



CANADIAN GLOBAL  
EXPLORATION FORUM



# Canada's Global Energy Connection

CGEF  
February, 2019

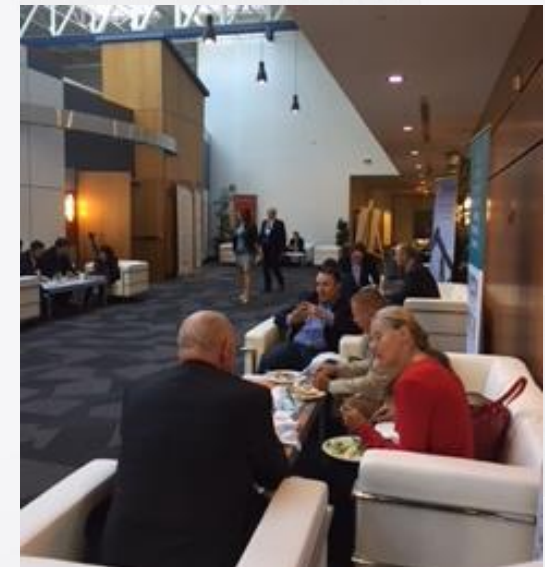


CANADIAN GLOBAL  
EXPLORATION FORUM

- Canadian Global Exploration Forum
- Investing with Canadian Companies operating internationally
- History of the Oil and Gas Industry in Canada
  - Mature field optimization
- Investing in Canadian Expertise
  - International Examples
- 2019 CGEF International Conference
  - June 10, 2019, Calgary, Alberta, Canada

# WHAT IS THE CANADIAN GLOBAL EXPLORATION FORUM (CGEF)?

- **CGEF** is a registered industry volunteer organization that promotes cooperation between Canada-based, internationally operating energy companies and their international counterparts and governments.
- **CGEF** is a primary Canadian contact point for international energy companies, services, and governments who are visiting Calgary seeking Canadian investment or expertise
- **CGEF** members are E&P companies that share Canadian expertise, technology, and opportunities with each other and internationally
- **CGEF** supports a vibrant, Canada-based, international energy industry through networking events, conferences and workshops



# CANADIAN PUBLIC & PRIVATE E&P COMPANIES

>100 companies

>100 countries

Canadian Public & Private International Oil & Gas Companies



Country with Canadian  
Operators

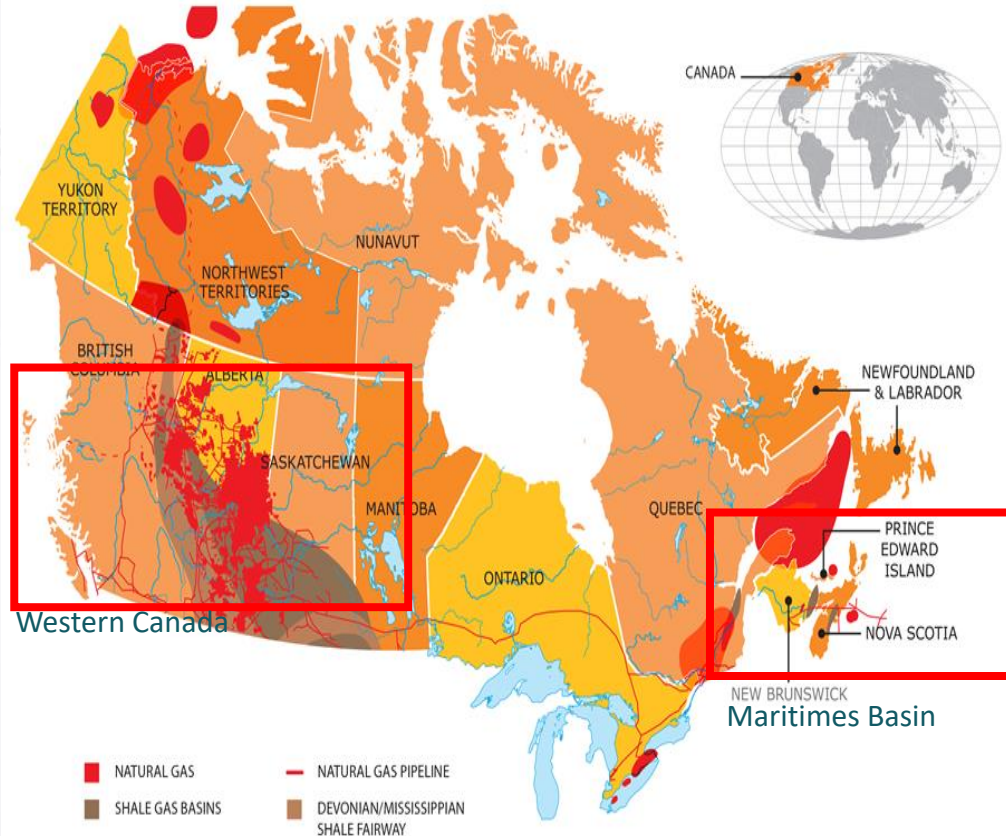
Country with CGEF-Member  
Canadian Operators



