SPE/CHOA Slugging it Out Conference XXVI

CRUDER THINGS

17 April 2018 | BMO Centre at Stampede Park
Calgary, AB, Canada

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Society of Petroleum Engineers

Canadian Heavy Oil Association

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SCHEDULE OVERVIEW (AS OF 10 APRIL 2018 | SUBJECT TO CHANGE)

0700–0800	Registration
0700–0800	Hot Breakfast
0800–0815	Welcome and Opening Remarks
0815–0945	**Session 1: Non Thermal** **1 Opening Keynote: The First Nations-led Energy Corridor: The Eagle Spirit Solution for getting Canadian Energy Resources to World Markets** **Calvin Helin**, President & Chairman of Eagle Spirit Energy Holdings Ltd. **2 The Power of Multilaterals at Marten Hills** **Xin Zhang**, Cenovus Energy **3 Less is More? Phased, Short, Perforated Completions of Horizontal Monobores** **Jason Van Dusen**, Rifle Shot Oil Corp.
0945–1015	Morning Coffee Break
1015–1145	**Session 2: International** **1 History and Current Status of Heavy Oil Development and Technologies in China** **Xiuluan Li**, RIPED, PetroChina **2 Challenges and Learnings From a Heavy Oil Project in Albania** **Nick Tumu**, Bankers Petroleum **3 Development of the Biggest European SAGD Project** **Ravil Ibatullin**, TAL Oil Ltd.
1145–1300	Lunch and Comedian
1300–1500	**Session 3: New Technology** **1 Emerging Technologies in Oil Sands** **Ian Gates**, University of Calgary **2 Overview of History, Status and Outlook for Solvent Use to Recover Bitumen** **Bruce Carey**, Peters & Co. Ltd. **3 Demystifying the IIOT for Heavy Oil** **Dave Shook**, Dave Shook & Associates **4 RF Heating: Results from a 100 kW Field Test** **Damir Pasalic**, Acceleware Ltd.
1500–1530	Afternoon Coffee Break
1530–1700	**Session 4: Project Updates** **1 The Effectiveness of Flow Control Devices in the Leismer Asset** **Shaista Esmail**, Athabasca Oil Corporation **2 Update of Imperial's LASER (Liquid Addition to Steam for Enhanced Recovery) Project at Cold Lake** **Richard Smith**, Imperial Oil **3 Update on JACOS Hangingstone Expansion Start-up** **Christian Canas**, JACOS
1700–1830	Sluggin' It Back! Networking Reception and Live Music

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Heath Williamson
BlackPearl Resources Inc.

Vice Chairperson
Jarrett Dragani
Cenovus Energy

Richard Chan
Suncor Energy

Stephan Foust
Athabasca Oil Corporation

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Nick Tumu
Bankers Petroleum Ltd.

Jeremy Walter
Computer Modelling Group Ltd.

K.C. Yeung
K C Yeung Canadian Enterprise

Jian-Yang Yuan
MEG Energy

OPENING KEYNOTE PRESENTER

The First Nations-led Energy Corridor: The Eagle Spirit Solution for Getting Canadian Energy Resources to World Markets

Keynote Speaker: Calvin Helin
President & Chairman of Eagle Spirit Energy Holdings Ltd.

Calvin Helin, will present on the five-year odyssey to:

- acquire First Nations support for a crude oil pipeline—to end up with unanimous support for an energy corridor
- the formation and role of the Chiefs Council
- the obstacles along the way
- the status of the project and the way forward
- problems and solutions with American ENGOs seeking to dictate policy on First Nations traditional lands—the harm they cause to communities and to the Canadian economy

In Lieu of Speaker and Committee Gifts ...

On behalf of the Slugging it Out Program Committee and Speakers, a donation of **CAD 600** has been made to Brown Bagging for Calgary's Kids. BB4CK works in partnership with Calgary Schools to make and deliver free healthy lunches for students who would otherwise go hungry. This donation has been made at the request of the committee, in lieu of speaker and committee gifts.

SESSION 1: NON THERMAL

Session 1 Sponsor: wood.

Session Chairpersons: **Stephan Foust**, Athabasca Oil Corporation; **Rich Stahl**, Cona Resources Ltd.; **Nick Tumu**, Bankers Petroleum Ltd.

