Partnership and Innovation: The Silk Road towards a Sustainable Energy Future

26 - 28 March 2019
Beijing International Convention Center
Beijing, China

www.iptcnet.org/19IPTC/home/
ADVANCING with TECHNOLOGY

Striving for Excellence

As one of the world’s major providers of oilfield engineering and technical services, CNPC is dedicated to improving petroleum operations performance through increasing reserves, reducing costs and enhancing production with continuous innovation and integration of oilfield technologies.

www.cnpc.com.cn
China National Petroleum Corporation (CNPC) is an integrated international energy company, with businesses covering oil and gas operations, oilfield services, engineering and construction, equipment manufacturing, financial services and new energy development.

As an international energy company embracing technology and innovation, CNPC has long been committed to researching and developing sophisticated and practical technologies and solutions in oil and gas exploration and development operations. Facing up to the end of ‘easy oil’, we have to turn to much tougher targets to meet ever increasing energy demand. We focus our R&D efforts on finding and tapping subtle and complex reservoirs, enhancing recovery of mature oilfields, unlocking unconventional hydrocarbons, improving operational safety, and mitigating impact to the environment.

Saudi Aramco is a leading integrated energy and chemicals company. The Company manages reserves of 332.9 billion barrels of oil equivalent. In 2017, Saudi Aramco produced over 3.7 billion barrels of crude oil. Saudi Aramco’s downstream operations include participation in a worldwide refining capacity of 4.9 million barrels per day.

Headquartered in Dhahran, Saudi Arabia, Saudi Aramco’s operations in the Kingdom include refining, petrochemicals and distributing oil products to meet domestic daily energy demands. Through its affiliates, Saudi Aramco also has joint ventures and subsidiary offices in China, Egypt, Japan, India, the Netherlands, the Republic of Korea, Singapore, the United Arab Emirates, the United Kingdom and the United States.

For more information, please visit www.saudiaramco.com.
About IPTC

Founded in 2005, the International Petroleum Technology Conference (IPTC) continues to be the flagship multidisciplinary technical event in the Eastern Hemisphere. The conference content and associated programmes will address the technology and related industry issues that challenge management, established petroleum professionals and young people seeking to join our industry from around the world.

IPTC is focused on the dissemination of new and current technology, best practices and multi-disciplinary activities, emphasising the importance of the value chain, and multidisciplinary cooperation in order to maximise asset value.

IPTC is sponsored by four professional associations, the American Association of Petroleum Geologists (AAPG); the European Association of Geoscientists and Engineers (EAGE); the Society of Exploration Geophysicists (SEG); and the Society of Petroleum Engineers (SPE). The synergy of these four leading, member driven organisations, through the formation of knowledgeable and experienced committees comprising senior leaders and experts, supportive of the IPTC mission, has ensured another outstanding technical programme consistent with previous editions of IPTC.
Message from the Honorary, Executive Committee and Programme Committee Co-Chairmen

During 26-28 March 2019, Beijing will host more than 4,000 international oil and gas leaders and professionals at the 11th International Petroleum Technology Conference (IPTC). This 11th edition of the International Petroleum Technology Conference (IPTC) will be hosted by China National Petroleum Corporation (CNPC) and co-hosted by Saudi Aramco. This partnership between two major energy leaders will provide an excellent forum to address and resolve the technical and commercial challenges facing the industry.

IPTC is a collaborative effort among the American Association of Petroleum Geologists (AAPG); the European Association of Geoscientists & Engineers (EAGE); the Society of Exploration Geophysicists (SEG); and the Society of Petroleum Engineers (SPE), rotating between Asia Pacific and the Middle East. The synergies amongst these four leading professional societies provide the most comprehensive opportunity to form an outstanding multi-disciplinary technical programme.

The IPTC Executive Committee selected the theme “Partnership and Innovation: The Silk Road towards a Sustainable Energy Future” from a list of over 40 suggestions. The theme’s mention of the historic Silk Road refers to the 7th century when world-changing technological advances and trade connected civilizations and cultures, and provides a geographical and historical focus, while firmly looking forward as industry leaders, governmental representatives and professionals gather together to share their views on current industry topics and trends in Beijing in 2019.

The conference will include high level dialogue through its CEO plenary session, nine panel sessions, and detailed technical presentations on a range of industry subjects. More than 500 technical papers representing 105 organisations and 30 countries will be presented during 70 technical sessions and 6 session ePosters. Specifically, for the first time at IPTC, the 11th edition will feature a special focus on the development of digital technologies and the impact of their adoption by the oil & gas industry via two panel sessions and eight technical sessions.

In conjunction with the comprehensive technical programme, emerging leaders and university students will take part in special events and programmes as part of the IPTC’s continued commitment to education and broadening the horizons of knowledge in the industry.

In addition, recognition will be given for successful technical and business contributions to the industry through the prestigious IPTC Excellence in Project Integration Awards. There will also be a range of integrated social activities to encourage networking and off-line discussion.

An exhibition spanning more than 1,500 square metres will also showcase the latest advancements, innovations, achievements in upstream exploration and production, and recent digital initiatives related to the petroleum industry.

Please circulate this information to your colleagues, and make plans to join us at the 11th IPTC.

We hope that you will take this unique opportunity to participate and engage with others who are committed towards ensuring the future success of the energy industry and to learn about the opportunities in the region and globally.

We look forward to welcoming you to Beijing.

Wang Yilin
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IPTC Honorary Chairman

Amin H. Nasser
President & CEO
Saudi Aramco
IPTC Honorary Co-Chairman

Wang Dongjin
President and Director
CNOOC
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Lyu Gongxun
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PetroChina
IPTC Conference Programme Committee Co-Chairman

Nabeel I. AlAfaleg
General Manager, International Gas
Saudi Aramco
IPTC Conference Programme Committee Co-Chairman
IPTC Sponsoring Societies

The American Association of Petroleum Geologists (AAPG), founded in 1917, has been a pillar of the world-wide scientific community. The original purpose of AAPG, to foster scientific research, to advance the science of geology, to promote technology, and to inspire high professional conduct, still guides the Association today. Currently the world’s largest professional geological society with approximately 40,000 members in 129 countries, AAPG provides publications, conferences, and educational opportunities to geoscientists and disseminates the most current geological information available to the general public. For more information, visit the AAPG website www.aapg.org.

The European Association of Geoscientists & Engineers (EAGE) is a professional association for geoscientists and engineers. Founded in 1951, it is an organization with a worldwide membership, providing a global network of commercial and academic professionals. The association is truly multi-disciplinary and international in form and pursuits. EAGE operates two divisions: the Oil & Gas Geoscience Division and the Near Surface Geoscience Division. EAGE has around 19,000 members worldwide representing over 100 countries. All members of EAGE are professionally involved in (or studying) geophysics, petroleum exploration, geology, reservoir engineering, mining and civil engineering. For more information, visit the EAGE website at www.eage.org.

The Society of Exploration Geophysicists (SEG) is a not-for-profit organization committed to connecting the world of applied geophysics. With more than 27,000 members in 128 countries, SEG provides educational and technical resources to the global geosciences community through publications, books, events, forums, professional development courses, young professional programs, and more. Founded in 1930, SEG fosters the expert and ethical practice of geophysics in the exploration and development of natural resources, characterisation of near surface, and mitigation of earth hazards. For more information visit www.seg.org.

The Society of Petroleum Engineers (SPE) is a not-for-profit professional association whose members are engaged in energy resources development and production. SPE serves more than 158,000 members in 143 countries worldwide. SPE is a key resource for technical knowledge related to the oil and gas exploration and production industry, and provides services through its publications, events, training courses and online resources at www.spe.org.

The IPTC Sponsoring Societies wish to extend their sincerest appreciation to the committees for their dedicated efforts and contributions to the conference and exhibition.
The IPTC Board of Directors oversees the management of IPTC. The Board is made up of members elected from IPTC’s four sponsoring societies, the American Association of Petroleum Geologists (AAPG), the European Association of Geoscientists & Engineers (EAGE), the Society of Exploration Geophysicists (SEG), and the Society of Petroleum Engineers (SPE).

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Schedule of Events

(Changes/additions made after 25 October 2018 will be reflected on the website and on-site programme. All functions, unless otherwise specified, are scheduled at the Beijing International Convention Center.)

Saturday, 23 March
0900-1730 hours Exhibit Stand Build-Up/Move-In .........................................................Exhibition Hall 1 & 2, Level 1

Sunday, 24 March
0900-1730 hours Exhibit Stand Build-Up/Move-In .........................................................Exhibition Hall 1 & 2, Level 1
0900-1730 hours Registration: Exhibitors ........................................................................Lobby, Level 1
1200-1730 hours Registration: Conference Delegates .....................................................Lobby, Level 1
1200-1730 hours Speaker/Author Check-In and AV Preparation .....................................Room 201C, Level 2

Monday, 25 March
0800-1700 hours Emerging Leaders Workshop ............................................................Room 305C/D/E, Level 3
0900-1600 hours Exhibit Stand Build-Up/Move-In .........................................................Exhibition Hall 1 & 2, Level 1
0900-1700 hours Training Courses .................................................................................Room 302 & 303, Level 3
0900-1800 hours Registration: Exhibitors and Conference Delegates .............................Lobby, Level 1
0900-1800 hours Speaker/Author Check-In and AV Preparation .....................................Room 201C, Level 2

Tuesday, 26 March
0700-1730 hours Registration: Exhibitors and Conference Delegates .............................Lobby, Level 1
0800-1730 hours Speaker/Author Check-In and AV Preparation .....................................Room 201C, Level 2
0900-1015 hours Opening Ceremony and Award Presentation ........................................Convention Hall 1, Level 2
1000-1730 hours Exhibition .............................................................................................Exhibition Hall 1 & 2, Level 1
1015-1045 hours Coffee Break .........................................................................................Exhibition Hall 1 & 2, Level 1
1045-1230 hours CEO Plenary Session: Partnership and Innovation:
  The Silk Road towards a Sustainable Energy Future ..................................................Convention Hall 1, Level 2
  Conference Luncheon .................................................................................................Convention Hall 2, Level 2
1400-1445 hours Exhibition Opening Ceremony and VIP Tour of Exhibition .................Exhibition Hall 1 & 2, Level 1
1400-1450 hours Ask the Expert Session 1: Digital Rock Approach for
  Extending Core Materials into Time/Space/Process Dimensions .........................Room 307, Level 3
1400-1530 hours Panel Session 1: Industry Cycles - What Have We Learned? ..........Convention Hall 3, Level 1
1400-1530 hours Technical Sessions ..............................................................Room 308, 302, 303, 305A/B, 305C/D/E, 311A, 311B, 311C, Level 3
1530-1600 hours Coffee Break .........................................................................................Exhibition Hall 1 & 2, Level 1
1530-1600 hours Session ePoster 1 ................................................................................Lobby, Level 3
1600-1650 hours Ask the Expert Session 2: Brown Field Redevelopments:
  The Art of Finding Oil in Your Own Backyard .........................................................Room 307, Level 3
1600-1730 hours Panel Session 2: The Role of Gas in the Energy Mix ............................Convention Hall 3, Level 1
1600-1730 hours Technical Sessions ..............................................................Room 308, 302, 303, 305A/B, 305C/D/E, 311A, 311B, 311C, Level 3