# WHY DO BUSINESS WITH CANADIAN/ALBERTAN E&P AND SERVICE COMPANIES?

- The Canadian energy industry has a long track record of proven expertise in the development and application of the latest technologies for the full spectrum of oil and gas exploration, development and re-development in all types of reservoirs and reservoir fluids
- World class regulatory and environmental protection standards
- Competitive foreign exchange (1 USD~1.25 CAD)
- Access to both public and private capital markets
- Canadian operators and service companies are actively searching for collaboration with local partners for entry into international oil & gas opportunities

# THE CANADIAN PETROLEUM INDUSTRY: OVERVIEW



Waterton, AB:  
oldest Alberta well  
(1897)



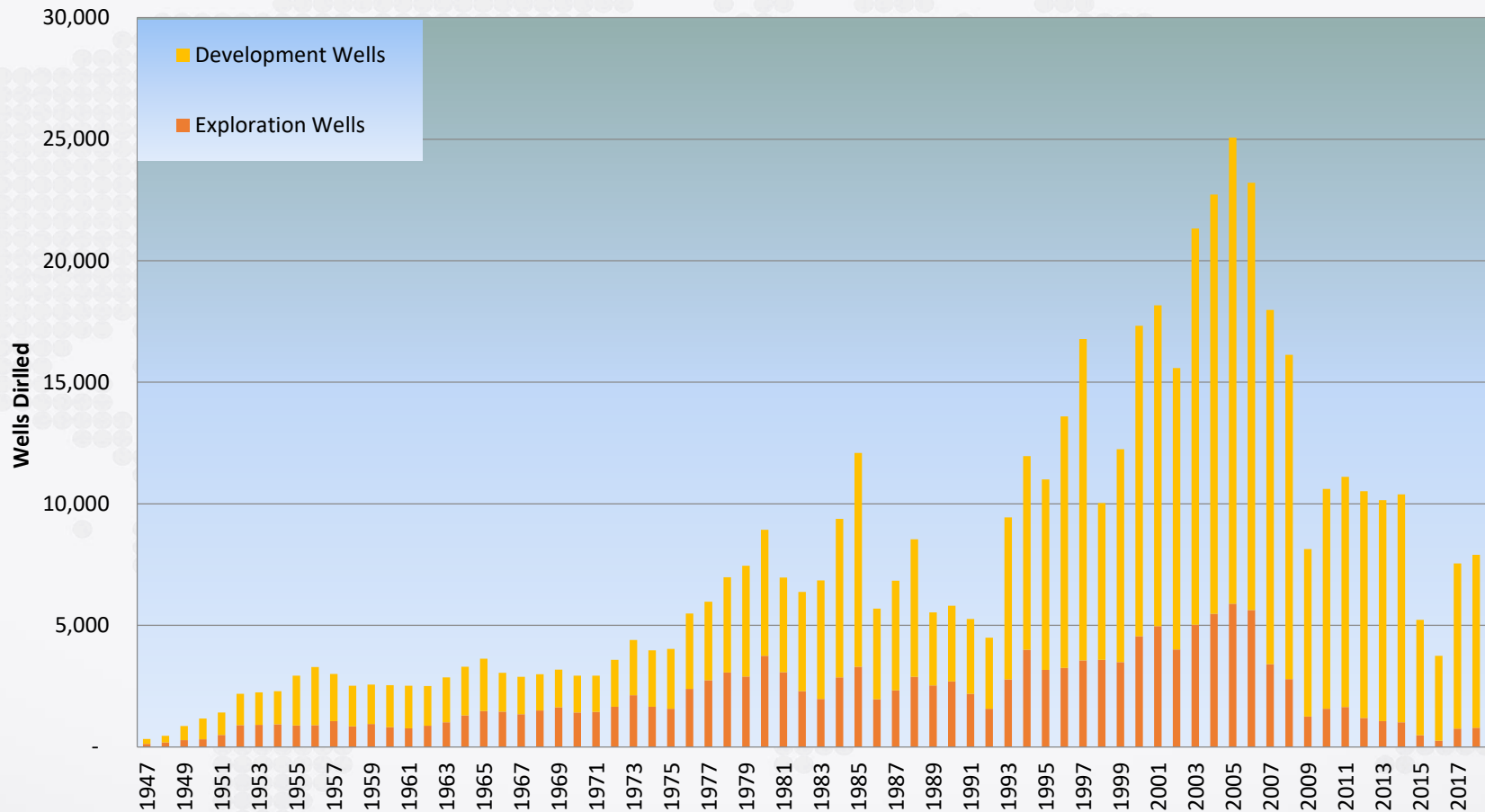
Hibernia platform,  
East Coast

## Canada

- Third largest natural gas producer
- Fifth largest energy producer
- Sixth largest crude oil producer
- Third in crude oil reserves