PRESENTATION 2

The Power of Multilaterals at Marten Hills

Xin Zhang
Cenovus Energy

In 2016, Cenovus drilled and completed a 4-leg multilateral well in the Marten Hills field with a total open-hole completion length of 6,745m. The well was a major achievement within the company and its completion style has proven to be highly productive for producing oil within formations containing medium to heavy crude that may otherwise be uneconomic with horizontal or vertical wells. In 2017, Cenovus followed suit by drilling an 8-leg multi-lateral well from the same pad with a total open-hole completion length of over 15km. The open-hole multi-lateral style of exploitation has proven to be an innovative application of existing technology towards new problems. Multi-lateral wells can reduce overall surface disturbance and enhance the economics of an oil play. This talk will seek to discuss the drilling and operational learnings from the application of multi-lateral wells at Marten Hills and its implications as an emerging off-the-shelf technology to the industry in Alberta.

PRESENTATION 3

Less is More? Phased, Short, Perforated Completions of Horizontal Monobores

Jason Van Dusen
Rifle Shot Oil Corp.

RSO has commercialized a novel completion methodology in the Provost-area of Alberta which it uses to exploit conventional, oil-over-water reservoirs. RSO terms its approach Horizontal Multi-Perf (HZMP).

HZMP involves drilling a monobore horizontal and producing discrete intervals via phased, perforated completions. Exploitation starts at the toe of the well and consists of three to six intervals. Subsequent intervals are isolated from previous intervals by bridge plugs.

The technique results in increased recovery factor and improved economics as compared to conventional horizontal development. In addition, HZMP permits economic exploitation of marginal pools which would be impossible with conventional methods.

RSO has drilled 70 wells growing its production economically through the recent period of low commodity prices. With earlier analogs from predecessor companies and internal data, there are about 30 examples of effective completions of successive intervals in HZMP wells which substantiate the technique.

The presentation will cover the essential details of the technique, discuss the company's learnings to date and present a case history form a field developed using exclusively HZMP.

SESSION 2: INTERNATIONAL

Session Chairpersons: **K.C. Yeung**, K C Yeung Canadian Enterprise; **Jian-Yang Yuan**, MEG Energy

PRESENTATION 1

History and Current Status of Heavy Oil Development and Technologies in China

Xiuluan Li, RIPED, PetroChina

The development of heavy oil recovery began in the early 1980s when the first steam huff and puff pilot test was successfully carried out in a 1,600m depth heavy oil reservoir in Liaohe oil field. Since then, the chapter of heavy oil development has been started in China. The heavy oil reservoirs in China are continental deposited and are mostly deeper (up to 1,700m in depth), thinner, and more heterogeneous than their counterparts in Canada. To meet the challenges and solve the technical problems in the development of these heavy oil reservoirs, numerous researches and efforts were carried out by PetroChina. Four stages of technological innovations have been experienced in Petrochina, involving the steam huff and puff pilot tests in the conventional heavy oil reservoirs

CONTINUES

SESSION 2: CONTINUED

(with crude oil viscosity less than 10000 mPa·s @ 50°C, the steam huff and puff technology researches in the extra-heavy oil reservoirs(with crude oil viscosity more than 10000 mPa·s @ 50°C, the steam flooding pilot tests in the deep heavy oil reservoir(about 1000 m in depth) and steam assisted gravity drainage pilot tests in extra-heavy oil reservoirs. Currently, the Steam Huff and Puff, the Steam Flooding, the Steam Assisted Gravity Drainage and In Situ Combustion technologies with their diversified supporting technologies and processes have been successfully developed and applied in oil fields in China, including Liaohe, Xinjiang, Tuha oil fields. All these developments have guaranteed the stable oil production in China.

PRESENTATION 2

Challenges and Learnings From a Heavy Oil Project in Albania

Nick Tumu
Bankers Petroleum Ltd.