Wednesday, 27 March
0730-1730 hours Registration: Exhibitors and Conference Delegates .............................Lobby, Level 1
0800-1730 hours Speaker/Author Check-In and AV Preparation .....................................Room 201C, Level 2
0900-1730 hours Exhibition .............................................................................................Exhibition Hall 1 & 2, Level 1
0900-1030 hours Panel Session 3: What’s Next in Unconventionals? ............................Convention Hall 3, Level 1
0900-1030 hours Technical Sessions ..............................................................Room 308, 302, 303, 305A/B, 305C/D/E, 311A, 311B, 311C, Level 3
0900-1030 hours Integrated Project Award Session ......................................................Room 307, Level 3
## Schedule of Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>1030-1100 hrs</td>
<td>Coffee Break</td>
<td>Exhibition Hall 1 &amp; 2, Level 1</td>
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<tr>
<td>1030-1100 hrs</td>
<td>Session ePoster 2</td>
<td>Lobby, Level 3</td>
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<tr>
<td>1100-1230 hrs</td>
<td><strong>Panel Session 4: Innovative Technologies – Improving Efficiencies in the Upstream</strong></td>
<td>Convention Hall 3, Level 1</td>
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<tr>
<td>1100-1230 hrs</td>
<td>Technical Sessions</td>
<td>Room 308, 302, 303, 305A/B, 305C/D/E, 311A, 311B, 311C, Level 3</td>
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<tr>
<td>1100-1230 hrs</td>
<td><strong>Integrated Project Award Session</strong></td>
<td>Room 307, Level 3</td>
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<tr>
<td>1230-1400 hrs</td>
<td>Conference Luncheon</td>
<td>Convention Hall 2, Level 2</td>
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<tr>
<td>1330-1400 hrs</td>
<td>Session ePoster 3</td>
<td>Lobby, Level 3</td>
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<tr>
<td>1400-1530 hrs</td>
<td><strong>Panel Session 5: Future of Asia Pacific Gas Markets</strong></td>
<td>Convention Hall 3, Level 1</td>
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<tr>
<td>1400-1530 hrs</td>
<td>Technical Sessions</td>
<td>Room 308, 302, 303, 305A/B, 305C/D/E, 311A, 311B, 311C, Level 3</td>
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<tr>
<td>1400-1530 hrs</td>
<td><strong>Integrated Project Award Session</strong></td>
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<tr>
<td>1530-1600 hrs</td>
<td>Coffee Break</td>
<td>Exhibition Hall 1 &amp; 2, Level 1</td>
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<tr>
<td>1530-1600 hrs</td>
<td>Session ePoster 4</td>
<td>Lobby, Level 3</td>
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<tr>
<td>1600-1650 hrs</td>
<td><strong>Ask the Expert Session 3: Thermal Enhanced Oil Recovery – False Starts and Successes</strong></td>
<td>Room 307, Level 3</td>
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<tr>
<td>1600-1730 hrs</td>
<td><strong>Panel Session 6: Industry 4.0: Key to the Petroleum Industry’s Transformation</strong></td>
<td>Convention Hall 3, Level 1</td>
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<tr>
<td>1600-1730 hrs</td>
<td>Technical Sessions</td>
<td>Room 308, 302, 303, 305A/B, 305C/D/E, 311A, 311B, 311C, Level 3</td>
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<tr>
<td>1700-1900 hrs</td>
<td>Exhibit Move-Out</td>
<td>Exhibition Hall 1 &amp; 2, Level 1</td>
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### Thursday, 28 March

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>0730-1630 hrs</td>
<td>Registration: Exhibitors and Conference Delegates</td>
<td>Lobby, Level 1</td>
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<tr>
<td>0800-1530 hrs</td>
<td>Speaker/Author Check-In and AV Preparation</td>
<td>Room 201C, Level 2</td>
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<tr>
<td>0900-1630 hrs</td>
<td>Exhibition</td>
<td>Exhibition Hall 1 &amp; 2, Level 1</td>
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<td>0900-1030 hrs</td>
<td><strong>IPTC Society Presidents Panel Session: Innovative Technologies and Industry Trends</strong></td>
<td>Room 307, Level 3</td>
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<tr>
<td>0900-1030 hrs</td>
<td>Technical Sessions</td>
<td>Room 308, 302, 303, 305A/B, 305C/D/E, 311A, 311B, 311C, Level 3</td>
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<td>1030-1100 hrs</td>
<td>Coffee Break</td>
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<td>1030-1100 hrs</td>
<td>Session ePoster 5</td>
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<td>1100-1230 hrs</td>
<td><strong>Panel Session 7: Life Cycle of Technology Development &amp; Deployment</strong></td>
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<td><strong>Oil &amp; Gas Project Case Study: Midyan Field Development Drives Frontiers in North Saudi Arabia</strong></td>
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<td>1230-1400 hrs</td>
<td>Conference Luncheon</td>
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<td>Session ePoster 6</td>
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<tr>
<td>1400-1530 hrs</td>
<td><strong>Panel Session 8: Industry 4.0 - What’s in it for Our Industry?</strong></td>
<td>Convention Hall 3, Level 1</td>
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<td>1400-1530 hrs</td>
<td>Technical Sessions</td>
<td>Room 308, 303, 305A/B, 305C/D/E, 311A, 311C, Level 3</td>
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<td>1545-1700 hrs</td>
<td><strong>Closing Session</strong></td>
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<td>1700-1900 hrs</td>
<td>Exhibit Move-Out</td>
<td>Exhibition Hall 1 &amp; 2, Level 1</td>
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### Friday, 29 March

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<td>Exhibit Move-Out</td>
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### EDUCATION WEEK

Sunday, 24 March to Thursday, 28 March
## Conference Programme Schedule

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<tr>
<th>Date</th>
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<th>Convention Hall 3</th>
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<td><strong>Thursday, 28 March</strong></td>
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<tr>
<td>0900-1015 hours</td>
<td>Opening Ceremony and Award Presentation – Convention Hall 1, Level 2</td>
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<td>1045-1230 hours</td>
<td>CEO Plenary Session: Partnership and Innovation: The Silk Road towards a Sustainable Energy Future - Convention Hall 1, Level 2</td>
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<td>1230-1400 hours</td>
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<tr>
<td>1400-1445 hours</td>
<td>Exhibition Opening Ceremony and VIP Tour of Exhibition – Exhibition Hall 1&amp;2, Level 1</td>
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<tr>
<td>1400-1530 hours</td>
<td>*1400-1450 hours Panel Session 1 Industry Cycles - What Have We Learned?</td>
<td>*Ask the Expert Session 1 Digital Rock Approach for Extending Core Materials into Time/Space/ Process Dimensions</td>
<td>Technical Session 1 Unconventional Reservoirs</td>
<td>Technical Session 2 Cloud Computing</td>
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<td>1530-1600 hours</td>
<td>Coffee Break – Exhibition Hall 1&amp;2, Level 1 / Session ePoster 1 – Lobby, Level 3</td>
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<tr>
<td>1600-1730 hours</td>
<td>*1600-1650 hours Panel Session 2 The Role of Gas in the Energy Mix</td>
<td>*Ask the Expert Session 2 Brown Field Redevelopments: The Art of Finding Oil in Your Own Backyard</td>
<td>Technical Session 9 Unconventional Production</td>
<td>Technical Session 10 Big Data</td>
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<td><strong>Wednesday, 27 March</strong></td>
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<tr>
<td>0900-1030 hours</td>
<td>Panel Session 3 What’s Next in Unconventionals?</td>
<td>Integrated Project Award (Award Finalist)</td>
<td>Technical Session 41 Tight Sandstone Oil and Gas</td>
<td>Technical Session 42 Drilling &amp; Completion Machine Learning</td>
<td>Technical Session 26 Reservoir &amp; Production Machine Learning</td>
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<tr>
<td>1400-1530 hours</td>
<td>Panel Session 5 Future of Asia Pacific Gas Markets</td>
<td>Integrated Project Award (Award Finalist)</td>
<td>Technical Session 33 Fracturing Modelling and Design</td>
<td>Technical Session 34 Artificial Intelligence for the Oil &amp; Gas Industry</td>
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<tr>
<td>1600-1730 hours</td>
<td>*1600-1650 hours Panel Session 6 Industry 4.0: Key to the Petroleum Industry’s Transformation</td>
<td>*Ask the Expert Session 3 Thermal Enhanced Oil Recovery – False Starts and Successes</td>
<td>Technical Session 49 Heavy Oil and Coalted Methane</td>
<td>Technical Session 50 Formation Evaluation Machine Learning</td>
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<td>Oil &amp; Gas Project Case Study Midan Field Development Drives Frontiers in North Saudi Arabia</td>
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### Sessions
- Opening and Closing
- Plenary and Panel

### Technical Sessions
- Unconventional
- Industry 4.0: Cognitive Computing and Machine Systems
- Drilling and Completions
- Development and Production
Opening Ceremony & Award Presentation

Tuesday, 26 March • 0900-1015 hours • Convention Hall 1, Level 2

Welcome Remarks

Wang Yilin
Chairman
CNPC

Amin H. Nasser
President & CEO
Saudi Aramco

Joseph M. Reilly
IPTC Board Chairman

The Opening Ceremony will be followed by the IPTC “Excellence in Project Integration” Award Presentation. Industry leaders, senior management and professionals from oil and gas related companies, and engineering and technical industry professionals will be in attendance.

Sponsored by:

CEO Plenary Session

Partnership and Innovation: The Silk Road towards a Sustainable Energy Future

Tuesday, 26 March • 1045-1230 hours • Convention Hall 1, Level 2

Opening Remarks

Wang Dongjin
IPTC Executive Committee Co-Chairman
President and Director
CNOOC

Mohammed Y. Al-Qahtani
IPTC Executive Committee Co-Chairman
Senior Vice President, Upstream
Saudi Aramco

Wang Yilin
Chairman
CNPC

Amin H. Nasser
President & CEO
Saudi Aramco

Patrick Pouyanne
CEO
Total

Peter Coleman
CEO & Managing Director
Woodside Energy Ltd.

Moderator

Tor Fjaeran
President
World Petroleum Council
Panel Sessions

Industry Cycles: What Have We Learned?
Tuesday, 26 March • 1400-1530 hours • Convention Hall 3, Level 1

Moderator
Ivan Marten
Senior Partner & Managing Director, Vice Chairman, Energy Practice
Boston Consulting Group

Keynote Speaker
Andrew Brown
Director, Upstream Shell

Speakers
Michael Deal
Vice President, Asia Pacific and Middle East ExxonMobil Exploration Co.

Mazuin Ismail
Senior Vice President, Project Delivery & Technology PETRONAS

Gustavo Baquero
Senior Vice President, Operations Technology Excellence, Development & Production International Equinor

Tan Sri Dato' Seri Shahrl Shamsuddin
President and Group Chief Executive Officer Sapura Energy

Our industry is beginning to recover from a long downturn and its near stranglehold on major new investments in oil and gas projects. The upstream industry has been given another opportunity to reinvent itself. Operational efficiency, timely technology development & application, and finding the right partners to work together are some of the keys to success.

This panel will address the new reality of our industry with examples of cost-efficiency in global value chains, resumption of exploration in a competitive environment, and technology adaptation. This will also include resource management and people development.
Panel Sessions

The Role of Gas in the Global Energy Mix

Tuesday, 26 March • 1600-1730 hours • Convention Hall 3, Level 1

Moderator

As Tempelman
Vice President, East Shell Integrated Gas Ventures

Speakers

Nasir K. Al-Naimi
Vice President, Petroleum Engineering & Development Saudi Aramco

Emma Cochrane
Vice President, LNG ExxonMobil Gas Power and Marketing Co.

He Jiangchuan
Executive Vice President PetroChina Tarim Oilfield Co.

Laurent Vivier
President, Gas Total

Montri Rawanchaikul
Executive Vice President, Strategy & Business Development Group PTTEP

Nigel Hearn
President Chevron Asia Pacific Exploration & Production Co.

Gas is becoming a main source of the energy mix especially for power generation. Key factors include new technology applications, public infrastructure development expansion, new business models and access to the capital required, and solving storage requirements. LNG market has undergone significant changes in recent years due to rapid demand growth in globally, as economies have developed. As a result, the markets have shifted from a traditional model of a handful of consumers buying directly from a handful of key suppliers. Instead, we are seeing an increasing fragmentation of the LNG market.

This panel will discuss gas developments strategies and business models. This includes full field developments, strategic joint ventures & partnerships, and incredibly complex trade of gas products across the globe.
Panel Sessions

What’s Next in Unconventionals?

