SPE Thermal Well Integrity and Design Symposium

19–21 November 2019 | The Fairmont Banff Springs Hotel
Banff, Alberta, Canada

go.spe.org/19ThermalSymposium
Thank You to Our Sponsors

Corporate and Bowling Social Event Sponsor

Gold Partner

Silver Partner

Silver Partner

Notebooks and Pens Sponsor

Candy Station Sponsor

Committee

**Symposium Chairperson**
Barkim Demirdal  
Canadian Natural Resources Limited

Wendy Akins  
CNOOC International

Linda Blair  
EVRAZ NA

Mark Chartier  
Noetic Engineering

Joel Colucci  
Stream-Flo

Kousha Gohari  
Baker Hughes

Christian Hamuli  
Resource Energy Solutions

Emad Hanna  
Tenaris

**Symposium Vice Chairperson**
Bruce Thornton  
Osum Oil Sands Corporation

Doug Hollies  
Remedy Energy Services

Lawrence Jonker  
Alberta Energy Regulator

John Krener  
Chevron

Ronny Lee  
Canadian Natural Resources Limited

Raina May  
MEG Energy

Justin Novak  
Cenovus Energy

Trent Pehlke  
Suncor Energy

**Symposium Vice Chairperson**
Todd Zahacy  
C-FER Technologies

Scott Pruett  
Aera Energy LLC

Maxim Skiliarov  
Husky Energy

Jesse Stevenson  
Variperm Canada Ltd.

Colby Sutton  
RGL Reservoir Management Inc.

Blair Temple  
Imperial

Gina Wozney  
GRW Engineering
Welcome to the SPE Thermal Well Integrity and Design Symposium

The main objective of well integrity is to prevent the uncontrolled release of formation fluids throughout the life cycle of a well. While this objective may seem to be relatively straightforward, achieving this can indeed be quite challenging, especially for wells in thermal operations where the well components and surrounding formations experience extreme temperature variations, thermal-induced loads, corrodents and operational conditions, with many of the factors and damage mechanisms yet to be understood given the challenges of the downhole environment.

The Design considerations early in the planning phase should include the reliability of the wellbore barriers and sand control systems during the well construction, installation, operation, servicing and decommissioning phases of a thermal well's life. Each of these phases bring their own unique challenges and difficulties that need to be suitably addressed with the actions effectively implemented and monitored to maintain well integrity over the cycle of the well. Technical challenges, such as tubular behavior under post yield conditions; interaction between the wellbore and the formations; cement systems and tubulars under thermal loading/cycles; and the impact of production optimization and sand control designs to the overall well life-cycle requires a collaborative effort from across the industry to share their learnings.

In addition to technical challenges, our industry is also facing a transformation where utilization of data management tools is essential in order to process all the information collected and to make the best use of available resources. If we improve on all of these considerations, we will be able to make smarter decisions related to the impact of design of components for well efficiency and deliverability while maintaining well availability and integrity.

Join your fellow SPE members, including thermal operators and industry experts engaged in the wide range of topics and specializations related to well design and integrity at this year’s 2019 SPE Thermal Well Integrity and Design Symposium. This annual technical gathering continues to be one of the premier industry events of the thermal well community where attendees share their recent experiences, solutions and on-going challenges associated with the design, drilling, operation and decommissioning of thermal wells.

Barkim Demirdal
2019 Chairperson

Table of Contents

Sponsors 2
Committee 2
Schedule Overview 4
General Information 5
Technical Program 6
Knowledge Sharing ePosters 15
Venue Floor Plan 16
Exhibitors 16

About the Society of Petroleum Engineers

The Society of Petroleum Engineers (SPE) is a not-for-profit professional association whose more than 168,000 members in 144 countries are engaged in oil and gas exploration and production. SPE is a key resource for technical knowledge providing publications, events, training courses, and online resources at www.spe.org.
## Schedule Overview (as of 13 November 2019)