The Patos-Marinza Oil Field, located in Albania, was discovered in 1928. The field contains approximately 5.4 billion barrels of oil in place, consisting of approximately 22 different sandstone formations. The oil gravity within the field varies from less than 3° API to 33°API and the live oil viscosity is estimated to be between 1 cP and 10,000+ cP. Primary exploitation technologies included vertical wells completed in multiple commingled formations, followed by horizontal wells. Since a polymer flood pilot was initiated in 2012, secondary production pushed daily production above 20,000 bopd in 2014. 85 patterns are now in full polymer flood development and half of the daily production is attributed to the flood. The project uses a line drive between stacked horizontal wells within multiple formations, and they target oil gravities of 8 to 12° API and live oil viscosities of 600 cP to 1,600 cP. Tertiary exploitation is now being explored, with a Cyclic Steam Stimulation pilot in the South of the field. Performance from 2 deviated wellbores is currently being assessed for further development. This presentation will review the exploitation, performance and challenges of the Patos-Marinza Project.

PRESENTATION 3

Development of the Biggest European SAGD Project

Ravil Ibatullin
TAL Oil Ltd.

Heavy oil deposits in Tatarstan, Russia, contain huge resources of oil with viscosity up to 145 Pa·s. The shallow oil deposits are characterized by an uneven distribution of oil saturation zones, an oil-water contact nonconformity with bedding, a presence of water-saturated "lenses" inside the net oil pay, and small size of fields.In 2006, JSC "Tatneft" started a new stage of development of the first SAGD project of the Ashalchy heavy oil field by drilling and successfully operating different kinds of SAGD wells. Today, there are near 200 SAGD pairs and 30+ CSS wells in the Tatneft's heavy oil project. Various geological conditions, heterogeneity of oil viscosity, have demanded specific technological solutions to control steam injection and oil production.As a result of the new technologies and solutions developed, the maximum well flat production was reached 1.9 times faster, and the steam-oil ratio (SOR) was reduced 1.2 times while the recovery rate was increased 1.7 times. The current project SOR is less 2.8, and the current production for the whole project has a rate more than 35,000 bbl/day.

LUNCH COMEDIAN

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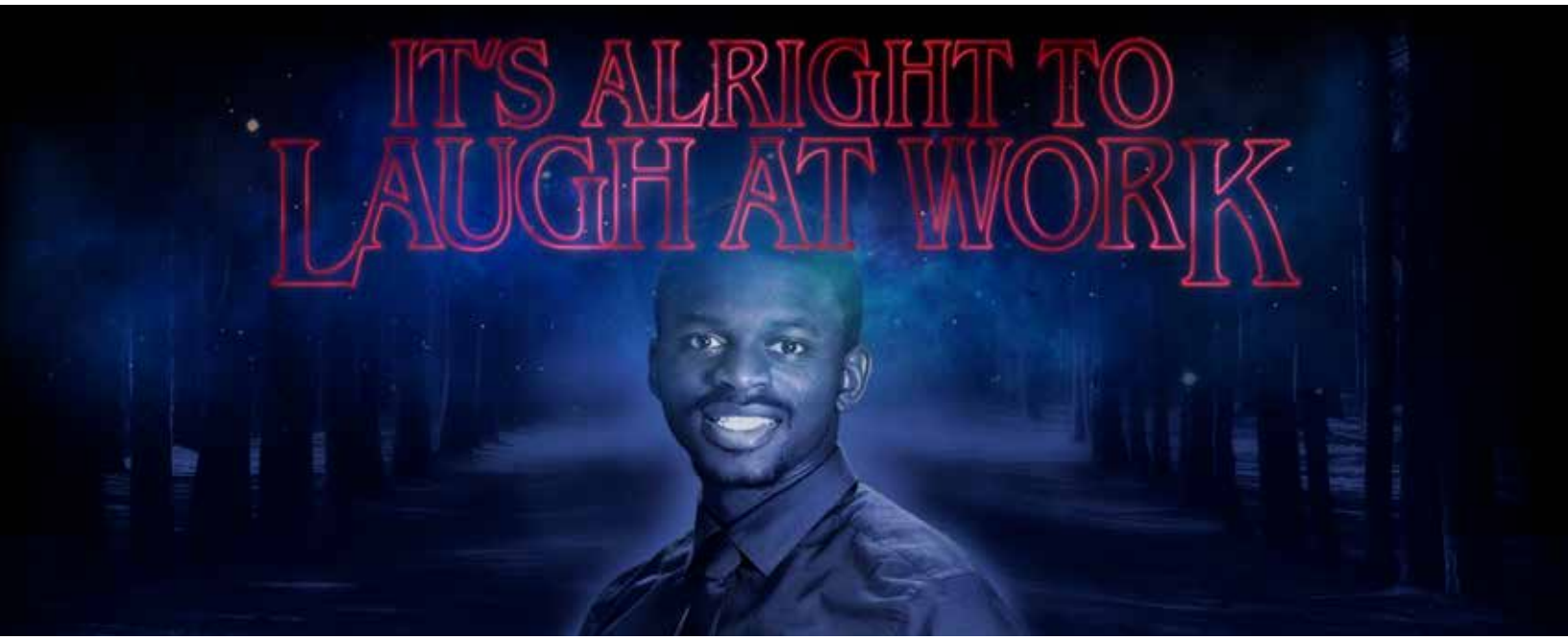