Wednesday, 27 March • 0900-1030 hours • Convention Hall 3, Level 1

Moderator
Liu Yuzhang
Director, Senior Consultants Office Research Inst. of Petroleum Exploration and Development, CNPC

Keynote Speaker
Li Luguang
Vice President, PetroChina and President PetroChina E&P Co.

Speakers
Khalid M. Al-Abdulqader
General Manager, Unconventional Resources Saudi Aramco

Liu Yuzhang
Director, Senior Consultants Office Research Inst. of Petroleum Exploration and Development, CNPC

Li Luguang
Vice President, PetroChina and President PetroChina E&P Co.

Khalid M. Al-Abdulqader
General Manager, Unconventional Resources Saudi Aramco

Moderator

Keynote Speaker

Speakers

Michael Segura
Vice President, Production Enhancement Halliburton

Content:

Unconventional resources is spearheading a step-change in the oil & gas industry. Unconventional resources has changed the landscape of the US energy sector and produced beneficial knock-on effects for the US economy. Furthermore, unconventional resources is driving upstream development costs lower through higher efficiencies. The challenge now is to develop the abundant unconventional resources outside the US and unlocking their potential. This will happen through dedicated exploration, pilot and appraisal programmes that build on the lessons learnt from the US experience while factoring-in regional specifics of unconventional reservoirs at-hand.
Technology has shaped our industry’s past and present, and it will certainly transform our future. Technology innovations have opened up energy resources from offshore deepwater, made it possible to develop heavy oil and oil sands, and unlocked vast new supplies of oil and natural gas from shale rock. Just as technology has led to expanding supplies, it will also be the key to success, innovation can help us to find new efficiencies, lower costs, and maximize resource values.

This panel will address how technology will remain instrumental in our industry’s overall mission to find integrated solutions—solutions that expand supplies while simultaneously reducing emissions. In addition to deploying proven technologies, how companies must invest in promising next-generation solutions that could help change the course of our energy future.

Panel Sessions

**Innovative Technologies – Improving Efficiencies in the Upstream**

*Wednesday, 27 March • 1100-1230 hours • Convention Hall 3, Level 1*

**Moderator**

Zhao Wenzhi
Academician of Chinese Academy of Engineering and President Research Inst. of Petroleum Exploration and Development, CNPC

**Speakers**

Liu He
Academician of Chinese Academy of Engineering and Deputy Chief Engineer Research Inst. of Petroleum Exploration and Development, CNPC

Tolu Ewherido
Vice President, Technical ExxonMobil Exploration Co.

Ahmad O. Al-Khowaiter
Chief Technology Officer Saudi Aramco

Paul Zeppenfeldt
Vice President, Subsurface Technology Shell

Bundit Pattanasak
Senior Vice President, Technology & Knowledge Management Division PTTEP

Daniel Plathey
Director, R&D Total

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Technology has shaped our industry’s past and present, and it will certainly transform our future. Technology innovations have opened up energy resources from offshore deepwater, made it possible to develop heavy oil and oil sands, and unlocked vast new supplies of oil and natural gas from shale rock. Just as technology has led to expanding supplies, it will also be the key to success, innovation can help us to find new efficiencies, lower costs, and maximize resource values.

This panel will address how technology will remain instrumental in our industry’s overall mission to find integrated solutions—solutions that expand supplies while simultaneously reducing emissions. In addition to deploying proven technologies, how companies must invest in promising next-generation solutions that could help change the course of our energy future.
Panel Sessions

Future of Asia Pacific Gas Markets

Wednesday, 27 March • 1400-1530 hours • Convention Hall 3, Level 1

Moderator: Rao Abdullah
Accounts of National Oil Companies & Regional Independent Operators, Asia Pacific Global Operations
Halliburton

Speakers:

- Bernard Samuels
  Vice President
  Shell China Energy

- Ahmad Adly Alias
  Vice President,
  LNG Marketing & Trading
  PETRONAS

- Qian Xiang
  President, China
  BHGE

- Sun Dalu
  Assistant President
  CNOOC

Natural gas is becoming a main source of the energy mix in Asia Pacific regions, mainly due to power generation. Recent major discoveries of gas in the US, Australia, Eastern Mediterranean are all coming into play. As a result markets have shifted from traditional long-term contracts to even shorter-term contracts to meet seasonal upticks in electricity demand.

This resulted in increasing fragmentation of the LNG market. Emerging consumers with more seasonal or shorter-duration needs than traditional markets will need a more flexible supply chain that will allow delivery to meet demand swings. This panel will discuss natural gas strategies and business models to help meet the needs of a changing market.
The 4th Industrial Revolution (Industry 4.0) provides and fuses many technologies to improve efficiencies and human productivity. A few examples of these technologies, include: Big Data, Predictive Analytics, Machine Learning, Artificial Intelligence, Internet of Things, High Performance Computing, Visualisation, Virtual Reality and Autonomous Robots.

Industry 4.0 is the current trend towards full automation and control. It is about better utilising edge data to increase the efficacy of a process. As such, it is very broadly applicable to all production and manufacturing industries and opportunities exist for lessons from otherwise very different industries to cross pollinate.

Some of the technologies and main principles of Industry 4.0 have already been or are in the process of being adopted in the oil and gas industry. This session will explore examples of where Industry 4.0 can be applicable to the whole oil and gas lifecycle.
Panel Sessions

IPTC Society Presidents Panel: Innovative Technologies and Industry Trends
Thursday, 28 March • 0900-1030 hours • Room 307, Level 3

Moderator

Michael Gunningham
IPTC Board Member
Chief Production Technologist
SGS Subsurface Consultancy

Speakers

Denise Cox
2018-2019 AAPG President
President
Storm Energy

Jean-Jacques Biteau
2018-2019 EAGE President
Professor
Ecole Nationale Supérieure de Géologie (ENSG)
IFP School

Sami Alnuaim
2019 SPE President
Manager, Petroleum Engineering Application Services
Saudi Aramco

Robert Stewart
2018-2019 SEG President
Hugh Roy and Lillie Cranz Cullen Distinguished University Chair in Exploration Geophysics
U. of Houston

The presidents of IPTC’s four sponsoring societies, the American Association of Petroleum Geologists (AAPG); the European Association of Geoscientists & Engineers (EAGE); the Society of Exploration Geophysicists (SEG); and the Society of Petroleum Engineers (SPE) will share their perspectives on what innovative technologies and industry trends are shaping the future of the energy landscape.
Panel Sessions

Life Cycle of Technology Development & Deployment

Thursday, 28 March • 1100-1230 hours • Convention Hall 3, Level 1

Moderator

Ali A. Al-Meshari
Manager, EXPEC
Advanced Research Center
Saudi Aramco

Speakers

Zhang Fengjiu
Vice President
CNOOC Energy Technology & Services Ltd.

Greg Leveille
Chief Technology Officer
ConocoPhillips

Amran Marhubi
Technical Director
Petroleum Development Oman

Nasir B. Darman
Chief Technology Officer
PETRONAS

Ravisankar Mamidanna
Vice President,
Engineering and Construction
Sapura Energy

Etienne Roux
President,
Drilling and Evaluation
Weatherford

The technology life cycle starts from an inception of idea/concept and taking it through different phases of R&D until the technology is fully commercialized. The life cycle varies depending on the nature and scale of the technology. This panel discussion addresses some of the challenges associated with different phase of technology life cycle besides shedding some light on how to overcome these challenges to fast track the technology life cycle for large reservoir scale applications.
Panel Sessions

Industry 4.0 – What’s in it for Our Industry?
Thursday, 28 March • 1400-1530 hours • Convention Hall 3, Level 1

Moderator

Nabeel I. Al-Afaleg
General Manager,
International Gas
Saudi Aramco

Speakers

Bill Vass
Vice President,
Engineering
Amazon Web Services

Vishwanath Narayan
Chief Technology Officer
IBM

Xu Mingqiang
Chief Technology Officer,
Greater China Region
Microsoft

Darren Martin
Chief Technology Officer
Wood

Li Sanqi
Chief Technology Officer,
Product and Solution
Huawei

The 4th Industrial Revolution (Industry 4.0) or the world of automation is now with us. The Internet of Things, cloud technologies, and Big Data Analytics pave the way for automated decision-making. Manufacturing facilities are now highly connected and devices are able to communicate, process data, and make decisions in real time.

Industry 4.0 is the current trend towards full automation and control. It is about better utilising edge data to increase the efficacy of a process. As such, it is very broadly applicable to all production and manufacturing industries and opportunities exist for lessons from otherwise very different industries to cross pollinate.

Technology has been affecting operations for decades so why does today feel different? We are at an inflection point due the exponential growth of digital innovation driving pervasive connectivity, data proliferation and computing power. These innovations are driving macro trends that oil and gas executives must recognise and address, for example:

- Increasing customer expectations and buying patterns
- Global Supply chains with end to end visibility
- Production cost reduction and increasingly competitive landscapes
- Shifting talent and operating model requirements
- Sustainability and traceability

There are (already) identified opportunities in the oil and gas industry for:

- A step change in HSSE performance
- Increased customer loyalty
- Reduced capital and production costs
- Increased exploration success and production/recovery factor
- Significantly reduce overhead and back office activities and costs

Underpinning these opportunities are a range of technologies that drive improved visualisation, smart plants and operations, autonomous and unmanned operations, predictive analytics to improve plant reliability, block chain processes that enhance visibility, automated support processes and improved customer channels and engagement.

This panel will examine how industry representatives are developing strategies and putting in place the organizational capabilities to capture these opportunities. This is in addition to highlighting some of the challenges and means to overcome them to ensure that industry 4.0 technologies are fully adopted. This panel will address what enablers are required to capture the full potential of this business transformation.
Ask The Expert Sessions

The IPTC Ask the Expert Sessions are an opportunity for attendees to hear from “industry gurus” and “distinguished lecturers” on relevant topics related to IPTC’s mission of advancing the scientific and technological knowledge related to the exploration, development, production, transportation and processing of oil and natural gas. Each 50-minute session will feature a 30-minute keynote presentation by the expert followed by a 20-minute question and answer session.

Digital Rock Approach for Extending Core Materials into Time/Space/Process Dimensions

Tuesday, 26 March • 1400-1450 hours • Room 307, Level 3

Digital rocks are 3D models depicting the pore/grain scale textural arrangement of void spaces and solid framework of a rock. Such models are widely used to calculate fluid flow, and efforts are underway (many research groups) extending those methods for calculations of: resistivity, NMR response, thermal conduction, poro-mechanics and acoustics. These numerical approaches provide a phenomenological understanding of the process basis underlying real-world measurements (e.g. wireline) and those obtained via laboratory measurements (e.g. core analysis). Because digital rocks provide a critical link between rock textures and properties, it is possible to ‘play’ with textures to introduce (or remove) the textural effects of natural processes, such as diagenesis and deformation, following general rules derived from many decades of petrographic studies. This capability allows any digital rock to be extended forwards or backwards through its ‘process space’, enabling the estimation of property histories even though we do not have a physical sample.

Gary D. Couples
Professor
Herriot-Watt U.

Professor Gary D. Couples leads the Geomaterials research group at Heriot-Watt University, which seeks to understand, and quantify, subsurface processes at many length- and time-scales. These studies employ multiple simulation methods, laboratory experimentation, and geo-history investigations, and seek to provide the context and circumstances by which rocks, and their textural characteristics, are altered. Digital rocks play a key role by providing a common link across all scales and processes.

Dr. Couples earned a Bachelor degree at Texas A&M University (1974), a Master degree at Rice University (1977), and a PhD at Texas A&M University (1986). Following 15 years of industrial experience, he joined the academic world, first at Glasgow University, and now at Heriot-Watt University. He has been a Distinguished Lecturer for the SPE and teaches both academically and in the professional setting in many international locations.