### Tuesday, 19 November

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0700–0800</td>
<td>Registration</td>
<td>Foyer</td>
</tr>
<tr>
<td>0700–0800</td>
<td>Breakfast</td>
<td>Van Horne C</td>
</tr>
<tr>
<td>0800–0930</td>
<td>Opening Keynote Panel: The Canadian Thermal Industry—Oil Rich/Pipeline Poor</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>0930–1000</td>
<td>Coffee Break, ePoster, and Exhibition</td>
<td>Van Horne B</td>
</tr>
<tr>
<td>1000–1200</td>
<td>Session 1: Casing and Well Design</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1200–1330</td>
<td>Lunch and Exhibition</td>
<td>Van Horne B/C</td>
</tr>
<tr>
<td>1300–1330</td>
<td>Lunch Presentation: Overview of CSA Z624 — Well Integrity Management for Petroleum and Natural Gas Industry Systems</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1330–1500</td>
<td>Session 2: Thermal Isolation Technology</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1500–1530</td>
<td>Coffee Break, ePoster, and Exhibition</td>
<td>Van Horne B</td>
</tr>
<tr>
<td>1530–1700</td>
<td>Session 3: Near-Surface Casing Corrosion on Thermal Walls</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1700–1830</td>
<td>Networking Reception</td>
<td>Van Horne B</td>
</tr>
<tr>
<td>1930–2130</td>
<td>Bowling Social <em>Sponsored by:</em> Variperm*</td>
<td>Banff Springs Bowling Centre</td>
</tr>
</tbody>
</table>

### Wednesday, 20 November

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0700–0800</td>
<td>Registration</td>
<td>Foyer</td>
</tr>
<tr>
<td>0700–0800</td>
<td>Breakfast</td>
<td>Van Horne C</td>
</tr>
<tr>
<td>0800–0900</td>
<td>Opening Keynote</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>0900–1000</td>
<td>Session 4: Instrumentation/DTS/DAS</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1000–1030</td>
<td>Coffee Break, ePoster, and Exhibition</td>
<td>Van Horne B</td>
</tr>
<tr>
<td>1030–1200</td>
<td>Session 5: Flow Control Devices</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1200–1330</td>
<td>Lunch and Exhibition</td>
<td>Van Horne B/C</td>
</tr>
<tr>
<td>1330–1500</td>
<td>Session 6: Geomechanics</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1500–1530</td>
<td>Coffee Break and Exhibition</td>
<td>Van Horne B</td>
</tr>
<tr>
<td>1530–1730</td>
<td>Breakout Sessions</td>
<td>Van Horne A/Edward Beatty/Baron Shaughnessy</td>
</tr>
</tbody>
</table>
Schedule Overview (as of 13 November 2019)

Thursday, 21 November

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0700–0800</td>
<td>Registration</td>
<td>Foyer</td>
</tr>
<tr>
<td>0700–0800</td>
<td>Breakfast</td>
<td>Van Horne C</td>
</tr>
<tr>
<td>0800–0900</td>
<td>Opening Keynote</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>0900–1000</td>
<td>Session 7: Global Strategies for Maintaining Well Integrity <em>In Memory of Farhad Saeedi</em></td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1000–1030</td>
<td>Coffee Break and Exhibition</td>
<td>Van Horne B</td>
</tr>
<tr>
<td>1030–1130</td>
<td>Session 8: Barrier Management and Sand Control</td>
<td>Van Horne A</td>
</tr>
<tr>
<td>1130–1300</td>
<td>Lunch and Exhibition</td>
<td>Van Horne B/C</td>
</tr>
<tr>
<td>1300–1500</td>
<td>Session 9: Best Practices for FCDs in SAGD Wells</td>
<td>Van Horne A</td>
</tr>
</tbody>
</table>

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.

Symposium Format
Symposiums maximize the exchange of ideas among attendees and presenters through technical presentations followed by Q&A. Focused topics attract an informed audience eager to discuss issues critical to advancing both technology and best practices. There is a combination of papers and invited presentations which can take the form of case studies, best practices and technology reviews highlighting engineering achievements and lessons learned. In order to stimulate frank discussion, members of the press are not invited to attend.

Commercialism
In remaining consistent with symposium 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 2.45 CEU’s. One CEU equals 8 contact hours of participation. CEUs will be awarded through SPE Professional Development for participation and completion of SPE symposium. A permanent record of a participant’s involvement and awarding of CEUs will be maintained by SPE.