Lunch Comedian:
Kome Eto, **Suncor Energy**

Kome Eto is Reservoir Engineer at Suncor Energy on the Firebag team. Previously, Kome worked on Suncor's Mackay River project also as a Reservoir Engineer. Kome graduated from the University of British Columbia with a Bachelor's degree in Mechanical Engineering. Growing up through school and work, Kome has experience living in a few different cities and countries all around the world. In his spare time, Kome enjoys playing soccer and making people laugh, sometimes simultaneously.

SESSION 3: NEW TECH

Session Chairpersons: **Mary Hansen**, McDaniel & Associates; **Glenn Thoben**, Spartan Controls; **Jeremy Walter**, Computer Modelling Group

PRESENTATION 1

Emerging Technologies in Oil Sands

Ian Gates
University of Calgary

The oil sands industry has been inventive over the past 50 years with continuous reduction of the invested energy to oil ratio. With pressures for cleaner, more economic, production, the oil sands industry has been creative to find further enhancements and new processes to move the needle on carbon intensity, energy efficiency, and water consumption. In this talk, current and emerging technologies for in situ production of oil sands resources will be described. Thoughts on the future development of oil sands will also be described.

PRESENTATION 2

Overview of History, Status and Outlook for Solvent Use to Recover Bitumen

Bruce Carey
Peters & Co. Limited

This presentation provides a comprehensive review of the use of solvents by the heavy oil industry to improve bitumen recovery. Solvent-based technologies are discussed in terms of:

1. What has been industry's experience?
2. How has the technology performed?
3. How have solvents been selected?
4. Where is the industry headed?

Some processes have already been commercialized, some will be commercially applied within the next 5 years, and some will most likely await the mid-to-late 2020's – or later - for commercial implementation.

Key conclusions and observations from this work are:

1. There has been substantial field testing by the industry experience to date; results have been "mixed", but some have shown encouraging results.
2. The requirement for high solvent recovery is the primary economic risk, but some results to date suggest that this can be achieved.
3. For solvent-steam processes, industry leaders are currently divided between using low molecular weight hydrocarbons (propane, butane) versus higher molecular weight solvents such as condensate.

PRESENTATION 3

Demystifying the IIOT for Heavy Oil

Dave Shook
Dave Shook & Associates

Over the past few years, terms like "Internet of Things", "big data" and "machine learning" have become part of many vendors' marketing communications, with all sorts of claims about the opportunities, and the consequent risks of missing out. While many of these terms are just rebranding of things well-performing companies have been doing for years, there actually are some technological changes happening that are opening new opportunities for operating companies to reduce cost and improve effectiveness. Capturing some of the opportunities will require companies to change how they do business, though.

This presentation will explain a number of trendy terms within the context of heavy oil operations, discuss some of the relevant (and irrelevant) opportunities for heavy oil operators, and describe how they can affect how companies operate, as well as the potential impact on bottom line.

PRESENTATION 4

RF Heating: Results from a 100 kW Field Test

Damir Pasalic
Acceleware Ltd.

An RF XL Field Test was completed one year ago. This presentation describes the design and preparation of the test, how it was carried out, and the results obtained, as well as the matching of the results through reservoir simulation. The test involved installation of radio frequency (RF) antennae in a shallow ditch, with temperature measurement at defined locations in the "reservoir". A custom designed RF generator and system provided the power supply. All operational data were monitored and recorded over the several days to validate the technology and the modeling.

