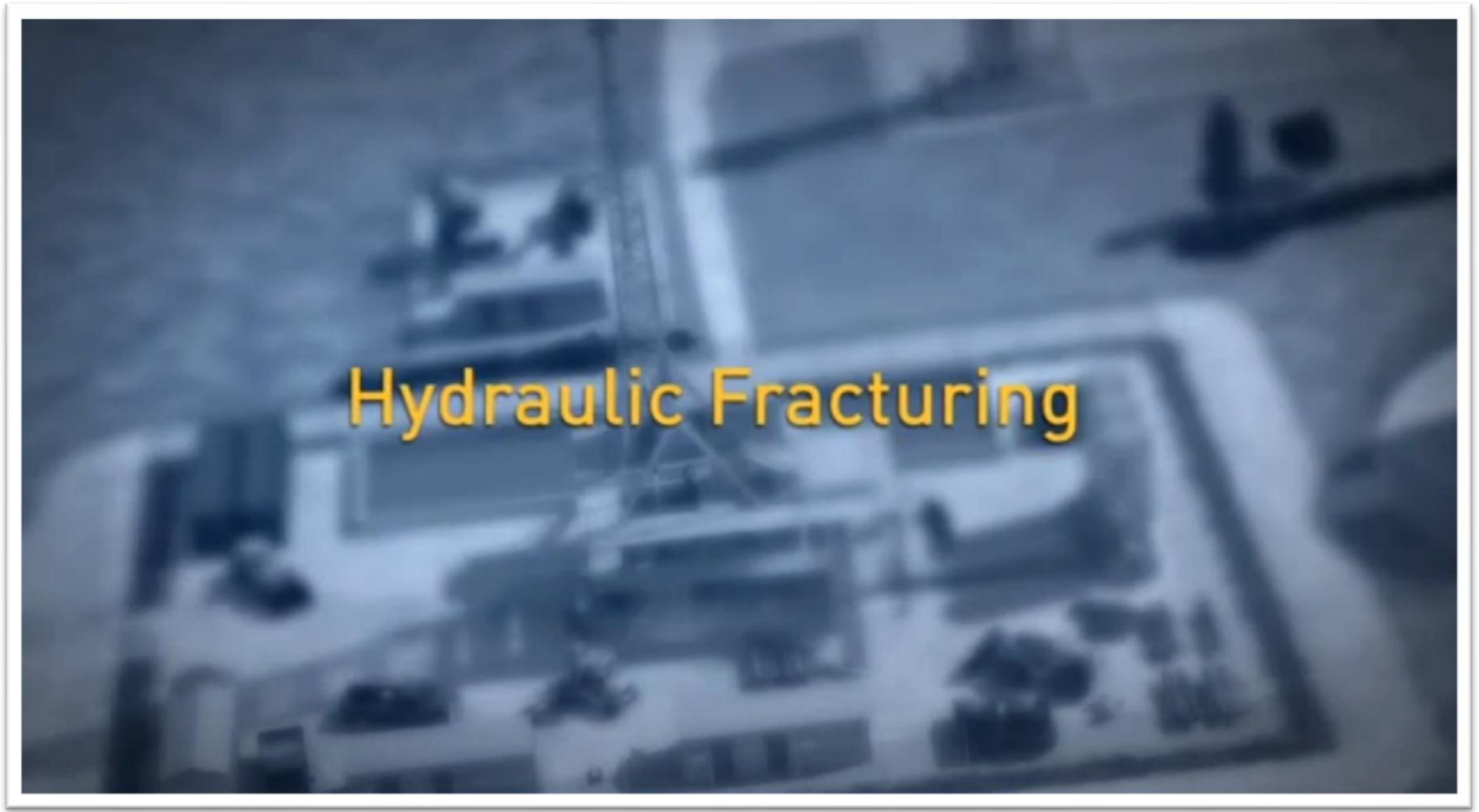


# Horizontal Drilling and Multistage Fracturing





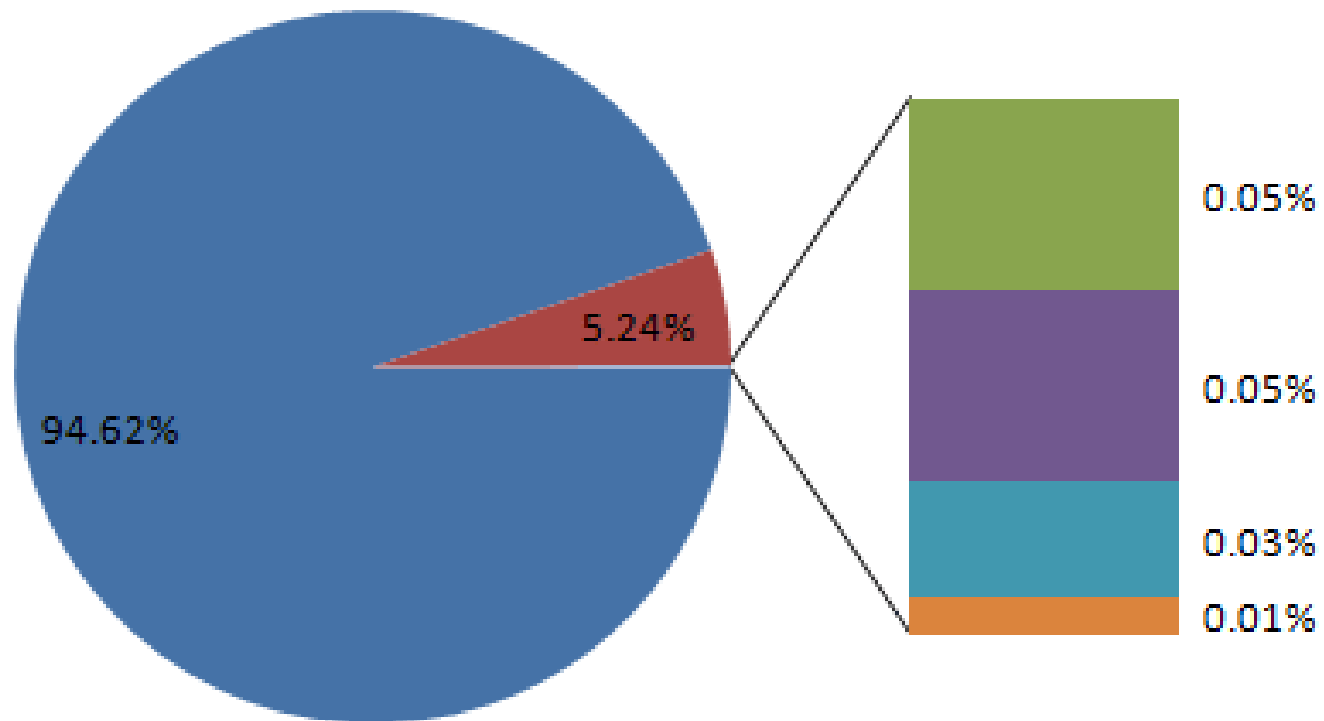
# Hydraulic Fracturing Animation



Video: Imperial Oil

# Typical Fracture Fluid Composition

■ Water ■ Sand ■ Friction Reducer ■ Antimicrobial ■ Hydrochloric Acid ■ Scale Inhibitor



Graphic: BC Oil & Gas Commission

# Fracture Fluid Disclosure – fracfocus.ca

[Home](#) / [Sitemap](#) / [Welcome](#) / [Publications](#) / [News & Updates](#) / [Links](#) / [Contact Us](#)



**HYDRAULIC FRACTURING**  
THE PROCESS

**WATER USAGE**  
& PROTECTION

**FIND A WELL**  
IN YOUR AREA

**REGULATIONS**  
PROVINCES & TERRITORIES

**CHEMICAL**  
USE

**FREQUENT**  
QUESTIONS

# WELCOME

**Welcome to the Hydraulic Fracturing and Fracture Fluid Information Site.** This website is a project of the BC Oil & Gas Commission and is intended to provide objective information on Hydraulic Fracturing, Fracturing Fluids, Groundwater and Surface water protection and related oil and gas activities in Canada.

[LEARN MORE >](#)

## FAQs

◀ 1 / 3 ▶

**Q.** The records for wells completed in Alberta are slightly different than for wells completed in British Columbia. Why?

**A.** The records essentially report the same information and the different jurisdictions share a common interest in protecting water and supporting public access to information. For example, general information regarding location and well ownership information as well as the particulars of the hydraulic fracturing fluids utilized at a well are common. The differences in the reports reflect the variations in data submission requirements, management processes, and retrieval and reporting procedures of the two jurisdictions.