Proceedings
Technical papers will be published. A digital Proceedings card giving online access to papers is included in registration prices. Non-papered presentations, approved for release, will be shared after the Symposium.
Opening Keynote Panel: The Canadian Thermal Industry—Oil Rich/Pipeline Poor

This keynote session will look at Canada’s thermal industry from a local, national, and global perspective, and the challenges we face getting our product to market. The world needs our oil for transportation, housing, consumer products, the reduction of energy poverty in developing countries, and much more. As an industry we constantly improve our technology and methods of thermal extraction. We operate under the world’s highest regulatory and environmental standards to meet energy demand in a safe and sustainable way. And yet our market access options are limited and faced with obstacles. Why aren’t we acknowledged for leading the world with our HSE policies and high environmental standards? When will our efforts be enough to show our government and the world that we should be the supplier of choice? Where do we fit into the current political landscape? And when will market access issues be solved?

Panelists

Mike MacSween  
EVP Upstream, Suncor Energy

Deborah Yedlin  
Chancellor, University of Calgary

Gordon Lambert  
CEO, Alberta Energy Regulator

Moderators

Linda Blair  
EVRAZ NA

Barkim Demirdal  
Canadian Natural Resources Limited
**Tuesday, 19 November | 1000–1200**

**Session 01: Casing and Well Design**

**Session Chairpersons:** John V Krener, Chevron; Bruce Thornton, Osum Oil Sands Corp

This session will explore the effects of thermal cycles on tubulars and connections; presenting ideas and concepts to consider for thermal well design.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1030-1100</td>
<td>198701</td>
<td>Enhancement of Current Methodologies Used for Tubular Connection Product Line Validation</td>
<td>J. Xie, C-FER Technologies; J. Xie, PetroChina Tarim Oilfield Company</td>
</tr>
<tr>
<td>1100-1130</td>
<td>198699</td>
<td>Evaluating Temperature Rate Near the Wellbore Considering Slow Warm-Up Case for a SAGD Producer Well with Different Completion Configurations Using Dynamic Flow Simulations</td>
<td>C.B. Nascimento, Schlumberger; B. Demirdal, J.G. Gauthier, Canadian Natural Resources Limited</td>
</tr>
<tr>
<td>1130-1200</td>
<td>Invited</td>
<td>Lessons Associated with the Implantation of Strain-Based Full Scale Testing and the Thermal Well Connection Evaluation Protocol</td>
<td>N. Santi, E. Hanna, Tenaris</td>
</tr>
</tbody>
</table>

**Tuesday, 19 November | 1300–1330**

**Lunch Presentation: Overview of CSA Z624—Well Integrity Management for Petroleum and Natural Gas Industry Systems**

**Presenter:** Isaac Khallad, CSA Z624 Technical Committee Chair

**Tuesday, 19 November | 1330–1500**

**Session 02: Thermal Isolation Technology**

**Session Chairpersons:** Mark Andrew Chartier, Noetic Engineering 2008 Inc; Doug Hollies, Remedy Energy Services

Thermal stimulation provides unique challenges when considering zonal isolation. Large temperature excursions in operating steam injection and production wells necessitate a fit for purpose solution for maintaining a seal between the thermally stimulated zone and overburden formations. Ensuring long-term zonal isolation is traditionally done using cement which must isolate gassy and unconsolidated overburden formations despite changes in chemistry and severe mechanical loads imposed by casing expansion. This session will provide a view into novel techniques and technologies for improving wellbore conformance and long-term-post-production isolation in thermal wells.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1330-1400</td>
<td>199787</td>
<td>Silicate-Activated Geopolymer Alternatives to Portland Cement for Thermal Well Integrity</td>
<td>E. van Oort, The University of Texas at Austin; M. McDonald, National Silicates; M. Juenger, The University of Texas at Austin; X. Liu, Nalco Champion</td>
</tr>
<tr>
<td>1430-1500</td>
<td>198919</td>
<td>Foam Formulation for High Temperature SAGD Applications</td>
<td>L.A. Adetunji, A. Ben-zvi, A. Filstein, Cenovus Energy</td>
</tr>
</tbody>
</table>
**Session 03: Near-Surface Casing Corrosion on Thermal Wells**

