The 2016 and 2017 SPE Workshops demonstrated a steep learning curve for competitive profitable production from the Montney. Sweet spots were identified, costs were reduced, EUR per well length has increased, and break-even price was lowered. However, every learning curve flattens out. The theme for the 2018 Workshop is: Where is the current limit of all of these advancements, and what can be done to push this limit further?

During this two-day workshop, Operators from the Montney will get the chance to share what they think are the levers available to push the limit further. Discussion between presenters and the audience will be greatly encouraged. The Keynote will address the potential market impact of an LNG project in Canada and technical sessions will address new developments in specific areas. A panel discussion will close out the workshop and provide the opportunity to discuss relevant topics amassed over the two days.
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.

Alcohol Policy
SPE recognizes the legitimate serving of alcoholic beverages in the process of conducting business and social activities. We also recognize that the use and consumption of alcohol carries with it the requirement for all attendees to consume those beverages responsibly.

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 1.6 CEUs. One CEU equals 8 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
The workshop FTP site will contain released copies of the workshop presentations if speakers give permission to release their presentation.

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

**WORKSHOP CO-CHAIRS**

Stuart Valentini  
Progress Energy Canada Ltd.

Daniel Yang  
Shell Canada

**WORKSHOP PROGRAM COMMITTEE**

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
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<tbody>
<tr>
<td>John Aoun</td>
<td>Seven Generations Energy</td>
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<tr>
<td>Mike Davies</td>
<td>Reveal Energy Services</td>
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<td>Mike Dembicki</td>
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<td>Jennifer Gee</td>
<td>Painted Pony Energy Ltd.</td>
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<td>Eric Geppert</td>
<td>Seven Generations Energy</td>
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<td>Geoff Grant</td>
<td>Encana Corporation</td>
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<td>Morgan Kwan</td>
<td>RS Energy Group</td>
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<td>Ryan Kwasniewski</td>
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<td>Crew Energy Inc.</td>
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<td>Trystan Wall</td>
<td>HEAL Systems</td>
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<td>Kris Watson</td>
<td>NCS Multistage</td>
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<td>Morgan Wittstock</td>
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<tr>
<td>Michael Woofter</td>
<td>Paramount Resources Ltd.</td>
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<tr>
<td>Jared Wynveen</td>
<td>McDaniel &amp; Associates Consultants Ltd.</td>
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<tr>
<td>Rob Zinselmeyer</td>
<td>ARC Resources Ltd.</td>
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**Name Badges**

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

**Photography and Recording Policy**

Unauthorized video/audio recording is expressly prohibited in the session room(s) or poster area, whether by video, still or digital camera, mobile phone, or any other means or form of reproduction. Any person attending may be photographed, and by your attendance, you give permission to use your image in possible future marketing publications including print and online.

**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.
### Schedule Overview

#### Tuesday, November 6

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<th>Time</th>
<th>Event</th>
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<tr>
<td>0700–0800</td>
<td>Registration</td>
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<tr>
<td>0800–0815</td>
<td>Opening Remarks by Workshop Chairs</td>
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<tr>
<td>0815–0900</td>
<td>Opening Keynote</td>
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<tr>
<td>0900–1000</td>
<td>Session 1: What Does the LNG World Look Like in Canada?</td>
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<tr>
<td>1000–1030</td>
<td>Coffee Break</td>
<td>sponsored by:</td>
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<tr>
<td>1030–1230</td>
<td>Session 2: Operator Forum – Views on Pushing the Limits in the Montney</td>
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<tr>
<td>1230–1330</td>
<td>Networking Lunch</td>
<td>sponsored by:</td>
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<tr>
<td>1330–1500</td>
<td>Session 3: Reservoir Rock and Fluid Property Characterization – Can We Increase Predictive Ability with Better Information?</td>
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<tr>
<td>1500–1530</td>
<td>Coffee Break</td>
<td>sponsored by:</td>
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<tr>
<td>1530–1700</td>
<td>Session 4: Frac Geometry and Well Design – Optimizing Resource Recovery and Development Cost</td>
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<tr>
<td>1700–1830</td>
<td>Networking Reception</td>
<td>sponsored by:</td>
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#### Wednesday, November 7

