

18 Oct 2017 | Civic on Third Calgary | Alberta, Canada



*Credit: Chevron*

## SPE Workshop: The Duvernay Liquids Rich Shale - What Makes it Different and How Do We Optimize It?

The Duvernay shale, an emerging oil and liquid-rich gas formation with a best contingent resource estimate of 1,676 MMBoe (AER, Dec 2016), is the source rock for historical conventional hydrocarbon in the Western Canada Sedimentary Basin.

The amount of wells drilled and hydraulically fractured has increased exponentially from 4 in 2010 to 315 by mid-2016 with the longest completed length increased from 1200m to over 3000m.

Despite the low commodity price environment, activity in the condensate rich area has not slowed down due to the operators' capability in drilling and completing these wells cheaper and faster.

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### Audio/Visual



### Reception



### Lunch



### Coffee Break



### Breakfast



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### Did you Know...

In 2016, the SPE Canadian Educational Trust was converted into a new entity, the SPE Canadian Educational Foundation (SPECEF). With the new governance structure, SPECEF has the flexibility to create new programs, scholarships and energy educational initiatives that will benefit SPE Canada members.

For more information about SPECEF or to give a tax deductible donation, please visit: [www.spe.org/canada](http://www.spe.org/canada)

## COMMITTEE MEMBERS

### Chairperson

**Lisa Song**

Chevron Canada

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### Co-Chairpersons

**Irma Eggenkamp**

Shell Canada

**Mathew Fay**

Shell Canada

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**Audrey Rasmussen**

Paramount Resources (ACL) Ltd.

**Matthew Johnston**

Shell Canada

**Nkem Ejiofor**

Hammerhead Resources

**Patrick Miller**

Repsol Oil & Gas Canada

**Ali Esmail**

Encana Corporation

**Adam Preston**

Alberta Energy Regulator

**Brian Hamm**

McDaniel & Associates

**Aaron White**

Murphy Oil Corp.

On behalf of the SPE Duvernay Workshop Committee and invited speakers, SPE Canada is pleased to make a donation of \$500 to Samaritan's Purse. This organization is providing support to hurricane victims in the US and Caribbean islands through emergency relief efforts and assisting Canadians who lost homes in the BC Fires. This donation has been made at the request of the committee, in lieu of speaker and committee gifts. [www.samaritanspurse.ca](http://www.samaritanspurse.ca)

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## TECHNICAL AGENDA

**WEDNESDAY, OCTOBER 18**

**0700-0800** | Registration and Breakfast

Sponsored by:



**0800-0900** | **Opening Plenary Session - Duvernay Overview**

Session Chair: **Lisa Song**, Chevron Canada

Panelists: • **James Navratil**, Kaybob Duvernay Manager, Chevron Canada

• **Roy Stadlwieser**, Alberta Development Manager, Shell Canada

• **John Gorman**, President, Halliburton Canada

• **Paul Ohaegbu**, Director Oil & Gas, BMO Capital Markets (Moderator)

**0900-0915** | Coffee Break

**0915-1045** | **Session 1: The Duvernay's Unique Challenge in Estimating Resource in Place Phase Behaviour and Mobility**

Session Chairs: **Ali Esmail**, Encana

**Nkem Ejiofor**, Hammerhead Resources

**Matthew Johnston**, Shell Canada

This session will focus on a broad range of sub-surface topics including geochemistry, core analysis, pore distribution, PVT and in situ fluid characterization and mobility.

■ **Presentation 1:** Considerations for Lean-Gas Cycling in the Duvernay

**F. Brent Thomas, Mehdi Noroozi**

**Ronnel April**, Weatherford Labs Canada

■ **Presentation 2:** Phase Behavior and Reservoir Characterization: The Spectrum of Liquid Yields and Petroleum in Place for the Duvernay

**Ali Esmail**, Encana

■ **Presentation 3:** Fox Creek Duvernay PVT - When Does It Matter?

**Jeff MacDonald**, Shell Canada

**1045-1100** | Coffee Break

**1100-1230** | **Session 2: Forecasting Duvernay Condensate Yields and the Volatility Drivers**

Session Chairs: **Brian Hamm**, McDaniel & Associates

**Adam Preston**, Alberta Energy Regulator

**Aaron White**, Murphy Oil Corp.

Forecasted CGR/GOR differs significantly from original reservoir in-situ phase conditions due to the inherent fluid volatility; stable producing yields that are observed do not resemble initial non-depleted producing yields. The initial-to-stable yield variability, volatility driver and forecasting methods specific to the Duvernay will be examined.