**Session Chairpersons:** Emad Hanna, Tenaris; Ronny Lee, Canadian Natural Resources Limited

This session is dedicated to highlight the importance of monitoring and mitigating near-surface casing corrosion on Thermal wells. Presence of condensate water, oxygen, high temperature and salts create the perfect environment for casing corrosion. Utilizing techniques like Casing pressure tests, logging tools, and excavation provided evidence that in many cases corrosion occurs within a few years of the well's life. These studies share experiences evaluating various high-temperature coating systems, liquid inhibitors, and also the effect of OCTG material selection using various corrosion resistant alloys as Cr13 and Inconel vs conventional carbon steel to provide protection on these thermal wells. Our presenters will shed more lights on Corrosion failure patterns, film characteristics and mechanisms that were investigated by surface analysis techniques to determine the corrosion behavior. Please join us to learn more about these safe, environmentally friendly, self-healing and cost effective solutions.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
</table>
| 1530-1600     | 198688  | **Application of High Temperature Coatings for Near-Surface Corrosion Mitigation on SAGD Wells**  
M.A. Habib, I. Khallad, ConocoPhillips Canada; V. Savino, ConocoPhillips USA |
| 1600-1630     | Invited | **Mitigation of Near Surface Corrosion Using Potassium Silicate**           |
|               | Presenter| B.W. Temple, Imperial; D. Guo, M.J. McDonald, National Silicates           |
| 1630-1700     | Invited | **Using Externally Coated Casing to Mitigate Shallow External Corrosion**   |
|               | Presenter| S. Pruett, Aera Energy LLC                                                  |

**Networking Reception**

**Bowling Social**

**In Lieu of Speaker and Committee Gifts...**

On behalf of Invited Speakers and the Symposium Committee, SPE Canada is pleased to make a donation of $600 to support Roots 2 Stem. This non-profit organization provides in-school and extra-curricular Engineering programs for youth.

For more information about Roots 2 Stem, visit [http://roots2stem.ca](http://roots2stem.ca)
**Wednesday, 20 November | 0800–0900**

**Opening Keynote**

Session Chairpersons: Linda Blair, EVRAZ NA; Raina May, MEG Energy

**Enhancing Operations in Oil and Gas through Artificial Intelligence**

Presenters: Kyle Christie and Zaman Forootan, Deloitte

---

**Wednesday, 20 November | 0900–1000**

**Session 04: Instrumentation/DTS/DAS**

Session Chairpersons: Joel Colucci, Stream-Flo; Jesse Stevenson, Variperm Canada Ltd.

The instrumentation in your well is primarily there as a means to optimize production, but often is critical to ensure well integrity or to determine failure locations and mechanisms. In this session, we will investigate the deployment and value of fiber optics from these two perspectives.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
</table>
| 0900-0930  | Invited  | Application of DTS Fiber in a Greenfield SAGD Start-Up
G. Wozney, GRW Engineering; C. Bergeron, Harvest Energy                                                                                                                                      |                                                                                                                                                                                                 |
| 0930-1000  | 198685   | Prognostics Thermal Well Management: A Review on Wellbore Monitoring and the Application of Distributed Acoustic Sensing (DAS) for Steam Breakthrough Detection
M. Soroush, RGL Reservoir Management/University of Alberta; M. Roostaei, V. Fattahpour, M. Mahmoudi, RGL Reservoir Management; D. Keough, Precise Downhole Services Ltd; L. Cheng, K. Moez, University of Alberta |                                                                                                                                                                                                 |