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<tr>
<td>0800–1000</td>
<td>Session 5: Operator Forum – Views on Pushing the Limits in the Montney</td>
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<tr>
<td>1000–1030</td>
<td>Coffee Break</td>
<td>sponsored by:</td>
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<tr>
<td>1030–1230</td>
<td>Session 6: Parent and Child Well Relationships</td>
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<tr>
<td>1230–1330</td>
<td>Networking Lunch</td>
<td>sponsored by:</td>
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<tr>
<td>1330–1500</td>
<td>Session 7: Big Data Analytic Techniques</td>
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<tr>
<td>1500–1530</td>
<td>Coffee Break</td>
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<tr>
<td>1530–1700</td>
<td>Session 8: Operator Panel - Pushing the Limits, Discovering the Limitations</td>
<td>sponsored by:</td>
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Ginette MacIsaac, Director of Operations, LNG Canada

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1030–1230
**Session 2: Operator Forum - Views on Pushing the Limits in the Montney**

Session Chairpersons: Kris Watson, NCS Multistage
Jared Wynveen, McDaniel & Associates Consultants

This session will feature three prominent players in the Montney and their pursuit of excellence, displaying some unique strategies and experiences endured while developing their specific Montney Resource. The operator brings experts to the podium to focus on their learnings and to share information around Pushing The Limits in their Areas/Formations.

- **Progress Energy: Completions Optimization Through DUC**
  Stuart Valentini

- **Shell Canada: Pushing Production: Delivering Consistent Volumes for the Long Term at Competitive Pricing**
  Morgan Wittstock, Jacqueline Smith, Justine Keenan, Will Williams

- **NuVista Energy: Are We There Yet? Pushing the Limits of Well Design, Recovery, and Logistics of the Montney Formation**
  Walker Neumann, Dave Morin, Mark Thorne, Janet McNally

1330–1500
**Session 3: Reservoir Rock and Fluid Property Characterization – Can We Increase Predictive Ability with Better Information?**

Session Chairpersons: Mike Davies, Reveal Energy Services
Eric Geppert, Seven Generations Energy
Michael Woofter, Paramount Resources Ltd.

The Montney formation presents extremely complex rock and fluid properties across the vast span of this deposit from the Alberta Deep Basin into North Eastern British Columbia. This session focuses on characterizing the rock and fluid properties with an eye on using the knowledge gained to better predict the performance of existing developments as well as future developments in order to “push the limits”.

- **Presentation 1: Are You Looking at the Right Rock? Finding Performance Predictability in the Groundbirch Upper Montney**
  Alexa Tomlinson, Shell Canada

- **Presentation 2: Challenges in Unconventional Well Classification — Gas or Oil Well?**
  Curtis Whitson, Pera Associates

- **Presentation 3: Recovery Factors and Condensate Yields in Liquids Rich Montney**
  Jared Wynveen, McDaniel & Associates Consultants

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In Lieu of Speaker and Committee Gifts...

On behalf of Invited Speakers and the Montney Workshop Committee, SPE Canada is pleased to make a donation of $1000 to Inn From the Cold. Inn From the Cold provides shelter, sanctuary, and healing to assist homeless children and their families achieve independence. Since the beginning of 2018, they have provided care to over 500 children experiencing homelessness.

For more information about the charity, visit: http://innfromthecold.org
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Technology
Stakeholder service
Innovation

Responsibly producing energy for North Americans
0800–1000
**Session 5: Operator Forum - Views on Pushing the Limits in the Montney**

Session Chairpersons: Ryan Kwasniewski, Sinopec Canada
Brad Makowecki, Crew Energy Inc.
Kris Petterson, Hammerhead Resources

This session will feature three prominent players in the Montney and their pursuit of excellence, displaying some unique strategies and experiences endured while developing their specific Montney Resource. The operator brings experts to the podium to focus on their learnings and to share information around Pushing The Limits in their Areas/Formations.

- **Encana Corporation: Encana’s Perspective on the Montney**
  Geoff Grant, Graham Schmidt, Jimmy Zhang

- **Seven Generations Energy: Lessons Learned on the Way to Development**
  Mike Dembicki, Lynne Chrumka

- **Hammerhead Resources: A Shark’s Tale – Pushing the Limits in the Heart of the Oil Window**
  Troy Olson, Craig Hall, Kris Petterson

1030–1230
**Session 6: Parent and Child Well Relationships**

Session Chairpersons: Jennifer Gee, Painted Pony Energy Ltd.
Morgan Kwan, RS Energy Group

This session dives into the latest learnings on the relationship between parent and child wells, what companies are doing to mitigate offsetting well failure, and what rehabilitation methods have been explored when offsetting well failure occurs.

- **Presentation 1: Measuring and Mitigating Depletion**
  Kyle Haustveit, Devon Energy

- **Presentation 2: Fracture Geometry and Well Spacing - Parent Child Cases in the Deep Basin**
  Rafik Belhaouas, Harvest Energy

- **Presentation 3: Mitigation of Asymmetrical Fracture Propagation in Child Wells due to Parent Well Depletion**
  Rob Zinselmeyer, ARC Resources Ltd.