■ **Presentation 1:** Can Desorption Explain CGR/GOR Behavior While Flowing above  $P_{sat}$  in the Duvernay? Insights from History Matching Using Adsorption in a Compositional Simulation

**Patrick Miller**, Repsol

## GENERAL INFORMATION

### About Society of Petroleum Engineers

The Society of Petroleum Engineers (SPE) is a not-for-profit professional association for members engaging in oil and gas E&P, providing resources for technical knowledge. Income from this event will be invested back into SPE to support many other member programs. Scholarships, certification, the Distinguished Lecturer program, and SPE's energy education program Energy4me are just a few examples.

### Accessibility

Our events and functions are accessible to all attendees with wheelchairs. If you require special arrangements, please contact our staff at the registration desk.

### Commercialism

In remaining consistent with workshop objectives and

SPE guidelines, commercialism in presentations will not be permitted. Company logos should be used only to indicate the affiliation of the presenter(s).

### Continuing Education Units

Attendees will receive .8 CEUs. One CEU equals 10 contact hours of participation. CEUs will be awarded through SPE Professional Development for participation and completion of SPE workshop. A permanent record of a participant's involvement and awarding of CEUs will be maintained by SPE.

### Documentation

Following the workshop a URL containing released copies of the workshop presentations will be available to all attendees.

- **Presentation 2:** Factors Defining Drawdown Management in the Duvernay Gas Condensate Region  
**Osita Aniekwe, Chevron Canada**

- **Presentation 3:** What Rate Management Impacts in the Oil Window and It's Operational Limitations  
**Aaron White, Murphy Oil Corp.**

1230-1330 | Networking Lunch

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1300-1500 | **Session 3: Reservoir Characterization - Integrating Geoscience with Completion Design to Maximize Production**

Session Chairs: **Lisa Song, Chevron Canada**  
**Irma Eggenkamp, Shell Canada**

The various Duvernay CGR and production profiles depend on geological, petrophysical and geomechanical properties. This session will showcase operators' strategies in landing zone and completion recipes for different Duvernay rock types.

- **Presentation 1:** Advanced Core Analysis in Support of Multi-Fractured Horizontal Well Characterization for Primary and Enhanced Recovery Applications  
**Chris Clarkson, University of Calgary**
- **Presentation 2:** Integration of Reservoir and Geomechanical Properties for Optimization of Completion Design  
**Tara Branter, Repsol**

- **Presentation 3:** Isotopes, Fractures, and Facies: Understanding the Origin of the Hydrogen Sulfide in the Duvernay Formation, Fox Creek, Alberta, Canada  
**Matthew LeForte, Encana**

1500-1530 | Coffee Break

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1530-1700 | **Session 4: Well Spacing and Completion Design**

Session Chairs: **Mathew Fay, Shell Canada**  
**Patrick Miller, Repsol**  
**Audrey Rasmussen, Paramount Resources (ACL) Ltd.**

To maximize the economic value of the Duvernay, it's critical to balance well spacing with stimulation intensity and capital costs. This session will explore different operators strategies to achieve this balance, using both theory and empirical data.

- **Presentation 1:** Interfering With My Data – A Study on Well Spacing Effects  
**David Bonar, Encana**
- **Presentation 2:** I've Got My Ion You – Water:rock Ratios and Stimulated Rock Volumes Estimated from Produced Water Composition  
**Mathew Fay, Shell**
- **Presentation 3:** Well Spacing and Proppant Intensity Optimization Study  
**Autumn Linklater, Chevron Canada**

1700-1830 | Networking Reception

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## GENERAL INFORMATION

### Electronic Devices

As a courtesy to the speakers and your fellow registrants, please turn off all electronic devices during presentations.

### Name Badges

Please wear your badge at all times. It is a courtesy to your fellow registrants, speakers and sponsors.

### Photography and Recording Policy

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### Workshop Format

Workshops maximize the exchange of ideas among attendees and presenters through brief technical presentations followed by extended Q&A periods. Focused topics attract an informed audience eager to discuss issues critical to advancing both technology and best practices.