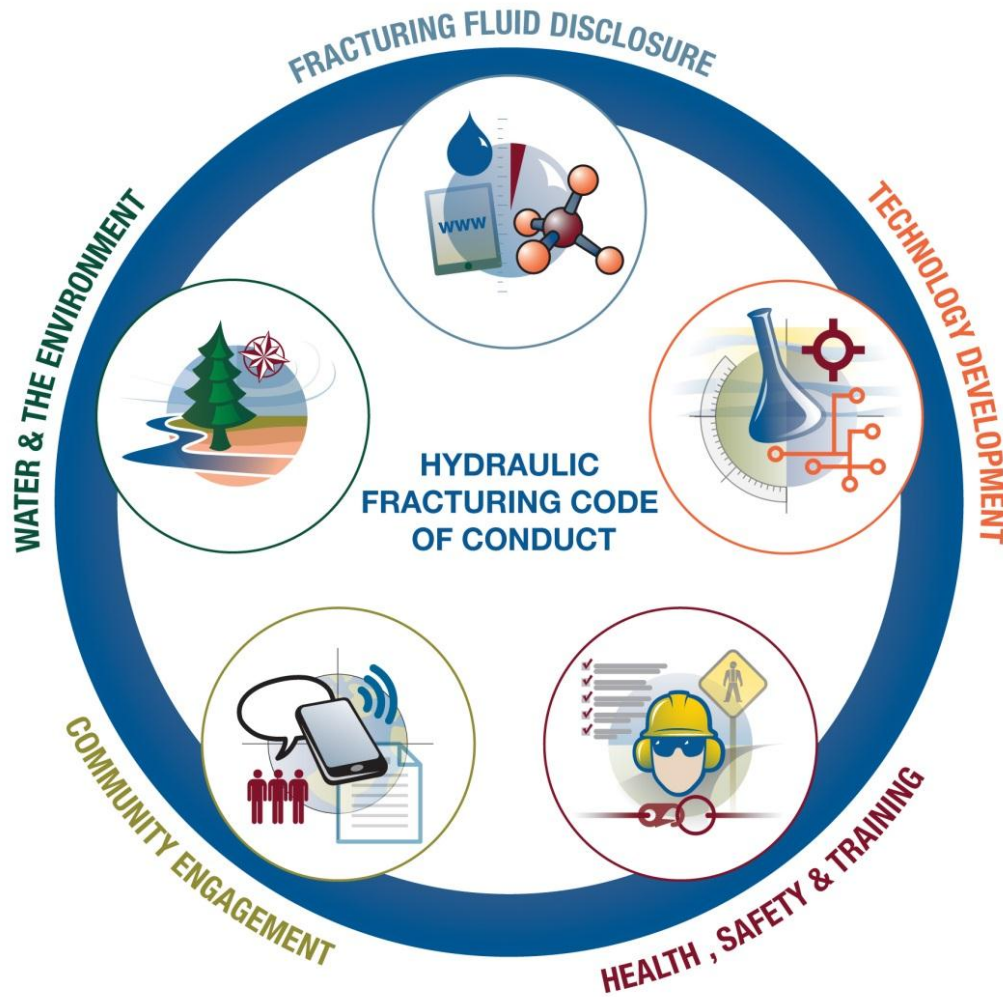
[All FAQs »](#)

# Alberta Energy Regulator (AER)

- Draft Directive: Hydraulic Fracturing
- Directive 8: Surface Casing Depth Requirements
- Directive 9: Casing Cementing Requirements
- Directive 20: Well Abandonment
- Directive 27: Shallow fracturing Operations-  
Restricted Operations
- Directive 29: Energy and Utility Development  
Applications and the Hearing Process
- Directive 31: Guidelines for the Energy Proceeding  
Cost Claims
- Directive 35: Baseline Water Well Testing
- Directive 38: Noise Control
- Directive 44: Surveillance of Water Production  
in Hydrocarbon Wells
- Directive 50: Drilling Waste Management
- Directive 51: Injection and Disposal Wells
- Directive 55: Storage Requirements
- Directive 56: Energy Development Applications
- Directive 58: Oilfield Waste Management  
Requirements for the Upstream Petroleum Industry
- Directive 59: Well Drilling & Completion  
Data Filing Requirements



# Hydraulic Fracturing Code of Conduct





Leading Energy Services,  
Supply, Manufacturing and Innovation

**Working Energy Commitment**  
**[www.workingenergy.ca](http://www.workingenergy.ca)**