Brown Field Redevelopments: The Art of Finding Oil in Your Own Backyard

Tuesday, 26 March • 1600-1650 hours • Room 307, Level 3

Brownfields today still hold significant reserves. Global effort to increase oil and gas production shall be a combination of developing new discoveries and maximising the production from existing brownfields. Production decline from existing brownfields can be due to a combination of reservoir pressure decline, redistribution of oil and gas, and change in rock-fluid properties.

The initially constructed subsurface production and surface production support system progressively become inadequate and degraded. Reservoir and field production management main focus and tasks are shifting to reservoir and production surveillance, well productivity assurance and system flow assurance. Brownfield redevelopment shall focus on reconstruction of an optimised production system for maximising well productivity and higher wellbore stability at the lowest cost.

In this technical sharing session, the latest techno-commercial challenges in brown field will be discussed. Several case studies will be presented to support our so called ‘Value Driven Approach’ in mature field redevelopment.
Ask The Expert Sessions

Thermal Enhanced Oil Recovery – False Starts and Successes

Wednesday, 27 March • 1600-1650 hours • Room 307, Level 3

Thermal Enhanced Oil Recovery (EOR) has come a long way, contributing to about 5% of the world oil production. There is still the potential to double this volume. Much time and resources have been lost in testing thermal or thermally assisted recovery methods with little or no commercial recovery potential. The successful methods include steam injection in many forms. The unsuccessful methods encompass a broad range of processes, such as combustion-based methods, electrical heating, contiguous use of chemicals and solvents, and still more exotic approaches such as downhole steam generators. The successful processes are discussed, pointing out that currently steam injection is applicable to almost any type of reservoir. The technical flaws of less successful methods are briefly discussed. Future applications of thermal EOR are outlined.

Dr. Abdolrahim Ataei, BSc, MSc, and PhD is Principal Reservoir Engineer in PETRONAS. He has more than 28 years of industrial and academic experiences in Upstream E&P with the past 11 years in PETRONAS. Beside reservoir engineering and reservoir studies, he was working in several positions in E&P business including offshore operation and production, as well as well completion design and drilling.

In PETRONAS, he was a member of Technical Review Committee (TRC) which actively involved in formulation of several FDPs in Malaysia for the past 10 years, as well as subsurface advisor in several international asset evaluation and acquisition and resource maturation projects.

He published more than 50 technical papers in various international journals and conferences on different area in reservoir dynamic and characterisation. His areas of interest are reservoir simulation and dynamics, EOR, well testing and production analysis.

Dr. S.M. Farouq Ali is Distinguished Professor of Petroleum Engineering at the University of Houston. He served at the University of Alberta, and at the Pennsylvania State University, for 40 years. Until recently he was EnCana Professor at the University of Calgary. He has supervised over 200 graduate students, authored over 500 papers, and three books. He serves as consultant to oil companies worldwide.

Dr. Farouq Ali has been honoured for his work on thermal recovery and simulation, with awards from the Society of Petroleum Engineers, the Canadian Institute of Mining and Metallurgy, and the Russian Academy of Sciences. He was awarded honorary doctorates by two major universities in Russia, and also received the Academy of Sciences Kapitsa Gold Medal. In 2007, he received the Society of Petroleum Engineers’ Anthony F. Lucas Gold Medal for technical excellence, and in 2014, the Society’s highest Honorary Member award. In 2009, he was elected to the U.S. National Academy of Engineering.
Ask The Expert Sessions

What Really Matters When Determining the Producibility of Organic Shale Reservoirs?

Thursday, 28 March • 1400-1450 hours • Room 307, Level 3

The key to organic shale productivity is having an adequate quantity of producible hydrocarbons. The challenge is to define what is “producible.” This is assessed via two technical disciplines: petrophysics and geomechanics.

Petrophysics: Hydrocarbons in place can be a misleading metric. Oil in an organic hosted pore system may not be producible because of fluid viscosity and pore size. The producible hydrocarbons have likely migrated into a nearby conventional pore system. In the gas window such migration is not needed. Thus pore system nature and thermal maturation will impact producibility.

Geomechanics: Hydraulic fracturing exposes a large reservoir surface area to the pressure drop required for fluid flow. The challenge is to create a durable surface area in the desired location. Frac location is driven by geomechanics and natural fractures. Durability is controlled via frac design and production management.

This presentation will review how these petrophysical and geomechanical properties are quantified.

George Waters
Head of Integrated Fracturing Services Domain
Schlumberger Fellow
Schlumberger

George has 33 years of experience in hydraulic fracturing, having designed and evaluated stimulation treatments in over 20 countries on six continents. He currently manages the technical integration of multiple Schlumberger services on international stimulation projects. He has authored or co-authored over 40 technical publications and has 12 patents and applications. George holds a BS in Petroleum Engineering from West Virginia University, a MS in Environmental Engineering from Oklahoma State University, and a MS in Petroleum Engineering from Institut Francais du Petrole. He was a 2009-10 SPE Distinguished Lecturer on the topic of Completion of Organic Shale Reservoirs, and is a Schlumberger Stimulation Fellow.
Midyan field is located in a remote area in the Northwest region of Saudi Arabia. The field was developed to produce gas which generates power thus reducing the more costly diesel burning. The industry in this region is growing which requires additional power generation. Moreover, this development created an opportunity for further exploration and development in this region. This success has led to an exponential increase in exploration activities in the region targeting offshore prospects in the Red Sea.

The field was discovered in 1992 and further delineated afterwards. A multi-disciplinary team was formed to choose the most optimum cost effective way to develop the field. The development started in 2009 followed by construction activities that were completed by 2016. During the presentation, the pioneering developments will be highlighted.

The session will cover most aspects of development from exploration, delineation, field development, construction, testing and finally production.

**Project Team Members**

**Ahmed Attar (Presenter)**
Reservoir Engineer, Offshore Gas Reservoir Management
Saudi Aramco

**Abdullah Al-Utaibi**
General Supervisor, Offshore Gas Reservoir Management
Saudi Aramco

**AbdulRahman Al-Nutaifi**
Supervisor, Midyan Gas Unit, Offshore Gas Reservoir Management
Saudi Aramco
IPTC Excellence in Project Integration Award

As the upstream oil and gas industry moves towards increasingly complex and capital-intensive projects, conventional practices must be challenged. It is critical that lessons are shared from successfully integrated projects that embody excellence. The IPTC committees and sponsoring societies believe in highlighting projects above US$500 million that have demonstrated distinction throughout the entire exploration to production value chain.

The IPTC Excellence in Project Integration Award is given to a project that adds value to the industry and exemplifies strong teamwork, solid geoscience knowledge, reservoir and production engineering acumen, determined and watchful construction, and outstanding facilities engineering practices. Equally important, successful projects require a pervasive culture of HSE, and a positive impact on the country, the region and the world.

16 nominations from 12 organisations representing 7 countries were received to be considered for the 11th IPTC Excellence in Project Integration Award and the finalists will be determined in November. **The finalists and winner will be recognised at the Opening Ceremony scheduled 0900-1015 hours on Tuesday, 26 March.** Each finalist will also present the details of their project and answer audience questions in special 90-minute sessions on Wednesday, 27 March.

Past winners and finalists of the IPTC Excellence in Project Integration Award include:

<table>
<thead>
<tr>
<th>1ST IPTC • 2005 • DOHA, QATAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Qatargas Debottlenecking Project, Qatargas Operating Co. (first place)</td>
</tr>
<tr>
<td>- RasGas Liquefied Natural Gas Trains 3&amp;4, RasGas (second place)</td>
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<tr>
<td>- Qatif &amp; Abu Safah Development Programme, Saudi Aramco (third place)</td>
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<tr>
<th>2ND IPTC • 2007 • DUBAI, U.A.E.</th>
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<tr>
<td>- The Independent Project, Anadarko Petroleum (first place)</td>
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<tr>
<td>- Angola Block 17 Rosa Development, Total (second place)</td>
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<tr>
<td>- Champion West Project, Shell (third place)</td>
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<tr>
<th>3RD IPTC • 2008 • KUALA LUMPUR, MALAYSIA</th>
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<tr>
<td>- Shakhalin- 1 Project, Exxon Neftgas (first place)</td>
</tr>
<tr>
<td>- Kikeh Development Project, PETRONAS &amp; Murphy Sabah Oil (second place)</td>
</tr>
<tr>
<td>- RGX2 Train 5 LNG Project, RasGas (third place)</td>
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<tr>
<th>4TH IPTC • 2009 • DOHA, QATAR</th>
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<tr>
<td>- Qatargas 2, Qatar Liquefied Gas (first place)</td>
</tr>
<tr>
<td>- The Dolphin Project, Dolphin Energy (second place)</td>
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<tr>
<td>- Salym Project, Shell (third place)</td>
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<tr>
<th>5TH IPTC • 2012 • BANGKOK, THAILAND</th>
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<tr>
<td>- Parque das Conchas Project, Shell (winner)</td>
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<tr>
<td>- New Life After 80 “Seria Field Rejuvenation”, Shell (finalist)</td>
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<tr>
<td>- Odoptu First Stage Production, ExxonMobil (finalist)</td>
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<td>- Yemen LNG Project, Total (finalist)</td>
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<tr>
<th>6TH IPTC • 2013 • BEIJING, CHINA</th>
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<tr>
<td>- Pazflor, Total (winner)</td>
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<tr>
<td>- Efficient Development of the Large Tight Sandstone Gas Field in Sulige, China Natl. Petroleum Corp.(finalist)</td>
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<tr>
<td>- Jubilee Project, Tullow Oil (finalist)</td>
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<th>7TH IPTC • 2014 • DOHA, QATAR</th>
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<tr>
<td>- Perdido, Shell (winner)</td>
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<tr>
<td>- Pearl GTL, Shell (finalist)</td>
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<tr>
<th>8TH IPTC • 2014 • KUALA LUMPUR, MALAYSIA</th>
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<tr>
<td>- RasGas Expansion Phase 2 (RGX2 Project), RasGas Co. Ltd. (winner)</td>
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<tr>
<td>- Karan Mega Project, Saudi Aramco (finalist)</td>
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<tr>
<td>- Mars B, Shell (finalist)</td>
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<tr>
<th>9TH IPTC • 2015 • DOHA, QATAR</th>
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<tr>
<td>- CLOV, Total (winner)</td>
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<tr>
<td>- Bonga North West, Shell (finalist)</td>
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<tr>
<th>10TH IPTC • 2016 • BANGKOK, THAILAND</th>
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<tr>
<td>- Laggan Tormore, Total (winner)</td>
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<tr>
<td>- Keshen Development, China Natl. Petroleum Corp. (finalist)</td>
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Technical Sessions
(Changes/additions made after 25 October 2018 will be reflected in the on-site programme)

Tuesday, 26 March ● 1400-1530 hours ● Room 308
SESSION 1: UNCONVENTIONAL RESERVOIRS

Session Chairpersons:
Ibrahim S. Abou-Sayed, i-Stimulation Solutions, Inc.
Tian Jun, PetroChina E&P Co., CNPC

Paper
19056 Up-Scaling Shale Petrophysical Properties: Multi-Scale 2D and 3D Imaging of Mancos Shale with Correlative Light, X-Ray, and Electron Microscopy
J. Goral and M. Deo, U. of Utah; M.G. Andrew, Zeiss Microscopy

***** Pressure Transient Analysis (PTA) and Rate Transient Analysis (RTA) Methods in Unconventional Reservoirs
T.A. Blasingame, Texas A&M U. (Top Rated Paper from IPTC Sponsoring Societies)

19084 Lithofacies Controls on Mechanical Properties and Brittleness in Qusaiba Shale, Rub’ Al-Khali Basin, Saudi Arabia
A. Mustafa, A. Abdulraheem, and A. Sahin, King Fahd U. of Petroleum and Minerals

Tuesday, 26 March ● 1400-1530 hours ● Room 302
SESSION 2: CLOUD COMPUTING

Session Chairpersons:
Ian Sylvester, Woodside Energy Ltd.
Zaki H. Al-Awwami, Saudi Aramco

Paper
19418 Intelligent Oilfield - Cloud Based Big Data Service in Upstream Oil and Gas