---

**Wednesday, 20 November | 1030–1200**

**Session 05: Flow Control Devices**

Session Chairpersons: Kousha Gohari, Baker Hughes; Gina Wozney, GRW Engineering

This session has presentations on Evaluation of Flow Control Devices in thermal application based on testing and field implementation.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
</table>
| 1030-1100  | 198700   | Evaluation, Implementation, and Operations of an FCD for SAGD Producer Wells
D. Zhu, H. Heukelman, N. Neeteson, RGL Reservoir Management; S. Thompson, Athabasca Oil Corporation                                                                                          |
| 1100-1130  | 198698   | Horizontal Steam Injection Liner Deployed Flow Control Device Design Development and Testing
T.L. Gorham, J.C. Sims, Chevron Energy Technology Company; R.S. Buell, Chevron Energy Technology Company (retired); H. Heukelman, B. Feramiuki, RGL Reservoir Management; R. Miller, RGL-Pacific Perforating Inc. |
| 1130-1200  | 198696   | Best Practices In Design of Steam Splitters for Steam Assisted Gravity Drainage Injection Wells
C.B. Nascimento, N. Gomez Bustamante, Schlumberger; M.A. Melo Llanos, Consultant                                                                                                                  |
Session 6: Geomechanics
Session Chairpersons: Lawrence Jonker, Alberta Energy Regulator; Todd Anthony Zahacy, C-FER Technologies

This session will focus on the role that formation geomechanical properties have on the design and life-cycle integrity of thermal wells. This will include an overview of the relationship and interaction between formation geomechanical properties and wellbore design and integrity during the design, construction, operation, decommissioning and post-decommission phases of a thermal well's life. The session will also include a presentation on how geomechanical simulation methods can be used to improve thermal well design and maintain structural and isolation integrity.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400-1430</td>
<td>198693</td>
<td>Geomechanical Simulations to Design Well Integrity Y. Yuan, T.J. Boone, BitCan G&amp;E Inc.</td>
</tr>
<tr>
<td>1430-1500</td>
<td>Invited Presenter</td>
<td>Geomechanical Numerical and Experimental Studies to Address Complex Challenges of Thermal Well Behavior E. Hamza, R.J. Chalaturnyk, Reservoir Geomechanics Research Group, University of Alberta</td>
</tr>
</tbody>
</table>
Breakout Group 1:
Role of Geomechanics on Thermal Well Design and Long-Term Integrity
Moderators: Todd Zahacy and Lawrence Jonker

This interactive breakout session will allow attendees to explore and expand on the topics presented in Session 6: Geomechanics, as well as other topics related to the interaction and the role that formation geomechanical properties have on the design, construction, operating practices and long-term integrity of thermal wells.

Topics that may be explored include: key geomechanical factors (i.e., mechanical, thermal, compositional and pore fluid properties) that should be considered in the well design (e.g., wellbore orientation, trajectory and cement system selection and placement practices); how formation properties affect the initial 'as-built' quality of the constructed well; how the downhole isolation barrier elements and structural components are affected by the operating practices and thermal-mechanical loading (e.g., recovery strategy, heating and cooling rates); how characterization, monitoring and simulation tools can be used to assess and mitigate geomechanics-influenced damage mechanisms, susceptibilities and the risks of associated with such failures; and considerations for the late-life (thermal), post-steam, decommissioning and post-decommissioning phases of the well’s life.

Breakout Group 2:
External Casing Corrosion in Thermal Wells
Moderators: Blair Temple, Ronny Lee, Scott Pruett and Tanner Ottaway

External casing corrosion can pose a significant threat to casing integrity, if present, therefore monitoring for it is required. Well design, installation and operational strategies can also play a role in introducing corrosion especially in casing strings that are classified as primary pressure barrier, namely intermediate or production casing. This breakout session will provide an opportunity to hear and express specific cases and the associated risks from a broad perspective. We will be discussing the different techniques used to identify the corrosion behavior and the underlying factors that contribute to inception and development. We will discuss specific concepts and strategies around assessing the risk and which mitigation strategies are working or not working well. This session offers an excellent platform for collaboration with peers who are actively working these issues and introducing others to the risk factors within this subject. We encourage attendees to bring specific conditions, examples, experiences, and questions. We look forward to a great discussion.