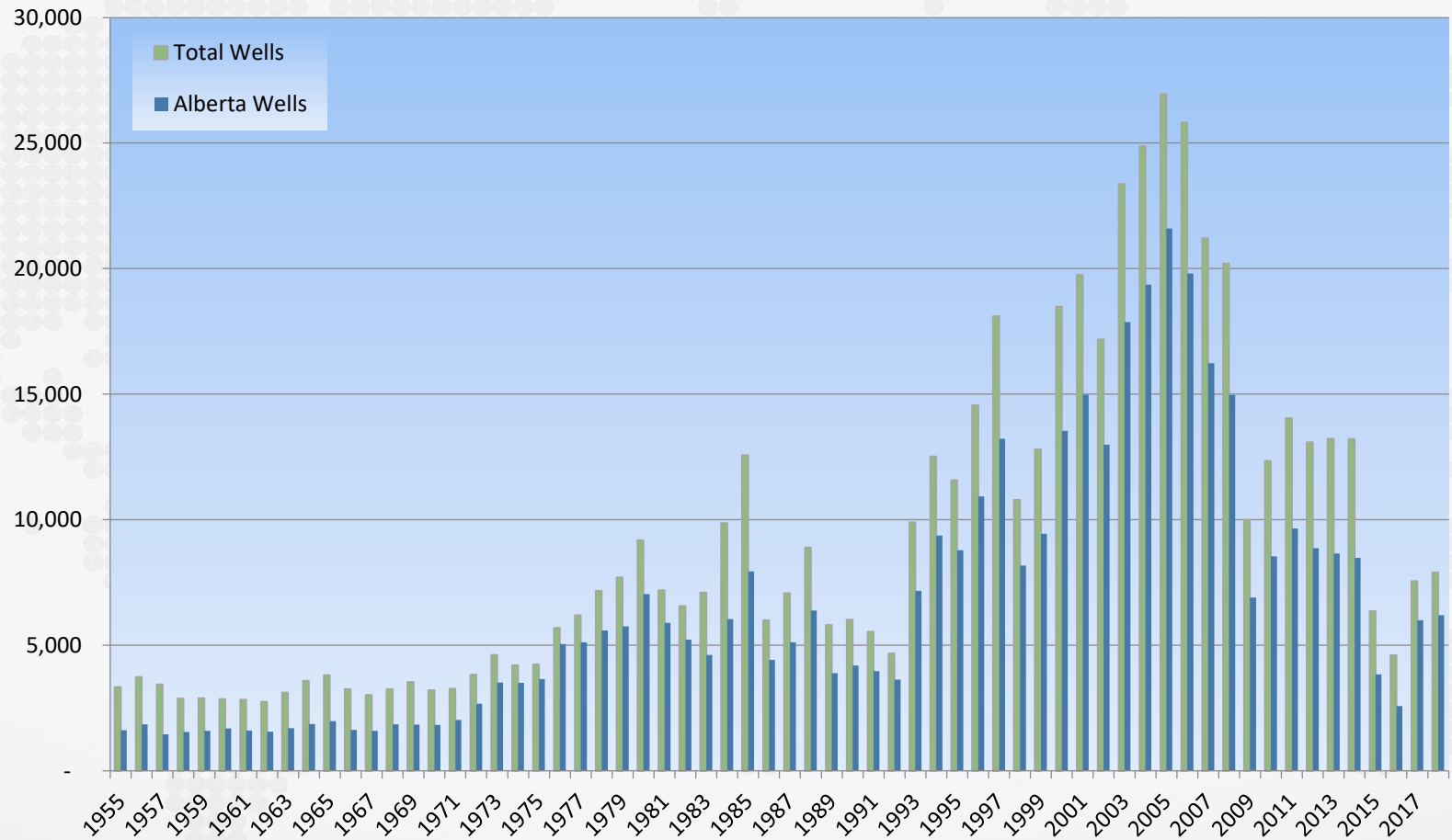
# HISTORIC WELLS IN CANADA

## Wells Drilled in Western Canada 1947 to 2018



# HISTORIC WELLS IN ALBERTA

## Wells Drilled in Canada and Alberta 1955-2017



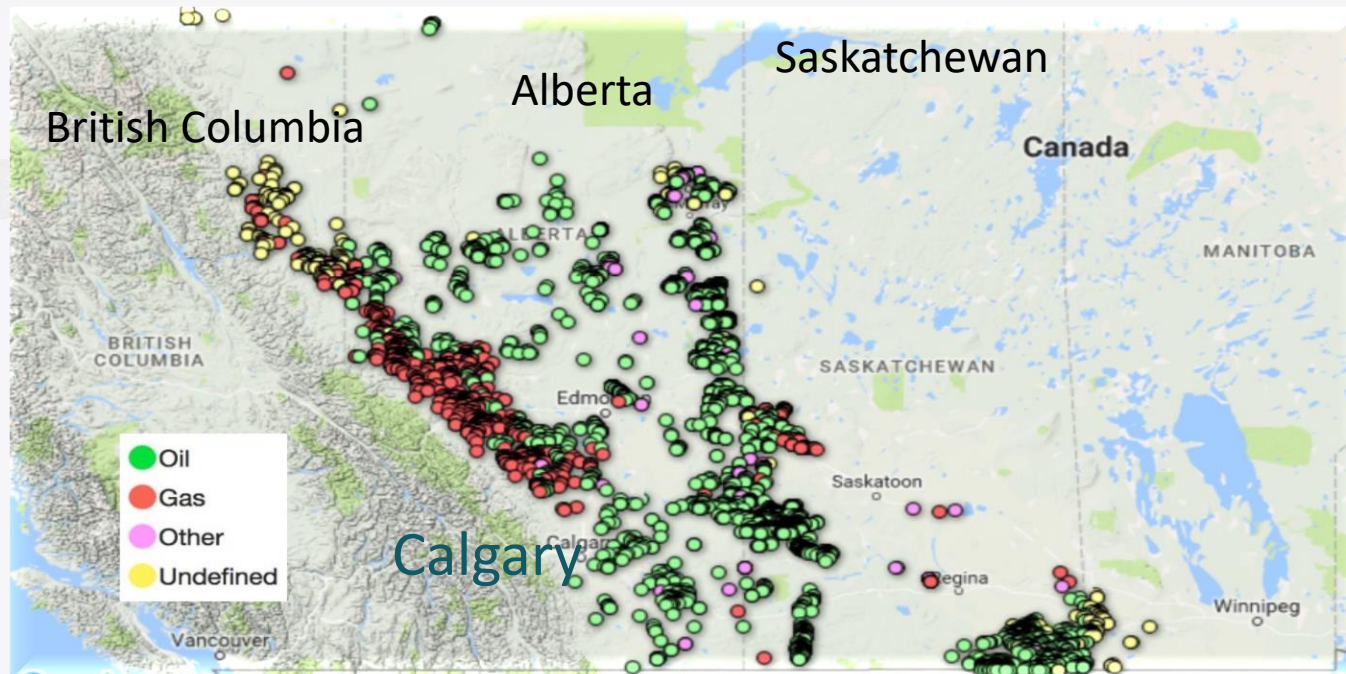


# THE PETROLEUM INDUSTRY IN CANADA: TECHNICAL EXPERTISE

## Government Support:

- Public database of Western Canadian well data, production data, sample cuttings, and core data by the Government of Alberta
- The Alberta government has an advanced model for organizing data and making them available in the public domain; a similar service is provided by the other provincial energy department
- The Alberta Energy Regulator (AER) routinely consults to foreign governments regarding regulatory issues. They have set up the International Centre of Regulatory Excellence to work with foreign regulators to share Alberta's best practices

# TECHNICAL EXPERTISE IN EXPLORATION, DEVELOPMENT AND PRODUCTION



**Well Drilled Western  
Canada (past year):  