19383 Implementation of a Scalable Distributed Cloud Computing Platform for Fast Real-Time Reservoir Development
E. Gutierrez, H. Wu, C. Dong, and I. Effimov, Halliburton

***** Grid Cluster in the Office: High-Performance Computing for Reservoir Management
R.R. Yaubatyrov, V. Babin, and L.I. Akmadieva, Gazpromneft NTC (Top Rated Paper from IPTC Sponsoring Societies)

Tuesday, 26 March ● 1400-1530 hours ● Room 303
SESSION 3: FULL WAVEFIELD INVERSION & VELOCITY MODEL BUILDING

Session Chairpersons:
Liu Yongxia, CGG Technology Services (Beijing) Co. Ltd.
Li Tao, Aramco Asia

Paper
19289 Visco-Acoustic FWI for Imaging Beneath Complex Gas Clouds
M. Wang and Y. Xie, CGG

19459 Complex Velocity Model Building Illustrated by Case Studies
S. Sioni, E. Owah, A. Riou, and C. Rivera, Total E&P

Tuesday, 26 March ● 1400-1530 hours ● Room 305A/B
SESSION 4: ADVANCED GEOLOGICAL CONCEPTS

Session Chairpersons:
Mohammed Al-Fahmi, Saudi Aramco
Li Zhi, CNPC

Paper
19052 Depositional Pattern and Diagenesis of the Late Neogene Sunda Shelf Sedimentary Record: An Outcrop Study of the Banyumeneng Calcilastic Submarine Fan Prograding Sequence
M. Ridha, M. Nurdiansyah, J.S. Zamili, and P.T. Triwigati, U. Diponegoro; W.N. Farida, Pertamina Hulu Energi; Y.B. Muslih, U. Pertamina

19259 3D Pore Network Description in Order to Understand the Heterogeneity of Carbonate Rocks, a Mono-Mineral Case Study from Middle East
F. Hong, Total
Tuesday, 26 March • 1400-1530 hours • Room 305C/D/E
SESSION 5: RESERVOIR EVALUATION AND MONITORING: RECENT ADVANCEMENT

Session Chairpersons:
Ali A. Al-Yousef, Saudi Aramco

Paper
***** Cross Well Electromagnetics: Reservoir Surveillance and Monitoring Technology
P. Zhang and W. Abdallah, Schlumberger Saudi Arabia; A.F. Marsala and S. Lyngra, Saudi Aramco PE&D
(Top Rated Paper from IPTC Sponsoring Societies)

19358 Resistivity Log Modelling and Inversion, Now a Reality for Improving Petrophysical Analysis, Assisting Real-Time Operation Decisions, and Much More
H. Wang, Chevron

19452 Application of Signal Amplification Technique in Pressure Transient Analysis for Low Permeability Reservoirs
L. Luo and S. Cheng, China U. of Petroleum, Beijing; G. Qin, U. of Houston

Tuesday, 26 March • 1400-1530 hours • Room 311A
SESSION 6: DRILLING TECHNOLOGY – SUCCESS CASES

Session Chairpersons:
Wang Haige, CNPC Drilling Research Institute Inst.
Mohammad S. Al-Badran, Saudi Aramco

Paper
19462 Successful Use of Directional Casing while Drilling
E. Segui and S. Penot, Total E&P Myanmar; D. Pickup, Schlumberger

19159 The Effect of Pipe Rotation on Dynamic Well Control Casing Pressure within MPD Applications
Z.A. Al Marhoon, Saudi Aramco PE&D; B. Akbari, Louisiana State U.

19464 RSS with Near-Bit GR Imaging Assist Accurate Steer Drilling in Sichuan: A Fit-For-Purpose Solutions for Shale Gas Drilling Case Study
X. Liu and J.K. Zhao, Schlumberger Technology Services (Chengdu) Ltd.

Tuesday, 26 March • 1400-1530 hours • Room 311B
SESSION 7: ARTIFICIAL LIFT: PERFORMANCE MONITORING AND NEW ADVANCEMENTS

Session Chairpersons:
Emeline Chong, Petrofac Malaysia Ltd.
Bahrom Madon, PETRONAS

Paper
19074 An Innovative Simulated Experimental System for Evaluating PCP Elastomer’s Dynamic Fatigue Properties
G. Cao, RIPED, CNPC; Y. Huang, PetroChina Dagang Oilfield Co. Ltd.; C. Cong, China U. of Petroleum, Beijing; W. Ge, PetroChina Dagang Oilfield Co. Ltd.

19474 Truly Rigless: A World First through 3-1/2” Tubing Cable Deployed Electrical Submersible Pump on a Live Well, Sarawak Basin, Malaysia

19202 Electrical Submersible Pump Material Compatibility for High TDS Applications
T.C. Kalu-ulu and B.M. Mostafa, Saudi Aramco NAOO

Tuesday, 26 March • 1400-1530 hours • Room 311C
SESSION 8: ENVIRONMENT & TECHNOLOGIES FOR SUSTAINABILITY

Session Chairpersons:
Gregor Brodt, BASF SE
Ahmed Abou-Sayed, Advantek International

Paper
19173 Methane Emissions in China’s Oil and Gas Production: Impacts and Control Measures
Y. Weng, M. Xue, X. Cui, and X. Li, CNPC Research Inst. of Safety & Environment Technology

***** Risk Associated with Legacy Wells in CCS and CO2 EOR Projects - A Simulation Study
B. Nazarian, Equinor ASA
(Top Rated Paper from IPTC Sponsoring Societies)

19354 A Useful Application of Foam for Mitigating Leakage Risk During CO2 Sequestration
A.A. Adebayo, King Fahd U. of Petroleum & Minerals
Tuesday, 26 March ● 1600-1730 hours ● Room 308
SESSION 9: UNCONVENTIONAL PRODUCTION

Session Chairpersons:
Francois D. Issard, Total E&P China
Sau-Wai Wong, rybkarock

Paper
19201 Improving the Understanding of Unconventional Well Performance with Integrated Surveillance Diagnostics: A Case Study from Permian Basin
M. Han, M. Harty, N. Wakil, and S. Amadi, Occidental Oil and Gas

19468 Modelling Inter-Well Interference Due to Complex Fracture Hits in Eagle Ford Using EDFM

19276 High-Definition Analysis and Evaluation of Gas Displacement EOR Processes in Fractured Shale Oil Formations
G.J. Moridis, Texas A&M U. and Lawrence Berkeley National Laboratory

Tuesday, 26 March ● 1600-1730 hours ● Room 309
SESSION 10: BIG DATA

Session Chairpersons:
Chen Kah Seong, PETRONAS
James Holbeach, Wood

Paper
19382 What Did Big Data Analytics Do in Drilling and Completion Obstacles? A Comprehensive Industry Review
C. Noshi and J.J. Schubert, Texas A&M U.

19446 An Assessment of the Impact of Rheological Properties on Rate of Penetration Using Data Mining Techniques
M. Al-Maliki and Y. Alshawi, Basra Oil Co.

19470 The Application of Big Data Analysis in the Optimising and Selecting Artificial Lift Methods
R. Zhao, China U. of Petroleum, Beijing; J. Zhang and J. Shi, RIPED, CNPC

Tuesday, 26 March ● 1600-1730 hours ● Room 303
SESSION 11: SEISMIC IMAGING & MIGRATION

Session Chairpersons:
Li Peiming, BGP, CNPC
Sandeep Kumar Chandola, PETRONAS

Paper
19433 Joint Migration Inversion Versus FWI-RTM: A Comprehensive Comparison Study Based Upon 2D Realistic Offshore Models
Y. Sun, Aramco Overseas Co.; Y. Kim, Saudi Aramco PE&D; S. Qu and E. Verschuur, Delft U. of Technology; A. Almomin, Saudi Aramco; R. van Borselen, Aramco Overseas Co.

19469 The Study and Application of the Kirchhoff Q PSDM Technology
W. Zhang, J. Zhang, C. Wang, P. Sun, and G. Xue, BGP, CNPC

19344 GDM Imaging Condition for Least Squares Reverse Time Migration
S. Moussavi Alashloo, A. Babasafari, and D.P. Ghosh, U. Teknologi PETRONAS

Tuesday, 26 March ● 1600-1730 hours ● Room 305A/B
SESSION 12: STRUCTURAL SYSTEMS AND TRAP ANALYSIS

Session Chairpersons:
Henk Rebel, AE&E Technologies Inc., China
Tong Hengmao, China U. of Petroleum, Beijing

Paper
19461 Fracture Mineralisation in the Tectonically Stable Interior of the Arabian Platform: A Case Study on the Arab Carbonates
M.M. Al-Fahmi, Saudi Aramco; J.A. Cartwright, Oxford U.

19364 Control Effects of Huizhou Depression Tectonic Evolution on the Paleogene Formation Sedimentary Differences

19116 A DNN Trained to Pick Faults in Seismic Data: Implementation and Results
B.A. Montaron, F. Montaron, and R. Montaron, Fraimwork SAS
Tuesday, 26 March ● 1600-1730 hours ● Room 305C/D/E
SESSION 13: ADVANCES IN RESERVOIR SIMULATION

Session Chairpersons:
Kamal Morad, Petroleum Development Oman
Wu Shuhong, RIPED, CNPC

Paper
19351 Modelling and Optimisation for Matrix Acidising in Fractured Carbonate Reservoirs
R. Dong and M.F. Wheeler, The U. of Texas at Austin

19128 Benchmarking of State-of-the-Art Assisted History Matching Methods under Reservoir Uncertainty on a Complex Water-Flooding Process
M. Maucec, Saudi Aramco PE&D; A. Saffar, A. Turki, and I. Fahmy, Saudi Aramco

19286 Waterflood Surveillance by Validating Streamline-Based Simulation with Crosswell Electromagnetic
S. Mishra and A. Ojha, Schlumberger Asia Services Ltd.; C. Shrivastava, Schlumberger

Tuesday, 26 March ● 1600-1730 hours ● Room 311A
SESSION 14: CEMENTING TECHNOLOGY ADVANCEMENTS

Session Chairperson:
Salim Taoutaou, Schlumberger

Paper
19399 Self-Healing Cement for Long-Term Safe Exploitation of Gas Wells: A New Technology Case Study
C.R. Johnson, Schlumberger Oilfield UK Plc.; T. Ioan, A. Gai, and J.L. Chantres, Schlumberger; G. Gervasi, Ital Gas Storage SpA; B. Bourgeois and M. Bouteldja, Geostock SAS

19471 Production Liner Cementing Practices in Challenging Horizontal Wellbores
I.A. Al-Bayat and M.E. Khalil, Saudi Aramco D&WO; T. Heinold and D.S. Porter, Saudi Aramco PE&D

19148 The Study and Application of Intelligent Thixotropic Cement Slurry Based on Nanotechnology

Tuesday, 26 March ● 1600-1730 hours ● Room 311B
SESSION 15: WELL AND ASSET MANAGEMENT FOR IMPROVED RESERVOIR PERFORMANCE

Session Chairpersons:
Abdullatif Al-Omair, Saudi Aramco
Rahim Masoudi, PETRONAS

Paper
19400 A Collaborative Approach to Risk Assessment and Mitigation of Pre-Production Cross-Flow for a Multi-Billion Dollar Sour Field Development Project in the Sultanate of Oman: A Case Study
M. Cobanoglu and A. Nabhani, Petroleum Development Oman

***** Effective and Sustained Cone Control Essential to Accelerate and Maximise Reserves Recovery in Water Drive Reservoirs - North Kuwait
E.P. Anthony and N. Al-Maqsseed, Kuwait Oil Co.; G. Deinum, Shell Intl.
(Top Rated Paper from IPTC Sponsoring Societies)

19120 Unlocking Marginal Deep Water Fields Development through Reservoir to Surface Integrated Asset Modelling
R. Marmier, Total E&P; M. Darde and O. Lehner, Total

Tuesday, 26 March ● 1600-1730 hours ● Room 311C
SESSION 16: PROJECT MANAGEMENT & FACILITIES DISCIPLINE

Session Chairpersons:
Lou Khee Fang, PETRONAS
Aslan Bulekbay, Saudi Aramco

Paper
19284 The Effects of Reducing the Sulfur Content of Diesel Products on the Lubricity & Electrical Conductivity and Optimising the Consumption of Lubricity and Conductivity Improver Chemicals
M.M. Alnughaimesh, Saudi Aramco

19440 Novel Pseudo Dry Gas System for Extended Subsea Tie-Backs
S. Stokes, A. Rafty, and L. Thomas, INTECSEA Pty. Ltd.

19391 An Integration of Geology, Geohazards, Geophysics and Geotechnics for Pre-FEED Site Layout and Engineering Design of an Offshore Gas Field in the Timor Sea
SESSION 17: UNCONVENTIONAL GEOLOGICAL RESERVOIR CHARACTERISATION AND MODELLING

Session Chairpersons:
John Kaldi, Australian School of Petroleum, U. of Adelaide
Tian Hua, RIPED, CNPC

Paper
19288 A Reservoir and Geomechanical Coupling Simulation Method: Case Studies in Shale Gas and CBM Reservoir
X. Tang, H. Zhu, and Q. Liu, Southwest Petroleum U.