- **Presentation 4: Impact of Parent Well Depletion**
  Garth Stotts, Paramount Resources

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**Wednesday, November 7**

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SPE Workshop: The Montney - Pushing the Limit

1330–1500
Session 7: Big Data Analytic Techniques
Session Chairpersons: Mike Dembicki, Seven Generations Energy
  Kim Nguyen, Murphy Oil Corporation

This session will focus on big data and machine learning techniques and work processes seen in the Montney and similar plays. The focus on capital efficiency and cost optimization throughout North American unconventional developments has resulted in big data becoming more important in the decision making process. Oil and gas development activities have terabytes of information for processing. The challenge is to integrate this data in a multi-discipline environment to come up with actionable results. The question that this session will focus on is how will new data analytic techniques help us do that.

- **Presentation 1:** Applied Data Science Techniques in Upstream Oil and Gas
  Emily Zong, RS Energy Group

- **Presentation 2:** Nature Vs. Nurture: Data Needs Both
  Brian Hamm, McDaniel Associates Consultants

- **Presentation 3:** A New Method for Determining Future Well Productivity and the Need for Consistent and Constant Production Forecasting
  Melanie Popp, GeoLogic Systems

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)
1530–1700  
**Session 8: Operator Panel - Pushing the Limits, Discovering the Limitations**

*Moderator(s):* Kris Watson, NCS Multistage  
Daniel Yang, Shell Canada

The feature players from the Operator Forums return to the podium for this exciting panel opportunity. The group will discuss similarities and differences of development strategies for the Montney based on the contents of the Operator Forums. Further, the audience will have the opportunity to submit questions for the panel, during the two-day workshop, that will be asked of the panelists in the final session. This is a unique opportunity to tease apart the tipping points and area challenges from the contrasting valuable perspectives in Montney development.

**PANELISTS:**

- **Louise Hill**, Director of Development, North Montney Joint Venture, Progress Energy
- **Carrie Rowe**, Area Manager, Groundbirch and Foothills, Shell Canada
- **Walker Neumann**, Montney Development Manager, NuVista Energy
- **Chris Feltin**, VP Corporate Planning and Development, Seven Generations Energy
- **Geoff Grant**, Manager, Montney Reservoir Engineering, Encana Corporation
- **Scott Rennie**, VP Development, Hammerhead Resources
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### SPE Canada Upcoming Training Courses

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<tr>
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<th>Title</th>
<th>Location</th>
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<tr>
<td>26 Nov 2018</td>
<td>Thermal-Hydraulics Design and Optimization</td>
<td>Banff, Alberta</td>
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<tr>
<td>26 Nov 2018</td>
<td>Considerations for Thermal Well Design</td>
<td>Banff, Alberta</td>
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<tr>
<td>25 Feb 2019</td>
<td>Shale Analytics</td>
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<tr>
<td>11-15 March 2019</td>
<td>Evaluation of Canadian Oil and Gas Properties</td>
<td>Calgary, Alberta</td>
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<tr>
<td>14-16 May 2019</td>
<td>Well Test Interpretation</td>
<td>Calgary, Alberta</td>
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The Society of Petroleum Engineers (SPE) is a not-for-profit organization. Income from this event will be invested back into SPE to support many other Society programs. When you attend an SPE event, you help provide even more opportunities for industry professionals to enhance their technical and professional competence. Professional awards, scholarships, the Distinguished Lecturer program, OnePetro, JPT and the Competency Management Tool are just a few examples of programs that are supported by SPE.

**SPE Canada Upcoming Events**

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<tr>
<th>Date</th>
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<tbody>
<tr>
<td>27–29 Nov 2018</td>
<td>SPE Thermal Well Integrity and Design Symposium</td>
<td>Banff, Alberta</td>
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<tr>
<td>26–27 Feb 2019</td>
<td>SPE Workshop: Subsurface Data Analytics</td>
<td>Calgary, Alberta</td>
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<tr>
<td>11–12 June 2019</td>
<td>SPE Workshop: Using Instrumentation and Data to Optimize Thermal Operations</td>
<td>Calgary, Alberta</td>
</tr>
<tr>
<td>30 Sep - 2 Oct 2019</td>
<td>SPE Annual Technical Conference and Exhibition</td>
<td>Calgary, Alberta</td>
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Eval. #2, 33%
Eval. #3, 11%
Other, 3%

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Andrew Dabisza P.Eng. - adabisza@mcdan.com

Canada