Breakout Group 3:
Liner integrity, Key Metrics from Design to Installation to Operation
Moderators: Mark Chartier, Kousha Gohari, Jesse Stevenson and Gina Wozney

Liner integrity is one of the leading causes for expensive workovers, redrill and sidetrack operations. As thermal design has matured, and increasingly challenging pay is encountered, designs continue to evolve. What key failure mechanisms are currently causing wells to fail prematurely, and how are they being evaluated or what enhancements to design have been made to address those issues. Are they working? And what new challenges and risks do those changes create? Several companies have deployed flow control devices (FCDs) as a means to improve productivity or deal with hot spots, and mitigate steam coning related failure, which will be a focal point of the discussion. How do FCDs change the design basis considering sand control, installation loading, and operating methodology? In this session we will provide a forum to discuss the evolution of liner design, highlight new challenges and the ways they are being addressed. We'll lay it all on the table and allow the attendees to drive towards key issues based on their experience, and is being done to make the next step forward.
Thursday, 21 November | 0800–0900 Van Horne A

Opening Keynotes:
Session Chairpersons: Trent Pehlke, Suncor Energy; Maxim Skliarov, Husky Energy

Methane Emissions Reduction, Summary of Requirements
Presenter: Lindsay Campbell, Alberta Energy Regulator

Aera Ambassador Program—Humanizing Our Industry
Presenter: Tanner Ottaway, Aera Energy LLC

Thursday, 21 November | 0900–1000 Van Horne A

Session 07: Global Strategies for Maintaining Well Integrity  In Memory of Farhad Saeedi
Session Chairpersons: Justin Novak, Cenovus Energy; Barkim Demirdal, Canadian Natural Resources Limited

Regardless of the type of well or operation, the main purpose of well integrity is to properly select and maintain barriers to ensure safe operations over the life of a well. This session will discuss, from a global perspective, well integrity challenges encountered in extreme downhole environments, look at evolving barrier selection as production strategies change in mature fields, and explore how well integrity management systems can be utilized to effectively manage well integrity programs over the life cycle.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0900-0930</td>
<td>198687</td>
<td><strong>Well Integrity Issues-Extreme High-Pressure High-Temperature Wells and Geothermal Wells (A Review)</strong>&lt;br&gt;T.D. Phi, R.M. Elgaddafi, R.M. Ahmed, C. Teodoriu, University of Oklahoma; M. Al Ramadan, King Fahd University of Petroleum &amp; Minerals</td>
</tr>
<tr>
<td>0930-1000</td>
<td>198690</td>
<td><strong>Double Barrier Strategy for Heavy Oil Producer Well in the South of Oman</strong>&lt;br&gt;W. Shizawi, A. Al Nairi, A.D. Cooper, K.S. Mahrazy, P. Putra, Petroleum Development Oman</td>
</tr>
</tbody>
</table>
Session O8: Barrier Management and Sand Control
Session Chairpersons: Wendy Akins, CNOOC International; Scott Pruett, Aera Energy LLC

Competent and reliable barriers within oil and gas well service are critical to protecting people, property, and the environment. Developing strategies and components that can meet the challenging and diverse environment of thermal service requires focused solutions through failure analysis and field trials. Strategies and design improvements to mitigate known and potential barrier failures will be discussed. This session will also present a field study and its findings on performance and reliability differences between three sand control types within the same field: slotted liner, precision punched screen, and wire wrapped screen.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1030-1100</td>
<td>Invited</td>
<td>Case Study on the Performance of Slotted vs Precision Punched vs Wire Wrapped Liners S. Pruett, Aera Energy LLC</td>
</tr>
<tr>
<td>1100-1130</td>
<td>Invited</td>
<td>Thermal Gate Valve Overpressure Analysis and New Design J. Colucci, S. Brennan, Stream-Flo</td>
</tr>
</tbody>
</table>

YOUR THERMAL CEMENTING SERVICES EXPERT

SANJEL ENERGY SERVICES delivers innovation through collaboration with the University of Alberta. The three-year study is quantifying the impact of stress-induced 3D fractures on cement integrity. The findings will allow Sanjel Energy to optimize cementing technologies which address the root cause of integrity loss; deliver solutions for improving long term wellbore integrity; reduce occurrences of gas migration and surface casing vent flows; and develop more effective remedial technologies.

ATTEND THE SEMINAR:
S.S. Iremonger, Sanjel Energy Services & X.Yang, University of Alberta will be presenting their paper: Imaging Leakage Pathways in Wellbore Cement after Uniaxial Compressive Loading.