19112 A New Diagnostic Approach to Identify the Complex Fracture Geometry with Fracture Hit Using a Semi-Analytical Model
Z. Chen and K. Sepehrnoori, The U. of Texas at Austin

19187 The Rock Mechanical Properties of Lacustrine Shales: Argillaceous Shales Versus Silty Laminae Shales
H. Yu, Northwest U.; R. Rezaee, Curtin U.

SESSION 18: DATA ANALYTICS FOR DRILLING & COMPLETION

Session Chairpersons:
Li Qun, CNPC
Bernard Montaron, Friaimwork SAS

Paper
19311 Data Analytics for Failure Prevention: A Novel Data Mining Approach in Predicting Casing Failures
C. Noshi, S.F. Noynaert, and J.J. Schubert, Texas A&M U.

19523 Artificial Intelligence Approach to Predict Pore and Fracture Pressures
A. Ahmed, King Fahd U. of Petroleum and Minerals

19316 Modelling Lost Circulation While Drilling Using Artificial Intelligence Algorithms in the Rumaila Field, Iraq
H. Alkinani and S. Dunn-Norman, Missouri U. of Science and Technology

SESSION 19: ADVANCES IN TIME PROCESSING

Session Chairpersons:
Zhang Xingyang, RIPED, CNPC
Dominique Guérillot, Texas A&M U. at Qatar

Paper
19366 Near-Surface Model Building Using Smart Distributed Acoustic Sensing Uprohles
R. Smith, A. Bakulin, A. Aldawood, and I. Silvestrov, EXPEC Advanced Research Center, Saudi Aramco

19569 Signal to Noise Ratio Enhancement Using Empirical Wavelet Transform
L.W. Yi, D.P. Ghosh, R. Hamidi, and M.H. Musa, U. Teknologi PETRONAS

19134 Resolving Shallow Reef Effect with New Water Layer Demultiple Method and Diving Wave Tomography: A Case Study from South China Sea
J. He and L. Rong, Schlumberger; Z. Liu and M. Zhu, CNOOC

SESSION 20: GEOLOGICAL CHALLENGES

Session Chairpersons:
Zou Caineng, RIPED, CNPC
Arindam Pal, Cairn Oil & Gas, Vedanta Ltd.

Paper
19147 Assessment of Oil Migration Pathway Dimension by Modelling Analysis of Geotracer Distributions
Y. Yang and K. Arouri, Saudi Aramco PE&D

19122 Study on the “Incised-Channel” Lithologic Traps in Neogene in Enping Sag, Pearl River Mouth Basin
Z. Li, L. Ding, X. Zhang, X. Li, X. Zhang, and S. Zhang, CNOOC Ltd., Shenzhen Branch

19263 Application of Fuzzy Control Theory in the Study of the Macroscopic Remaining Oil Distribution for a Mature Sandstone Reservoir in the Tarim Oilfield, China
J. Sun and Q. Li, China U. of Petroleum, Beijing; Z. Zhang, PetroChina Tarim Oilfield Co.; M. Chen and L. Ren, Xi’an U. of Petroleum; B. Zhang, PetroChina Tarim Oilfield Co.
Wednesday, 27 March ● 0900-1030 hours ● Room 305C/D/E

SESSION 21: DRILLING TECHNOLOGY FOR DIFFICULT ENVIRONMENTS

Session Chairpersons:
Wang Haige, CNPC Drilling Research Inst.
Liu Hai, Schlumberger

Paper
19058 Resolving Torsional Vibration in Horizontal Limestone Reservoirs Prevents Severe Equipment Damages
A.Z. Al Busaidi, Schlumberger

19350 Effective Annular Ledge Formation Sidetracking in Multilateral Wells
N.V. Abaltusov and A.I. Dubrovin, Weatherford

19363 New Ultra-Strong and Catalyst-Free PDC Cutting Element Technology
G. Zhan, Saudi Aramco EXPEC Advanced Research Center; T.E. Moellendick, M.S. Al-Badrab, B. Li, and C.P. Gooneratne, Saudi Aramco PE&D; D. He, Sichuan U.

Wednesday, 27 March ● 0900-1030 hours ● Room 311A

SESSION 22: DRILLING EFFICIENCY

Session Chairpersons:
Jan Paul, OMV
Zhou Jianliang, CNOOC

Paper
19092 Industry-First Hybrid Technology for Coiled Tubing Services Combining Fiber Optic and Electric Line, Enabling Downhole Power and Real Time Communication for the Next-Generation Decision-Making Process with Wider Downhole Insight with Continuous Power
V. Vera, C.A. Torres, E. Delgado, and C. Pacheco, Halliburton; J. Higuera and M. Torres, Equion Energia

19306 Saving a Challenging Sidetrack through Optimising the Trajectory by Accurately Predicting the Fracture Gradient

19300 A Rotating Continuous Circulation Tool (RCCT) for Increasing Drilling Efficiency and Optimising Borehole Cleaning
M.S. Al-Badrab, Saudi Aramco PE&D

Wednesday, 27 March ● 0900-1030 hours ● Room 311C

SESSION 24: LNG & GTL

Session Chairpersons:
Shan Tongwen, CNOOC Gas and Power Group
Zhang Chao, CNOOC Gas and Power Group

Paper
19231 Surge Peak Pressure Magnitude Impact Due to Vapour Formation and Collapse: Simulation Study, Mitigation and Testing

19401 Towing Characteristics of Large-Scale Concrete Cassion for Offshore Modularised LNG Terminal

19176 Maximising the Value - Malaysia End to End Gas Initiatives
K.I. Jamaludin and R. Mokhtar, PETRONAS

Wednesday, 27 March ● 1100-1230 hours ● Room 308

SESSION 25: FRACTURING MATERIALS & MONITORING

Session Chairpersons:
Andy Benson, Premier Oilfield Laboratories
Aaron Wang Yang, Halliburton

Paper
19538 Effective Fracture Thickness Estimation Using Microseismic Events Distribution
N. Shimoda, JOGMEC

19437 Maximising Production from Shale Reservoirs by Using Micro-Sized Proppants
H. Lau, A.V. Radhamani, N. You, and S. Ramakrishna, National U. of Singapore
19451 New Insights in the Characteristics Required for a Successful Flowback Surfactant and Its Use in Tight and Unconventional Reservoirs
A.I. Rabie, J. Zhou, and Q. Qu, SOLVAY

Wednesday, 27 March ● 1100-1230 hours ● Room 302
SESSION 26: RESERVOIR & PRODUCTION
MACHINE LEARNING

Session Chairpersons:
Ian Sylvester, Woodside Energy Ltd.
Bernard Montaron, Fraimwork SAS

Paper
19213 Deep Learning Generative Models for Reservoir Modelling Applications
L. Mosser, Imperial College London; O. Dubrule, Total; M.J. Blunt, Imperial College London

19226 Prediction of Surge Volumes Using Machine Learning
S. Masand, Wood

19260 Eagle Ford Well Completion and Production Optimisation Using Data-Driven Approaches
G. Luo, Y. Tian, and C.A. Ehlig-Economides, U. of Houston

Wednesday, 27 March ● 1100-1230 hours ● Room 303
SESSION 27: BOREHOLE GEOPHYSICS

Session Chairpersons:
Ali Dawood, Saudi Aramco
Zhu Zhenyu, CNOOC Research Inst.

Paper
19439 Depth Imaging from Topography Using Vertical Seismic Arrays
A. Bakulin, I. Silvestrov, Y. Kim, and P. Golikov, Saudi Aramco

***** Microseismic Event Location Using Direct and Reflected Waves
N. Belayouni, Baker Hughes, a GE company (Top Rated Paper from IPTC Sponsoring Societies)

19525 Velocity Estimation and Imaging Using Walkaway DAS VSP Acquired with Carbon Rod
A.A. Aldawood, I. Silvestrov, and M. Dmitriev, Saudi Aramco PE&D

Wednesday, 27 March ● 1100-1230 hours ● Room 305A/B
SESSION 28: GEOPHYSICAL CHALLENGES

Session Chairpersons:
Phathompat Boonyasaknanon, PTTEP
Emad Busbait, Saudi Aramco

Paper
19135 Integration of High-End Seismic Data with Outcrop Analogues Providing New Insights into the Sedimentary Systems of the Frontier Pegasus Basin, New Zealand
A. Karvelas, Schlumberger; A. McArthur, U. of Leeds; B.J. Lim, Schlumberger; B. McCaffrey, U. of Leeds

19365 A Rigorous Empirical Approach to Predict Poisson’s Ratio of Carbonate Rocks from Wireline Logs Using Artificial Intelligence Tools
Z. Tariq, King Fahd U. of Petroleum and Minerals

19337 Improved Seismic Imaging with Re-Processing: A Case Study in SCS Deep Offshore
M. Guo and Y. Deng, Total E&P Asia Pacific Pte. Ltd.; W. Shi and Z. Dan, Data Processing Co. Geophysical, China Oilfield Services Ltd.; M. Yang, CNOOC Ltd., Shenzhen Branch; C. Tien, CPC Corp.

Wednesday, 27 March ● 1100-1230 hours ● Room 305C/D/E
SESSION 29: ADVANCEMENT AND APPLICATION OF IOR/EOR

Session Chairpersons:
Subhash Ayirala, Saudi Aramco
Eric Delamaide, IFP Technologies (Canada) Inc.

Paper
***** Salinity-Sensitive Polymeric Particles for Improved Recovery in Fractured Carbonate Reservoirs
K.K. Mohanty and K.K. Panthi, The U. of Texas at Austin (Top Rated Paper from IPTC Sponsoring Societies)

19529 Separate Molecular and Pressure Technical of ASP Flooding in Daqing Oilfield

19066 Understanding of Multiscale Water Ion Interactions at Interfaces to Develop New Water Chemistry Guidelines for Smart Water Flooding in Carbonates
S.C. Ayirala, S.M. Al-Enezi, and A.A. Yousef, Saudi Aramco PE&D
Wednesday, 27 March ● 1100-1230 hours ● Room 311A

SESSION 30: COILED TUBING OPERATIONS

Session Chairpersons:
Cao Gang, RIPED, CNPC
Mofazzal Hossain, Curtin U.