SESSION 4: PROJECT UPDATES

Session Chairpersons: **Richard Chan**, Suncor Energy; **Jarrett Dragani**, Cenovus Energy; **Carmen Lee**, Husky Energy

PRESENTATION 1

The Effectiveness of Flow Control Devices in the Leismer Asset

Shaista Esmail
Athabasca Oil Corporation

The Leismer Asset at Athabasca Oil Corporation installed 3 tubing deployed Flow Control Devices (FCDs) in 2017 on underperforming wells to increase their production. The results from the installations have been positive as all three installs had a significant increase in production rates. The initial FCD candidate selection was dictated mainly by a wells past performance, if the well was not meeting historical production rates. Production uplift from all 3 candidates were expected to be similar based on production potential when selected, however the performance varied amongst the installs. Several parameters were investigated, comparing the well characteristics before and after the FCD install to determine what had the largest impact on production uplift. Based on this study a new selection criteria for FCD well selection was generated. The presentation will share the results from the FCD installs and will present on the new selection criteria recommended for selecting future wells to be re-completed with tubing deployed FCDs.

PRESENTATION 2

Update of Imperial's LASER (Liquid Addition to Steam for Enhanced Recovery) Project at Cold Lake

Richard Smith
Imperial Oil

LASER is being applied commercially at Imperial's Cold Lake field with low concentrations (<8%) of diluent being co-injected with steam. LASER was first piloted from 2002 – 2007. The first commercial application, beginning in 2007, was limited to 9 pads covering approximately 900 acres. Bitumen uplift and diluent recovery expectations were met. Another cycle of LASER was applied to 4 of these pads in 2012 with similar bitumen uplift results. Diluent recovery in this area is continuing with recently drilled infill wells. A second commercial application of LASER began in midyear 2017 at the Mahihkan North pads. This area is about 5 times larger at approximately 4600 acres, and includes both horizontal and deviated wells. Early observations at Mahihkan North reinforce the importance of diluent reproduction measurement to the success of steam-solvent processes.

PRESENTATION 3

Update on JACOS Hangingstone Expansion Start-up

Christian Canas
JACOS

JACOS' Hangingstone Expansion SAGD project achieved first steam on April 28th, first oil on August 3rd, 2017 and the field is now under controlled production mode. Preliminary results show the production ramp-up towards its planned rate of 20,000 bbl/d with 32 well pairs is better than prior expectation. This presentation will focus on lessons learned during our circulation phase such as recommended steam circulation rates to ensure proper heating and safe warm up of the wells, communication tests, temperature fall off tests to determine proper steam splits, and steam soaks to improve temperature conformance. Criteria for a successful conversion from circulation to SAGD will also be discussed, followed by a compilation of issues encountered during circulation and ramp-up.

SLUGGIN' IT BACK RECEPTION

Reception Sponsor: INNOVA GLOBAL

1700-1830

Vance Alexander and Anthony Blaine have been providing a unique live music experience for all types of events since they founded New Soul Duo in 2013. In a short time, they have become one of Calgary's most sought after live bands. This energetic power duo performs the top billboard songs from every decade with a fresh new feel. One of the most impressive aspects of New Soul Duo is their ability to deliver much more than a standard acoustic duo. They achieve the sound of a full band through harmonies, sweet guitar tones, kazoo, a one of a kind percussion drum setup.