~8000 wells**

- 120 years of exploration and development in structurally complex settings
- Expertise in assessing and exploiting new unconventional plays quickly and efficiently
- Unconventional resource plays (shale gas: Bakken, Montney; shale oil; tight sand oil, CBM)
- Example: oil sands development:
  - 54,000 mi<sup>2</sup>
  - 1.7 trillion barrels bitumen in place
  - Ca. 10% **recoverable: 178 billion barrels**

# TECHNICAL EXPERTISE IN EXPLORATION, DEVELOPMENT AND PRODUCTION

## Enhanced Production and Recovery

- Hydraulic fracturing routinely applied for decades
- Over 75% of wells drilled in Canada (2015) were horizontal
- Secondary and tertiary recovery technologies are routinely applied
  - Waterfloods, immiscible and miscible gas floods with sweet gas, CO<sub>2</sub> or H<sub>2</sub>S rich miscible gas flood; alkaline-surfactant-polymer (ASP) flood, SAGD in oilsands, etc.
- Cold Heavy Oil Production with Sand (CHOPS) (Lloydminster)
- All forms of artificial lift in use throughout Canadian oilfields and products exported worldwide

## Well Optimization, Remediation, Decommission and Abandonment

- Government directive policies regarding well decommissioning and abandonment
- Industry funded Orphan Well Fund, \$30MM/yr spent on well abandonments
- Environment best practices driven policies



# TECHNICAL EXPERTISE IN MATURE FIELDS: ALBANIA

- Patos Marinza, Albania: Banker's Petroleum
  - ~ 150 sq Kms
- First exploited in 1927 with a total of 3000 wells drilled
  - 15,000 bbl/d in 1975
  - ~400 bbl/d rates 1990's
- Acquired by Bankers Petroleum in 2004 and proceeded to apply Canadian technology and expertise which have increased the production to **21,000 bbl/day**
  - Legacy well reactivation
  - Installation of progressive cavity pumps
  - 600 horizontal wells
  - Foamy oil production
  - Successful polymer and water flood programs