Paper
19511 First Concentric Coiled Tubing Trial Test Phase 1 in Saudi Arabia: Operational Challenges and Lesson Learned
N.F. Qahtani and A. Mulhim, Saudi Aramco; U. Ahmed, Baker Hughes, a GE company

**** Factory Model Approach for Successful Coil Tubing Unit Drillout Operations in Unconventional Horizontal Wells
(Top Rated Paper from IPTC Sponsoring Societies)

19206 Case Stories of Improved Horizontal Well Sweep Efficiency with Inflow Control Device in Offshore Fluvial Oil Reservoir
H. Shi, Y. Su, and Y. He, CNOOC Ltd., Tianjin Branch

Wednesday, 27 March ● 1100-1230 hours ● Room 311B

SESSION 31: PRODUCTIVITY ENHANCEMENT THROUGH STIMULATION: NEW ADVANCEMENTS

Session Chairpersons:
Prady Chaliha, Osaka Gas Australia
Abdolrahim Ataei, PETRONAS

Paper
19121 A Fundamental Model for Wormhole Formation Including Multiphase Flow
H. Cheng, Research Inst. of Tsinghua U. in Shenzhen, and iCore Group Inc.; M. Palharini Schwalbert, Petrobras and Texas A&M U.; D. Zhu and A.D. Hill, Texas A&M U.

19359 Evaluation of Sandstone Stimulation Using Thermochemical Fluid through Distributed Temperature Sensing and CT Real-Time Downhole Flow Measurement Tool

19377 Numerical Analysis of Complex Fracture Propagation Under Temporary Plugging Condition in Natural Fractured Reservoir

Wednesday, 27 March ● 1100-1230 hours ● Room 311C

SESSION 32: GAS PROCESSING

Session Chairpersons:
Nayef S. Al-Shammari, Saudi Aramco
Lou Khee Fang, PETRONAS

Paper
19397 Predictive Monitoring of Acid Gas Membrane Performance
M.S. Rossi, A.D. Jariwala, S. Pan, and O. Medvedev, Schlumberger

19361 Increasing Efficiency of a Gas Processing Plant - A Case Study
P. Sengupta, S. G, B. Das, and A. Pawar, ONGC Ltd.

19234 Adverse Effect of Oversizing Upstream Gas Oil Separation Plants on Energy Consumption
M.A. Soliman, Saudi Aramco

Wednesday, 27 March ● 1400-1530 hours ● Room 308

SESSION 33: FRACTURING MODELLING AND DESIGN

Session Chairpersons:
Kenji Furui, Waseda U.
Kalyan Saikia, Halliburton

Paper
19141 Application of Innovative Hydraulic Fracture Modelling Demonstrates a Holistic Approach to Pad Development in the Delaware Basin
P. Shukla and L. Fan, Schlumberger

19405 Hydraulic Fracture Modelling and Design - A Perspective on How Things Have Changed from Conventional to Unconventional Reservoirs
S. Wong, National U. of Singapore

19431 Application of Dilation-Recompaction Model in Fracturing Optimisation in Tight Oil Reservoir
R. Gao, RIPED, CNPC

Wednesday, 27 March ● 1400-1530 hours ● Room 302

SESSION 34: ARTIFICIAL INTELLIGENCE FOR THE OIL & GAS INDUSTRY

Session Chairpersons:
Cao Hong, RIPED, CNPC
Shripad Biniwale, Schlumberger

Paper
19247 Performance Based Forecast Automation Using Advanced Analytics
V. Kumar and A. Kaushik, Shell India Markets Pvt. Ltd.; E. Zijlstra, Shell Kuwait Exploration and Production BV

19455 Artificial Intelligence in Oil and Gas Industry
H. Alali, Saudi Aramco
Paper
19185  The Application of CBM Case Library Base on Data Mining
M. Qiu and H. Zhang, CNPC Research Inst. of Economics & Technology; H. Zhang, CNPC; L. Wang and Y. He, CNPC Research Inst. of Economics & Technology

Wednesday, 27 March ● 1400-1530 hours ● Room 303 SESSION 35: ADVANCES IN SEISMIC ACQUISITION & PROCESSING

Session Chairpersons:
Kumar Satyam Das, Shell
Zhang Rujie, BGP International, CNPC

Paper
19261  Reducing Computation Cost by Lax-Wendroff Methods with Fourth-Order Temporal Accuracy
H. Liu, Saudi Aramco PE&D; H. Zhang, Aramco Research Center - Houston

Paper
19215  Advanced Model Building for Seismic Acquisition Feasibility Using Full Wave Modelling
R. Lencrerot, C. Agut, A. Barnola, J. Colonge, C. Rivera, and C. Ronot, Total S.A.

***** Reconstruction of S-Waves from Low-Cost Randomised and Simultaneous Acquisition by Joint Sparse Inversion
A.M. Alfaraj, U. of British Columbia; R. Kumar and F.J. Hermann, Georgia Inst. of Technology (Top Rated Paper from IPTC Sponsoring Societies)

Paper
19317  Fluid Discrimination Using Bulk Modulus and Neural Network

Paper
19370  Novel Methods to Prolong the Mature Offshore Oilfield Life under Low Oil Price Condition
Y. Su, CNOOC

Paper
19432  Gas Physical Properties and Their Implication on Gas Saturation and Leakage in Deep Reservoirs - A Case Study of Cambrian Gas Field, Sichuan Basin, China
H. Tian, RIPED, CNPC; X. Lu, S. Liu, S. Zhang, and C. Zou, PetroChina Co. Ltd.

Wednesday, 27 March ● 1400-1530 hours ● Room 305C/D/E SESSION 37: INTEGRATED RESERVOIR MANAGEMENT FOR CHALLENGING ENVIRONMENTS

Session Chairpersons:
Rachmat Hidajat, PT. Pertamina EP Cepu
Zhu Youyi, RIPED, CNPC

Paper
19079  Conformance Control for SAGD Using Oil-In-Water Emulsions in Heterogeneous Oil Sands Reservoirs
Y. Ni, B. Ding, L. Yu, M. Dong, I. Gate, and Y. Yuan, U. of Calgary

19104  An Integrated Modelling Workflow to Optimise Initial Production Rate and Well Spacing for Longmaxi Shale Gas Play
X. Zhuang, Schlumberger; R. Yong, Southwest Oil and Gas Co., PetroChina

19500  A Dynamic Characterisation Approach for a Complex Naturally Fractured Reservoir

Wednesday, 27 March ● 1400-1530 hours ● Room 305A/B SESSION 38: INNOVATIVE DRILLING FLUIDS

Session Chairpersons:
Shi Lin, CNPC Drilling Research Institute Inst.
Salim Taoutaou, Schlumberger

Paper
19526  Successful Application of Specialised High-Performance Water Base Drilling Fluid to Drill Challenging Tar Sections
R.M. Pino, Saudi Aramco PE&D; M. Infra, Saudi Aramco D&WO; J.C. Hubbard, Saudi Aramco EXPEC ARC; H.M. El-Dakroury and A. Addagalla, Baker Hughes, a GE company

Paper
19406  Development of a Novel Anti-Temperature, Anti-Abrasive and Ecofriendly Lubricant SDL-1 for Water-Based Drilling Fluid
Y. Liu, Z. Qiu, H. Zhong, and W. Huang, China U. of Petroleum (East China); Z. Nie, RIPED; W. Zeng, China U. of Petroleum (East China)

19169  A High-Density, Low Sag, Salt-Free, Heavy-Brine Replacement Using Precipitated Barium Sulphate Nanoparticles
J.M. Whyte, Schlumberger
Session Chairpersons:
Jeff Suiter, Total E&P Asia Pacific
Ding Zhu, Texas A&M U.

Paper
19448 An Integrated Approach to Well Leak Diagnostics: Case Study of the Successful Application of the Latest Leak Detection Technology and Interpretation Offshore Timor-Leste, South East Asia

19138 Efficient Flow Rate Profiling for Multiphase Flow in Horizontal Wells Using Downhole Temperature Measurement
S. Zhang and D. Zhu, Texas A&M U.

19531 First Worldwide Implementation of New ML Intervention Tool Facilitates Logging in Complex Multi-Lateral Wells
S. Mehmood, R. Said, and A.S. Al-Shawly, Saudi Aramco SAOO; Z. Zaouali, Schlumberger Saudi Arabia

Session Chairpersons:
Li Qun, CNPC
Ivy Chai Ching Hsia, PETRONAS Research Sdn. Bhd.

Paper
19114 Modelling and Experiments for CO₂ Blowdown from the Cryogenic Pilot Plant and the Mitigations Measure
A. Surmi, PETRONAS Research Sdn. Bhd.

19047 Efficient Process for Waste CO₂ Conversion and Utilisation to Intermediated Product
T. Piromchart, PTTEP

19219 CO₂ Storage Capacity Estimation in Tertiary and Depleted Oil Reservoirs
S. Ding, Northwest U.

Session Chairpersons:
Mauricio Bueno, Total E&P China
Wang Xingjin, Orient Energy Pty. Ltd./U. of Queensland

Paper
19356 Numerical Simulation and Experimental Study of Near-Wellbore Fracture Initiation Mechanism on Sandstone Coal Interbedding

19555 Successful Treatment and Reuse of Flowback Guar Frac-Fluid in Ordos Basin and Associated Cost Savings to Operators

19241 Tight Coupling of a Reservoir Simulator with a Transient Flow Well Model: A Field Case Application to Optimise Cyclic Production in Liquid Loading Regime for a Tight Gas Field
O. Rasoanalbo and J.A. Danquigny, Total S.A.; P. Henry and D. Hopkinson, Petroleum Experts Ltd.; A. Liu, Total E&P China; J. Marty, Total S.A.; R. Marmier, Total E&P

Session Chairpersons:
Chen Kah Seong, PETRONAS
James Holbeach, Wood

Paper
19099 Machine Learning and the Optimisation of Laser-Rock Interaction
D.P. San Roman Alerigi and O.M. Alobaid, Saudi Aramco PE&D; W.J. Assiri, Saudi Aramco PE&D EXPEC ARC; S.I. Batarseh, Saudi Aramco PE&D

19207 Using Deep Kalman Filter to Predict Drilling Time Series
Y. Yu, Q. Liu, R.J. Meehan, S. Chambon, and M.K. Hamzah, Schlumberger

19537 Drill Bit Performance Monitoring and Optimisation Using Advanced Artificial Intelligence
S. Lashari, West Virginia U.
Wednesday, 27 March ● 1600-1730 hours ● Room 303
SESSION 43: SEISMIC INVERSION

Session Chairpersons:
Aiman Malik Bakhorji, Saudi Aramco
Wang Chao, CGG

Paper
***** Using AVO to Evaluate a Norwegian Thin Pay
B.J. Paternoster and P. Lys, V. Marlot, Total E&P;
G. Mikkelsen, Total E&P Norge

19519 Advanced Azimuthal AVO Inversion: Case Study from Saudi Arabia
A. Suleiman and N. El Yadari, Saudi Aramco

19130 An Analysis on Isochronal Facies-Controlled Pre-Stack Seismic Inversion Prediction of Tight Sandstone Reservoir: A Case of Fuyu Formation in Zhaoyuan Area in North Songliao Basin, China
M. Chen, Northeast Petroleum U.; Q. Ji, RIPED, CNPC; S. Chen, No.1 Geophysical Exploration Co. of Daqing Drilling and Exploration Engineering Corp.

Wednesday, 27 March ● 1600-1730 hours ● Room 305A/B
SESSION 44: GEOLOGICAL RESERVOIR CHARACTERISATION

Session Chairpersons:
Schuman Wu, Saudi Aramco
Li Yupeng, Beijing Research Center, Aramco Asia

Paper
***** Characterisation of Deep Tight Carbonate Gas Plays with an Integrated Interpretation: Case Study from North Kuwait
J.D. Rao, A. Samar, M. Al-Dousiri, A. Mortar, N. Rao, and O.O. Dashti, Kuwait Oil Co.
(Top Rated Paper from IPTC Sponsoring Societies)

19409 Novel Workflow to Characterise Secondary Porosity in Carbonate Reservoir, Case Study of Tuban Formation – Indonesia
M.M. Adeyosfi, Schlumberger; M. Muhajir, JOB Pertamina-PetroChina East Java; A. Pradana, Schlumberger; W. Haidar and A.H. Purwanto, JOB Pertamina-PetroChina East Java; D. Juandi, Schlumberger

19542 Geomechanical Risk Evaluation for Developing Karstified Limestone Reservoir in Offshore Sarawak, Malaysia

Wednesday, 27 March ● 1600-1730 hours ● Room 305C/D/E
SESSION 45: FORMATION EVALUATION: INTEGRATED STUDIES AND WORKFLOWS

Session Chairpersons:
Abdullatif Al-Omair, Saudi Aramco
James Wang, Dow Chemical China Ltd.