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Daniel Auld	AGAT Laboratories
Robert Paul	AGAT Laboratories
Haitham Fath	Altus Group
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Stephan Foust	Athabasca Oil Corporation
Tarek Hamida	Athabasca Oil Corporation
Fabian Patino	Athabasca Oil Corporation
Ian Rudiger	Athabasca Oil Corporation
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Karl Miller	Avalon Oil & Gas Ltd.
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Alexander Choo	PetroChina Canada
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Robin Happy	Petrochina Canada
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Kyle Molzan	Petrospec Engineering Ltd.
Zach Linkewich	Phase Thermal Recovery Inc
Gustavo Bracho	Phillips 66
Ben Banack	Pinnacle Canada
Richard Masson	Planning Solutions
Yuchang (Bob) Ding	PMC Pumps / Precision Manufacturing Corp
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Mike Adams	PROMORE
Kyle Lagran	PROMORE
Ben Hollands	PTTEP Canada Ltd.
Steven Winkler	Quantum Downhole Systems Inc.
Xiuluan Li	RIPED PetroChina Co. Ltd.
Goran Andrijasevic	Reservoir Group
Scott Erickson	Reservoir Group
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Jason Van Dusen	Rifle Shot Oil Corp.
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Michelle Wolanski	Suncor Energy Inc.
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Juan Pablo Martin	Tenaris
Paul Guilfoyle	Tendeka
Camelia Dumitrescu	Terra-IQ Ltd.
Reilly Cowan	TOP Analysis
MJ Banwell	TRE Altamira Inc.
Giacomo Falorni	TRE Altamira Inc.
Dimitra Katsuris	TRE Altamira Inc.
Nora Toro	TRE Altamira Inc.
Osama EL Helali	TSI
Iggy Domagalski	Tundra Process Solutions Ltd.
Stan Pankratz	University of Alberta
Ian Gates	University of Calgary
Mohsen Keshavarz	University of Calgary
Robert Moore	University of Calgary
Belenitza Sequera-Dalton	University of Calgary, ISCRG
John Martinuk	Upside Engineering Ltd.
Curtis Veer	Upside Engineering Ltd.
Trevor Baird	Variperm Canada Ltd.
Colin Matthews	Variperm Canada Ltd.
Jesse Stevenson	Variperm Canada Ltd.
Aubrey Tuttle	Variperm Canada Ltd.
Kelsey Somerville	Voice Management Ltd.
Robert Cerminara	Weatherford Canada
Blair Neil	Weatherford Canada
Jeffrey Clayton	Welltec Canada
Abdulla Barahim	WIKA Instruments Ltd.
Nady Ferraras	WOOD
Bob Goshtabsi	WOOD
Matt Harms	WorleyParsonsCord

SPE UPCOMING EVENTS

Date	Title	Location
18–19 Sep 2018	**SPE/WIA Well Abandonment and Integrity Workshop**	Calgary, Alberta
Nov 2018	**SPE Montney Workshop**	Calgary, Alberta
27–29 Nov 2018	**SPE Thermal Well Integrity and Design Symposium**	Banff, Alberta

SPE UPCOMING TRAINING COURSES

Date	Title / Instructor	Location
8-10 May 2018	**Well Test Interpretation** / Louis Mattar	Calgary, Alberta
14-18 May 2018	**Unconventional Resource Assessment and Valuation** / James (Jim) Gouveia	Calgary, Alberta
18-22 Jun 2018	**Evaluation of Canadian Oil and Gas Properties** / Sproule Academy	Calgary, Alberta
10-14 Sep 2018	**Evaluation of Canadian Oil and Gas Properties** / Sproule Academy	Calgary, Alberta
17-21 Sep 2018	**Evaluating Tight Oil and Gas Reservoirs** / Creties Jenkins	Calgary, Alberta

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ABOUT SPE

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.

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CHOA UPCOMING EVENTS

Date	Title	Location
9 May 2018	**CHOA Poker Tournament**	Cowboys Casino
7 May 2018	**Environment Technical Panel**	Calgary Petroleum Club
6 June 2018	**Dillings and Completions Technical Luncheon**	Calgary Petroleum Club
20 June 2018	**CHOA Sharecase**	Calgary Petroleum Club
4 July 2018	**Stampede Party**	National on 8th, Calgary
6 September 2018	**Golf Tournament**	Priddis Greens Country Club

Canadian Heavy Oil Association

ABOUT CHOA

Accelerate your career through knowledge and relationships in the heavy oil industry.

The purpose of the CHOA is to strengthen Canada's energy industry by providing our members and sponsors and the general public with educational and social programs that accelerate and expand their knowledge, relationships and influence in our heavy oil community. Building on the expertise of our members and volunteers, our programs range from highly technical events to cross-disciplinary introductory sessions. Our activities add intelligence and clarity across our industry and provide volunteers the opportunity to participate and lead exciting initiatives. The strength of the heavy oil community is the people that discover, innovate, produce and support this critical energy resource. Our social events are built specifically to foster positive and dynamic connections.

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