Many of the presentations are in the form of case studies, highlighting engineering achievements and lessons learned. In order to stimulate frank discussion, no proceedings are published and members of the press are not invited to attend.



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## Upcoming SPE Canada Training Courses

### Unconventional Resource Assessment and Valuation

30 Oct - 3 Nov 2017 | Calgary, Alberta

### An Overview of Multistage Completion Systems for Hydraulic Fracturing

6 Nov 2017 | Calgary, Alberta

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to the  
challenge



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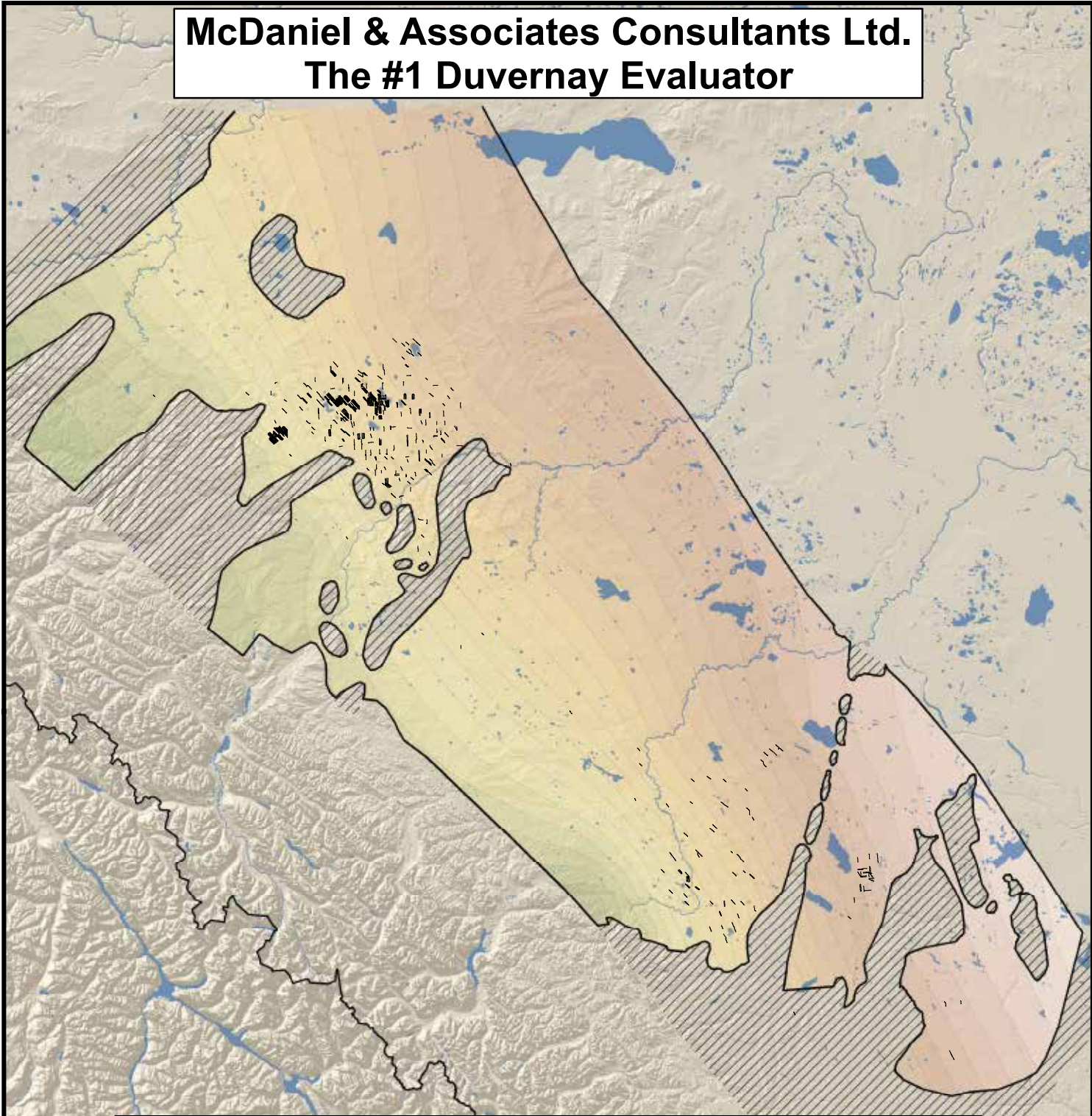
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