Paper
19443 Robotics & Automation for Rock Sampling and Characterisation: A Paradigm Shift in Real-Time Formation Evaluation
A.F. Marsala, B. Li and H. Alqattan, Saudi Aramco EXPEC ARC

19340 Integrated Formation Evaluation Using Novel Neutron Correction in the Presence of Trace Elements
H. Zhang, N. Alarcon and F.E. Mendex, Baker Hughes, a GE company

19378 Comprehensive Evaluation of NMR Characteristics of Complex Volcanic Reservoirs with Different Types of Rock Lithology
J. Sun, RIPED, CNPC
**Wednesday, 27 March ● 1600-1730 hours ● Room 311C**

**SESSION 47: GAS PRODUCTION PERFORMANCE**

Session Chairpersons:
Zhang Xi, CSIRO
Abdolrahim Ataei, PETRONAS

Paper
19315 Recent Development and Remaining Challenges of Iron Sulfide Scale Mitigation in Sour Gas Wells
T. Chen, Saudi Aramco PE&D; Q. Wang, Saudi Aramco; F.F. Chang and N.A. Aljeaban, Saudi Aramco PE&D

19211 A Transient Plunger Lift Model for Liquid Unloading from Gas Wells

19162 Sustaining Production in a Prolific Gas Well Using Storm Choke in Place of Failed TRCSSV
N. Zaidil, Sarawak Shell Bhd.

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**Wednesday, 27 March ● 1600-1730 hours ● Room 311B**

**SESSION 48: CONCEPT ENGINEERING, CONSTRUCTION, AND COMMISSIONING (THE 3 Cs)**

Session Chairpersons:
Yoshifumi Suehiro, Japan Oil, Gas and Metals National Corp.
Su Chunmei, PetroChina E&P Co., CNPC

Paper
19554 Artificial Reefing Platform Decommissioning Project in Block SK-305, Sarawak, Malaysia
M.Z. B. Sulaiman, PETRONAS; M. Mohamad Ros and Z. Kamarudin, PETRONAS Carigali Sdn. Bhd.

19055 Super Critical Fluid Injection
X. Han, CNOOC Ltd., Tianjin Branch

19125 Allied In-Situ Injection and Production for Fractured Horizontal Wells to Increase Hydrocarbon Recovery in Tight Oil Reservoirs: A Case Study in Changqing Oilfield
Z. Yang, H. Yu, and L. Luo, China U. of Petroleum, Beijing

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**Thursday, 28 March ● 0900-1030 hours ● Room 308**

**SESSION 49: HEAVY OIL AND COALBED METHANE**

Session Chairpersons:
Liu Honglin, RIPED, CNPC
Tayfun Babadagli, U. of Alberta

Paper
19484 Successful Integration of Well Logs and Real Time Data Acquisition with Numerical Fracturing Model to Optimise Reserve Tapping in Tight Oil Sands
S.K. Goenka, Cairn Oil & Gas

19065 Effect of Adsorption on Permeability and Fracture Size of Coal Using X-ray Microcomputed Tomography

19192 Comprehensive Analysis of Caprock Failure and Associated Steam Release Events during SAGD Operations
S. Matsuno and K. Furui, Waseda U.

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**Thursday, 28 March ● 0900-1030 hours ● Room 302**

**SESSION 50: FORMATION EVALUATION MACHINE LEARNING**

Session Chairpersons:
Li Qun, CNPC
Cao Hong, RIPED, CNPC

Paper
19053 Application of the Machine Learning for Lithological Classification
P. Golikov, Saudi Aramco PE&D; I.S. Deshemenkov, Saudi Aramco

19249 A Machine Learning Approach to Estimate Reservoir Fluid Properties Based on Advanced Mud Gas Data in Shale Reservoirs
T. Yang, I.H. Arief, and M. Niemann, Equinor ASA

19349 Facies Classification Using Well Logs: A Comparative Analysis of Machine Learning Techniques
S. Sarkar, Schlumberger; R.K. Saraiya, C. Majumdar, and A. Kumar, Schlumberger Asia Services Ltd.
Thursday, 28 March ● 0900-1030 hours ● Room 303
SESSION 51: ROCK PHYSICS

Session Chairpersons:
Wang Changhui, BGP, CNPC
Mukarram Ahmed, Saudi Aramco

Paper
19172 Probing Hybrid Tight Oil with a Rock Physics Template Technique
M. Lu, H. Cao, X. Yan, and S. Dong, RIPED, CNPC

19210 Understanding Carbonate Reservoir Porosity Effect on Marine Data
M. Ahmed, Saudi Aramco Exploration; O.H. Afif, Saudi Aramco

19073 Determining Viscoelastic Models from Seismic Attenuation Measurements
X. Liu and S. Greenhalgh, King Fahd U. of Petroleum and Minerals

Thursday, 28 March ● 0900-1030 hours ● Room 305A/B
SESSION 52: INTEGRATED RESERVOIR MODELLING

Session Chairpersons:
Seema Singh, Panjab U., Chandigarh
Emad Busbait, Saudi Aramco

Paper
19536 Integrating Outcrops into Analogue Studies: A Seamless Approach with Great Learning Potential

19303 Complex Geological Modelling Using Unstructured Grids: Quality Assurance Approaches and Improved Prediction
S. Harris, S. Santoshini, S. Kashem, T. Viard, A. Benabbou, A. Levannier, and D. Marquez, Schlumberger

19336 Sequence Stratigraphy and Facies Distribution Model of the Late Jurassic Hanifa Reservoir South of Rimthan Arch, Saudi Arabia
A. Al-Qasem and M. Fallatah, Saudi Aramco

Thursday, 28 March ● 0900-1030 hours ● Room 305C/D/E
SESSION 53: FORMATION EVALUATION: FIELD CASE STUDIES

Session Chairpersons:
Sun Fujie, CNOOC Consultant Centre
Takaaki Uetani, INPEX

Paper
19520 Additional-Perforations and Infill Wells Based on Multiples Contact & Saturation Logging Results: A Case Studies

19346 Low Resistivity Contrast Pay Identification in the Second Member of the Shahejie Formation, Bohai Bay Basin, East China
Y. Cui, Beijing Research Center, Saudi Aramco Asia; G. Wang, X. Fan, China U. of Petroleum, Beijing; H. Zhao, Beijing Research Center, Saudi Aramco Asia

19355 Characterising Fractured Basements Using 3D Acoustic Anisotropy Analysis
S. Sarkar and A. Nandi, Schlumberger; C. Majumdar, Schlumberger Asia Services Ltd.; S. Das, Schlumberger; P. Chaturvedi, S. Srivastava, and M.K. Verma, ONGC

Thursday, 28 March ● 0900-1030 hours ● Room 311A
SESSION 54: COMPLETION TECHNOLOGY

Session Chairpersons:
Cao Gang, RIPED, CNPC
A. Dan Hill, Texas A&M U.

Paper
***** Initiation of Stimulation Treatments Depends on Wellbore Mechanical Responses During Drilling
K.M. Al-Ruwaili, Saudi Aramco PE&D; G.D. Couples and J. Ma, Heriot-Watt U. (Top Rated Paper from IPTC Sponsoring Societies)

***** Optimising the Design and Application of Simultaneous Injection & Production (SIP) Technology Using Dual Concentric Strings with ESP
E.P. Anthony and N. Al-Maqsseed, Kuwait Oil Co.; C. Rodenboog, Shell Intl. (Top Rated Paper from IPTC Sponsoring Societies)

19552 Acid Selection for Volcanic Tuffaceous Sandstone with High Analcime Contents: A Laboratory Study in Kita-Akita Oil Field, Northern Japan
K. Ueda and R. Matsui, INPEX Corp.; M.E. Ziauddin, L. Teng, and W. Wang, Schlumberger
Thursday, 28 March ● 0900-1030 hours ● Room 311B
SESSION 55: PRODUCTIVITY ENHANCEMENT THROUGH STIMULATION: CASE STUDIES

Session Chairpersons:
Ding Zhu, Texas A&M U.
Chris Mole, WorleyParsons Ltd., Hydrocarbons

Paper
19546 Integration of Latest Laboratory, Software and Retarded Acid Technologies to Increase Efficiency of Acid Treatments in Carbonates: Case Studies from Central Asia
D. Abdrazakov, Schlumberger Logelco Inc.; A. Burlibayev, Almex LLP; M.E. Ziauddin, Schlumberger; M.K. Panga, Schlumberger Technology Corp.; O.V. Olennikova and M. Nikolaev, Schlumberger; I. Yakimchuk, Schlumberger Moscow Research Center; D. Oussoltsev, Schlumberger Well Services

19118 Stimulation Evaluation in Horizontal Wells with Emphasis on Petrophysics and Rock Mechanics: A Case Study in Deep, Tight Carbonate Formation

19549 Large Liquid Volume Deep Penetration Acidising in Iraqi Missan Oilfield - 3 Case Study
J. Gao, P. Feng, W. Da, S. Shangqi, C. Bo, and W. Gui, China Oilfield Services Ltd., CNOOC

Thursday, 28 March ● 1100-1230 hours ● Room 308
SESSION 57: ADVANCING IN FRACTURING TECHNOLOGY

Session Chairpersons:
Wang Xuli, Minerva Engineering Inc.
Jiang Tingxue, SINOPEC Research Inst. of Petroleum Engineering

Paper
***** A New Technique for Quantifying Pressure Interference in Fractured Horizontal Shale Wells
W. Chu, K.D. Scott, and R.W. Flumerfelt, Pioneer Natural Resources; C.C. Chen, Kappa (Top Rated Paper from IPTC Sponsoring Societies)

19203 Improving the Effective Supporting and Fracturing Technology is the Key to the Successful Stimulation of Low-Permeability and Low-Rank Coalbed Methane Reservoirs
X. Wang, RIPED, CNPC; Q. Zhu, PetroChina Huabei Oilfield Co.; W. Zheng and H. Lu, RIPED, CNPC

***** How to Learn Faster at Lower Cost to Drive Economic Recovery Enhancement in Shale Reservoirs?
R. Aguilera, B.K. Olusola, A. Fragoso Amaya, and D. Orozco Ibarra, U. of Calgary; K. Selvan, Nexen Inc. (Top Rated Paper from IPTC Sponsoring Societies)

Thursday, 28 March ● 0900-1030 hours ● Room 311C
SESSION 56: RISK MANAGEMENT

Session Chairpersons:
Ali Bin Ali, Saudi Aramco
Ong See Hong, Baker Hughes, a GE company

Paper
19102 Integrated Multiple Parameters Method for Candidate Selection in Refracturing Treatment
Y. Su, China U. of Petroleum (East China); M. Lu, Colorado School of Mines

19387 Understanding the Geomechanical Challenges and Risk Mitigation in Sichuan Shale Gas Drilling, China
F. Gui, S. Wang, S. Bordoloi, and S. Ong, Baker Hughes, a GE company

19374 Research and Application on Intensive Drilling Model of Large Platforms
J. Zhao, Y. He, Y. Li, H. Chen, and S. Zhan, PetroChina Jilin Oilfield Co.

Thursday, 28 March ● 1100-1230 hours ● Room 302
SESSION 58: IoT & ROBOTICS

Session Chairpersons:
Ian Sylvester, Woodside Energy Ltd.
James Holbeach, Wood

Paper
19072 A Cybersecurity Prospective on Industry 4.0: Enabler Role of Identity and Access Management
O. Alsaadoun, Saudi Aramco

***** An Industrial Internet of Things (IIoT) Platform that Closes the Gap between E&P Operations and Data Science
T. Wen, X. Huang, K. Evers, and R. