This workshop is focused on the unsung heroes of today’s oil patch – instrumentation and monitoring. Big data and data analytics are the current industry buzzwords, but both are built upon the foundation of effective instrumentation and practical monitoring schemes. New technologies, new uses for existing technologies, and innovative applications for both will be covered.

We will more effectively exploit our resources with better understanding, analysis, and utilization of the information that our instruments and monitoring systems are providing.

Thank you to our Sponsors

Committee Members

CO-CHAIRPERSON
Rick Stahl
Cona Resources

CO-CHAIRPERSON
Brad Kearl

Kim Bergman
ConocoPhillips Canada

Daniel Booy
C-FER Technologies

Ebrahim Ghanbari
Weatherford Canada

John Graham
Suncor Energy

Kyle Lagran
Core Laboratories

Kyle Molzan
Petrospec Engineering Inc.

Miodrag Pancic

Kent Qin
Osum Oil Sands Corp.

Javier Sanmiguel
Devon Energy

Glenn Thoeben
Spartan Controls Ltd.

Scott Thompson
Athabasca Oil Corporation

Faiz Zaini
Baker Hughes, a GE Company

Mohammad Zeidani
CNOOC International

Who We Are
SPE is the largest individual member organization serving managers, engineers, scientists and other professionals worldwide in the upstream segment of the oil and gas industry.
**General Information**

**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 equal 8 contact hours of participation. CEUs are 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.

**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**
SPE reserves the exclusive rights to all video/audio recording or reproductions of the workshop.

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Any person attending may be photographed or videotaped, and by your attendance, you give permission to use your image in possible future marketing publications including print, online, and video.

**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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**Schedule Overview**

**Tuesday, 4 June 2019**

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DAY 1: Tuesday, 4 June 2019

0755–0800
Opening Remarks
Moderators: Brad Kearl, Rick Stahl, Cona Resources

0800–0830
Opening Keynote: Measurement Challenges in Thermal Heavy Oil Production
Craig Marshall, TUV SUD NEL
As a Flow Measurement Consultant at NEL, Craig’s responsibilities include working on a large variety of R&D, training and consultancy projects focused on single and multiphase metering technology. He performs a variety of roles including project formulation, project management, technical lead, planning/delivering test work, data analysis and report writing.

0830–1000
Session 1: Understanding Well Inflow Using DAS
Session Chairpersons: Ebrahim Ghanbari, Weatherford Canada
Mohammad Zeidani, CNOOC International
Risk management in thermal wellbore integrity can be promoted by the proper collection, processing and interpretation of data from various types of wellbore instrumentation. Challenges associated with current implementation of downhole instrumentation versus a touch on new technologies, improving the interpretation of the data provided by these instruments, and how to use this information to further improve well operations will be the focus of this session.

• Presentation 1: FCD Acoustic Testing at Multiphase SAGD Conditions to Improve Interpretation of DAS Field Data
  Daniel Booy, C-FER Technologies
  Lyle Burke, Devon Energy

• Presentation 2: Evaluating Flow Control Device Performance in SAGD Production Wells with Fibre-Optic DTS and DAS
  Lyle Burke, Devon Energy
  Ben Banack, Halliburton

• Presentation 3: Utilizing DAS for Steam Plume Migration and Production in SAGD Operations
  Carson Laing and Andres Chavarria, OptaSense

1000–1030
Coffee Break

1030–1200
Session 2: Observation Wells
Session Chairpersons: Kim Bergman, ConocoPhillips Canada
  Kyle Molzan, PetroSpec Engineering Inc.
All operators are required to monitor temperature & pressure distribution within a producing pool and for in-situ thermal projects; however, the value of reservoir monitoring can be much more significant than meeting regulator directives. The number and type of vertical wells used to monitor projects can vary greatly, but the significance of the data collected is often overlooked. This session takes a closer look at opportunities to increase the value of collected data, improve completion designs, and manage unique challenges presented by observation wells.

• Presentation 1: Evaluation of Observation Well Completions and Case Study of Methanol/Water Vapor Reflux
  Ricardo Munoz, PetroChina

• Presentation 2: Piezometer Data: Real or Broken?
  Kim Bergman, ConocoPhillips

1200–1330
Lunch

1330–1430
Session 3: Applications of Well Data for Improving Operations
Session Chairpersons: Daniel Booy, C-FER Technologies
Scott Thompson, Athabasca Oil Corporation
This session will showcase operators’ experiences with well measurements. The common theme is related to the interpretation and trust in the information that is being relayed back to the operator. The practice of ensuring that quality information is used and the potential effects of that information interpretation on operational decisions and outcomes will be discussed.

• Presentation 1: Value of DTS for Short Temperature Fall Offs (TFO)
  Adrian Strong, Canadian Natural Resources Ltd.

• Presentation 2: Key Data for Optimizing SAGD Fields: SOR and Improving the Elusive Watercut Metering?
  Bruce James and John Graham, Suncor Energy

1430–1500
Coffee Break

1500–1600
Session 4: Wellbore Integrity and Predictive Flow Monitoring with DTS and DAS
Session Chairpersons: Kyle Molzan, PetroSpec Engineering Inc.
  Rick Stahl, Cona Resources
This is a unique session where we will get a taste of what the future holds for downhole instrumentation from the wellbore integrity standpoint. The first presentation will start with cutting edge predictive analysis in flow and wellbore monitoring utilizing DTS, DAS data and other global sensors inputs in real time. It will be followed by a case study on how downhole instrumentation plays a crucial role in telling your wellbore integrity is at stake.

• Presentation 1: Building Data-Driven Permanent Real-Time Full Wellbore Flow Monitoring Using Hybrid Distributed Fibre-Optic Simultaneous Vibration and Temperature Sensing Technology
  Mahdi Mahmoudi, RGL Reservoir Management Inc.
  Daniel Keough, Precise Downhole Services Ltd.

• Presentation 2: Well Failure Analysis via Real-Time DTS: Can You Stop the Inevitable?
  Donny Johnson, PetroChina Canada

1600–1730
Networking Reception
Stay and connect with your industry peers at the Networking Reception immediately following the Workshop.

Hot appetizers and beverages will be served.
DAY 2: Wednesday, 5 June 2019

0700–0800
Breakfast

0800–0930
Session 5: Multiphase Measurement and ESP Optimization
Session Chairpersons: John Graham, Suncor Energy
                        Javier Sanmiguel, Devon Energy

In this session two presentations will be focused on multiphase metering. The first presentation will be on field implementation and validation of water cut measurements using Magnetic Resonance (MR) technology. The second is an update of the field status and learnings using Multiphase metering to determine oil rate, water rate and gas rate. An additional presentation will discuss how ESP performance can be managed and optimized by analyzing the VFD performance without the use of filter and transformer.

- Presentation 1: Water Cut Metering Using Magnetic Resonance (MR) Technology
  Apostolos Kantzas and Jon Bryan, PERM Inc.

- Presentation 2: Managing Downhole Assets with Direct Connected VFDs
  Patrick Robinson, Altelec

- Presentation 3: Purpose Engineering
  Dean Piquette, Worley Parsons

0930–1000
Coffee Break

1000–1200
Session 6: New Monitoring Technologies
Session Chairpersons: Kyle Lagran, Core Laboratories
                      Faiz Zaini, Baker Hughes, a GE Company

The first presentation will be on Analyzing SAGD Producer Wellbore Instability and ESP Deterioration Using Dynamic Flow Simulations. The second presentation focuses on a new way of monitoring erosion and corrosion. The third presentation concentrates on using Stranded VFD data to improve ESP reliability. The fourth presentation discusses the value of Monitoring ESPs with Electrical Gauges.

- Presentation 1: Analyzing SAGD Producer Flow Instability and ESP Deterioration Using Dynamic Flow Simulations: A Field Case Study
  Song Shang, Schlumberger

- Presentation 2: Closing the “Gap” with Online UT
  Matthew Walker, Suncor Energy
  Joey Clarke, Spartan Controls

- Presentation 3: Health Monitoring of Electrical Submersible Pumps in Steam Assisted Gravity Drainage Wells
  Rahul Raveendran, University of Alberta

- Presentation 4: Electronic Gauges – The Future of Bottom Hole Pressure
  Scott Guichler, Suncor Energy

1200–1300
Lunch

1300–1430
Session 7: Data In, Insights Out-Case Studies of Extracting Actionable Insights from Data that Improve the Bottom Line
Session Chairpersons: Glenn Thoeben, Spartan Control Ltd.
                      Kent Qin, Osum Oil Sands Corp.

Recent developments in sensor technologies (such as distributed sensors, and IoT), coupled with new software capabilities have fueled our appetite for real-time, high fidelity data, at ever finer granularity. This has contributed to an unprecedented rate of growth in data availability that has created confusion in what data has value in this new era of big data; and has limited the ability of organizations to benefit from this data by turning data into actionable information.

In this session, we bring together cases studies from industry that showcase the best practices of data identification, collection, and using novel processes and tools of extracting information from the data and turning it into actionable insights.

- Presentation 1: Questions Can Be Answered by the Liquid-Pool Depletion Model for SAGD Application: Optimum Subcool, Localized Hot Spots Effects, FCD Design and Instability Effect of Solvent
  Mazda Irani, RPS Energy

- Presentation 2: AMS Implementation for Maintenance and Reliability at MEG Energy
  Jordan Cyron, MEG Energy

- Presentation 3: Buzzwords vs. Reality
  Steve Barker, Spartan Controls

1430–1500
Coffee Break

1500–1630
Session 8: Panel Session–Measuring the Success of Downhole Monitoring Systems
Session Chairpersons: Brad Kearl
                      Rick Stahl, Cona Resources

Establishing reliability and confidence in downhole monitoring systems is a constant effort for thermal operators. Choosing a technology and determining how to best deploy it are just the first decisions that must be made. Decisions such as: Fibre or thermocouple? Permanently installed or drive by surveys? In coil or pump down? Every well, or a sample of wells? Once the data is retrieved, the interpretation and scrutiny of it must take place. Is the data absolute quantitative truth, or qualitative indication or neither? If the data is in question, how much effort (time and money) is reasonable to repair/remediate the instrumentation? This panel will discuss current industry best practices used to improve the quality and confidence of our data streams, while also commenting on the instrumentation and data philosophies that their respective organizations follow.

Panelists:
Mark Bedry, Opcon Inc.
Lyle Burke, Devon Energy
John Graham, Suncor Energy
Patrick Nolan, Canadian Natural Resources Ltd.

In Lieu of Speaker and Committee Gifts ...
On behalf of Invited Speakers and the Workshop Committee, SPE Canada is pleased to make a donation of $500 to support Roots to STEM. This non-profit organization provides in-school and extra-curricular Engineering programs for youth. For more information about Roots to STEM, visit: http://roots2stem.ca/