Leading Energy Services, Supply, Manufacturing and Innovation

Working Energy Commitment
Working Energy Commitment
Founding Members

- Baker Hughes
- Iron Horse Energy Services
- Calfrac Well Services
- Millennium Stimulation Services
- Canyon Technical Services Ltd.
- Nabors
- Element Technical Services
- Sanjel
- Gasfrac
- Schlumberger
- Halliburton
- Trican
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

Map: ERCB
Hydraulic Fracturing Purpose

Unconventional Reservoirs
- Tight Gas Sand
- Shale

Conventional Reservoirs
- Conventional Natural Gas Reservoirs
- Natural Gas from Coal

Permeability (mD)
- Poor
- Quality of Reservoir
- Good

Increasing Requirement for Hydraulic Fracturing

Granite
- Sidewalk Cement
- Volcanic Pumice

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

Graphic: CSUR
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

Graphic: Trican Well Service
Many Steps in Hydraulic Fracturing
Horizontal Drilling and Multistage Fracturing

Graphic: ERCB
Hydraulic Fracturing Animation

Video: Imperial Oil
Typical Fracture Fluid Composition

Graphic: BC Oil & Gas Commission
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.
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 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

- Fracturing Fluid Disclosure
- Water & the Environment
- Technology Development
- Community Engagement
- Health, Safety & Training

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