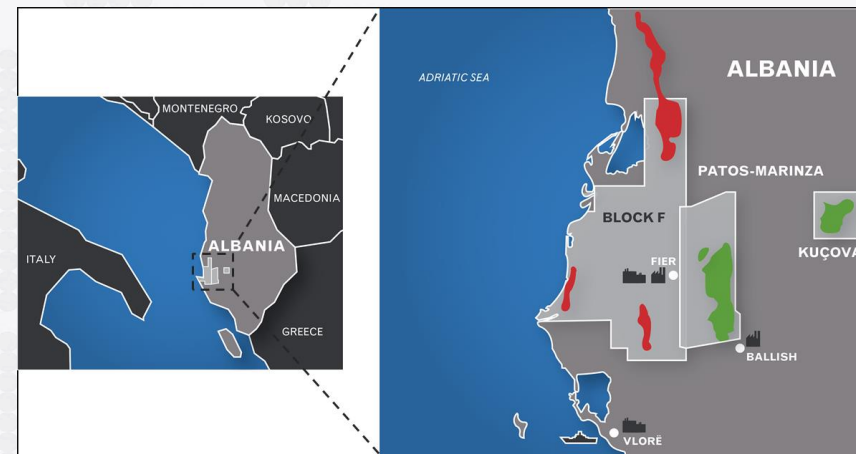
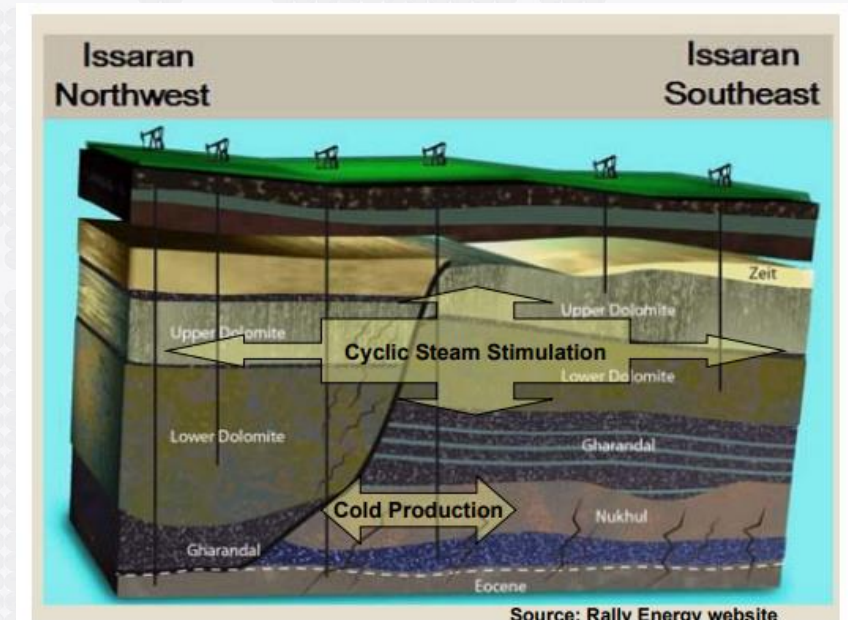


Image taken from YoungPetro.org



# TECHNICAL EXPERTISE IN MATURE FIELDS: EGYPT

- Issaran Field, Egypt: Rally Energy
  - 700 million Bbls in place
- Discovered in 1981 with first production in 1998 and early rates of ~2000 bbls/d
- Acquired by Canadian based company Rally Energy in 2006
- Canadian technologies and expertise were applied to reach a peak production of **~6000 bbl/d**
  - Cyclical Steam Stimulation (CSS)
  - Acid and proppant artificial fracture
  - Production drawdown optimization



# TECHNICAL EXPERTISE IN MATURE FIELDS: CANADA

## Pembina Oil Field, Alberta Canada

~1.8 Billion Bbls in place

Discovered in 1953

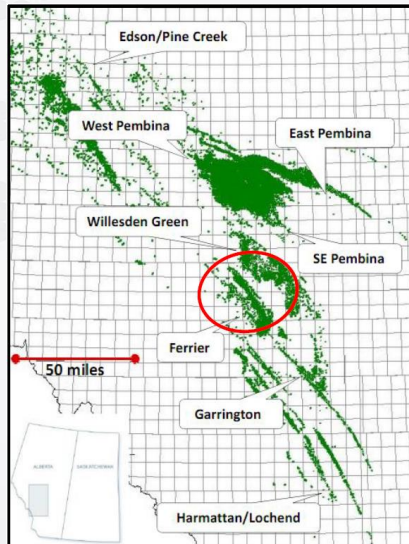
1970's: 200,000 bbl/d: peak production

2008: 50,000bbls/d

2018: 200,00 bbls/d through:

Multi-lateral drilling technologies

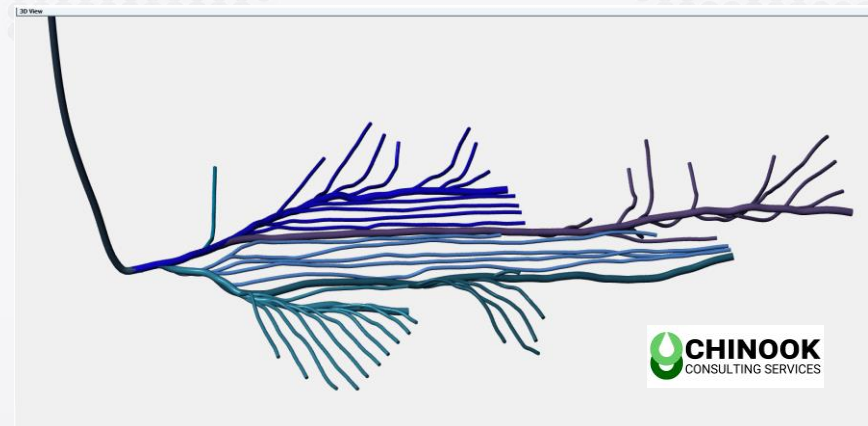
Multi-stage artificial fracture



## Realtime Geosteering

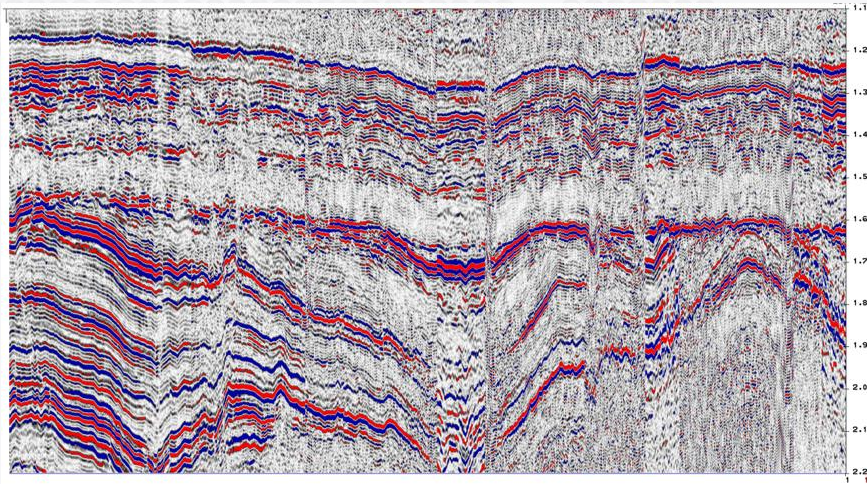


## Multi-well pads: 47 legs

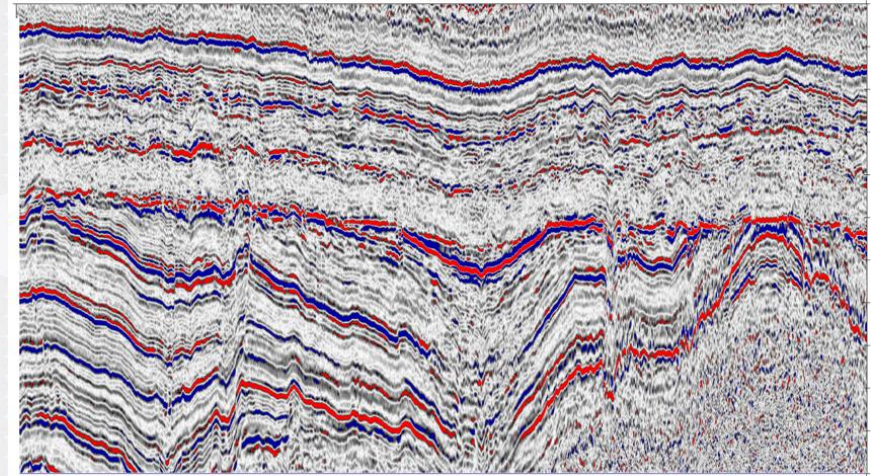




# TECHNICAL EXPERTISE IN MATURE FIELDS: INTERNATIONAL

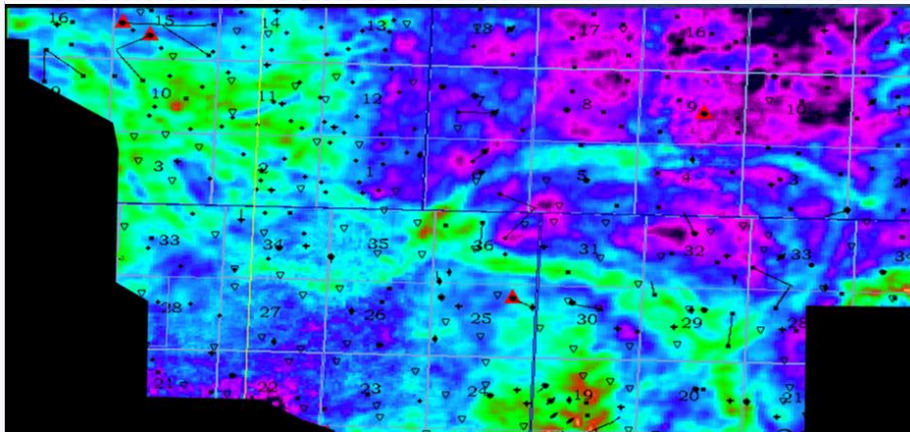


Original Processed Sections

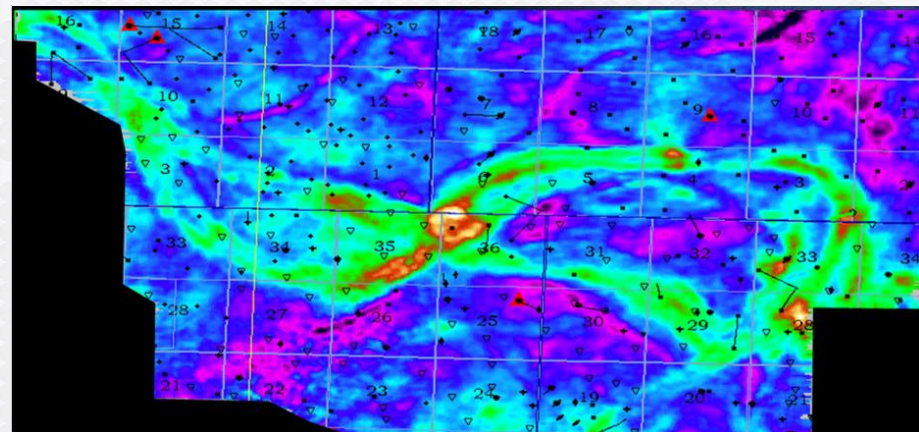


Merged Sections

# TECHNICAL EXPERTISE IN MATURE FIELDS: INTERNATIONAL



Original merge from 5 3D's



Canadian provider merge from 5 3D's



# CGEF MEMBERS

## Operators

Africa Oil  
Bengal  
Canacol  
Central European Petroleum  
Emzed  
Envoi  
Gran Tierra  
Horizon Petroleum PLC  
International Frontier Resources  
Mancal  
Oil & Gas Investment  
Pennine Petroleum Corp  
Frontera  
Serinus  
Sherritt  
Sonoro  
Sun God Resources  
Valeura  
Western Zagros

## Services Providers

Gowling WLG  
TMX  
RPS  
McDaniels  
Sproule  
SAIT  
EDC  
BDP Law  
Moyes & Co  
Envoi  
Petrel  
Simmons Edeco  
Chinook Consulting Services  
GLJ  
Transworld Tech Inc  
Norton Rose Fulbright  
Signature Seismic  
Photosat

# CGEF CONFERENCE 2019

**Canadian Global Exploration Forum**  
June 10, 2019 | Calgary, Canada



**JOIN THE ENERGY AND GROWTH OF  
CANADIAN INTERNATIONAL OIL & GAS**

- Delegates from 20 countries
- 2 Keynote Speakers
- 30 speakers
- 4 panels
- 300 delegates
- In partnership with the Global Petroleum Show

Go to [www.cgef.org](http://www.cgef.org) to register

# THANK YOU

- Alberta and Canada offer highly respected petroleum industry technical expertise
- The Canadian oil & gas industry offers the full spectrum of services at competitive prices
- Albertan operators and service companies are open for collaboration and the sharing of expertise with the international oil & gas industry
- Special thanks to the Canada Trade Commission Service, Government of Alberta, Economic Development and Trade
- Note: Slides 5-6 ,10-11 modified from **Kraus & McMechan (2017)**: *Perspectiva Canadiense de Exploración en México*. Presentation at the Mature Fields Conference in Mexico City, *22nd February 2017*.