Partners through Performance
sanjel.com
Session 09: Best Practices for FCDs in SAGD Wells

Session Chairpersons: Colby Sutton, RGL Reservoir Management; Blair Temple, Imperial

This session highlights advancements on the evaluation, design, implementation, performance assessment, and re-design of Flow Control Devices (FCDs). Discussions will highlight modelling methodologies, optimizations for completions designs, erosion risks and mitigations, and product performance and benchmarking. The ‘Case Study’ focus will highlight direct field results and lessons that can improve profitability for both the operator and service provider.

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300-1330</td>
<td>198681</td>
<td><strong>Field Application of Tubing Deployed Inflow Control Devices (ICDs) to Repair Liner Failures in SAGD Completions: Diagnosis, Design, Deployment and Outcome</strong>&lt;br&gt;M. Saeedi, J. Cowle, Pengrowth Energy Corporation; R. Cross, West Rock Energy Consultants Ltd.; J. Stevenson, A. Tuttle, Variperm Canada Ltd.</td>
</tr>
<tr>
<td>1400-1430</td>
<td>198695</td>
<td><strong>SAGD Circulation Strategy Utilizing Flow Control Devices</strong>&lt;br&gt;J. Batias, Total; J. Ortiz, K. Nespor, ConocoPhillips</td>
</tr>
<tr>
<td>1430-1500</td>
<td>198697</td>
<td><strong>Effective Reservoir Management with Flow Control Devices for SAGD Producer Wells in Mackay River</strong>&lt;br&gt;G.A. Rosi, D. Zhu, RGL Reservoir Management; D. O’Hagan, Suncor Energy</td>
</tr>
</tbody>
</table>

Did You Know...

The SPE Canadian Educational Foundation is the successor entity of the Petroleum Society’s 50th Anniversary Educational Trust Fund, established in 1999, and of the SPE Canadian Educational Trust Fund.

The SPE Canadian Educational Foundation (SPECEF) provides scholarships annually to post-secondary students who have indicated a desire to make a career in the Energy Industry and supports science fairs and other programs that encourage middle and high school students to consider the Energy Industry as a career choice.

**To date, over $450,000 in scholarship and funding has been granted.**

The governance structure of SPECEF provides the flexibility to create new programs, scholarships and energy educational initiatives that will benefit members of SPE in Canada.

For more information about SPECEF or to give a tax deductible donation, please visit [www.spe.org/canada](http://www.spe.org/canada).
## Knowledge Sharing ePosters (6 November 2019)

<table>
<thead>
<tr>
<th>Time</th>
<th>Paper #</th>
<th>Presentation</th>
</tr>
</thead>
</table>
| 0945-1000| 198684  | **Sources of Strain Localization in Thermal Wells and Managing the Risks They Introduce through Engineering Design**  
| 1500-1515| 198703  | **Corrosion Failure and Control of Carbon Steel and Anti-Corrosion Performance Evaluation of Candidate Materials in Thermal Applications**  
J. Li, C. Sun, H. Zeng, J. Luo, University of Alberta; M. Roostaei, M. Mahmoudi, V. Fattahpour, RGL Reservoir Management |
| 1515-1530| 198921  | **Lifetime Tubular Design: Combining Effects of Corrosion and Mechanical Wear**  
Z. Liu, R. Samuel, A. Gonzales, Y. Kang, Halliburton |

### Wednesday, 20 November | 1015–1030 Foyer

<table>
<thead>
<tr>
<th>Time</th>
<th>Invited Presenter</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015-1030</td>
<td>A. Tuttle, Variperm Canada Ltd.</td>
<td><strong>Flow Control Device Testing for NCG Coinjection Optimization</strong></td>
</tr>
</tbody>
</table>

---

**In Memory of Farhad Saeedi**

Farhad Saeedi, a colleague in the thermal community, passed away on May 13, 2019 at the age of 46 years after a battle with cancer. He left behind his beloved wife Sahar and son Adrian, along with many family members and friends. Farhad will be remembered for his kindness, courage and dedication to his family and profession.

To help support Farhad’s wife and son, the committee has setup a GoFundMe page if you wish to make a donation:

**Visit:** [www.gofundme.com](http://www.gofundme.com)  
**Search:** Help Support Farhad Saeedi’s Family
Venue Floor Plan

Van Horne A — Sessions

Van Horne B — Exhibits

Exhibitors

Andmir Group Canada
Eric Klotz
403 539 2239
eklotz@andmir.com

Ashaw Energy
Mazda Irani
403 667 7293
mazda.irani@ashawenergy.com

C-FER Technologies
Kirk Hamilton
780 450 8989 x236
K.hAMILton@cfertech.com

Cantak Tubulars
Jordan Zboya
403 498 4445
Jordan.zboya@cantak.com

DarkVision
Stephen Robinson
604 813 8646
robinson@darkvisiontech.com

EVRAZ NA
Linda Blair
403 543 8006
Linda.blair@evrazna.com

EV Canada Inc.
Frank Salverda
Frank.salverda@evcam.com
403 263 6144

Exceed (Canada) Oilfield Equipment Inc.
Alain Prefontaine
587 356 1888 x207
alain@exceedoilfield.ca

General Energy Recovery Inc.
Kevin Wiebe
587 387 3031
kwiebe@geri.ca

Hallmark Tubulars
Greg Kubasek
403 303 3708
gkubasek@hallmarksolutions.ca

Hunting
Barry McElligott
403 620 5882
barry.mcelligott@hunting-intl.com

InnoTech Alberta
Hart Golbeck
780 450 4613
hart.golbeck@innotechalberta.ca

Magnum Cementing Services
Kelly Soucy
403 999 4245
Kelly.soucy@magnumcement.ca

Renown Down Hole Solutions Inc.
Ryan Turner
780 214 5777
rturner@renownds.com

RGL Reservoir Management Inc.
Leah Miller
403 835 4453
lmiller@rglinc.com

Variperm Canada Ltd.
Colin Matthews
403 826 1671
Colin.matthews@variperm.com

VentMeter Technologies Inc.
Richard Friesz
403 877 4410
rfriesz@ventmeter.com

WIA Society
Rose Cooperrider
587 438 4404
president@wiasociety.org
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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–19 March 2020</td>
<td>SPE Canada Heavy Oil Conference and Exhibition</td>
<td>Calgary, Alberta</td>
</tr>
<tr>
<td>18–19 March 2020</td>
<td>SPE Canada Unconventional Resources Conference and Exhibition</td>
<td>Calgary, Alberta</td>
</tr>
<tr>
<td>14 April 2020</td>
<td>SPE/CHOA Slugging It Out Conference</td>
<td>Calgary, Alberta</td>
</tr>
<tr>
<td>20–21 May 2020</td>
<td>SPE Workshop: Subsurface Data Analytics</td>
<td>Kananaskis, Alberta</td>
</tr>
<tr>
<td>June 2020</td>
<td>SPE Workshop: Applications of Intelligent Wells in Canada</td>
<td>Location: TBD</td>
</tr>
</tbody>
</table>

We go the extra kilometre.

From mill to well to satisfied.

At Tenaris, our spirit is Canadian, but our reach is global. From our mills in Sault Ste. Marie and Calgary to Canada’s energy industry, we support your project from our mill to your well—every step of the way. For more information visit TheExtraKilometre.ca.
SPE Canada Unconventional Resources Conference

Two great events, one low price!
Access both technical programs and shared exhibit floor.

Register by 19 February 2020 to Save With Early Bird Rates!
For more information and to register visit www.spe.org/go/20URC or www.spe.org/go/20CHOC

For sponsorships and exhibit opportunities, please contact Kristin Briard at kbriard@spe.org or +1-403-930-5465.
Together

we’re working towards a better tomorrow

Innovation has always been the cornerstone of who we are and what we do. Whether it’s developing new technologies for a low carbon economy, contributing to public policy discussions or collaborating on creative social solutions, we’ve always been about working with others to raise the bar.

together.suncor.com
OptiCon™
Flow Control Technology
- Extended laterals
- Infills
- Slimhole
- Solvent flood
- High gas wells

900,000m+
Of sand control in current SAGD Oil Sands projects

24/7 Customer Support
When a customer needs us – we are here, and we take pride in allowing our clients to always connect to an engineer or manager

The only pressure drop in your wells should be the one you planned on.

Variperm Canada Limited is proud to have its Quality Management System certified to ISO 9001:2015.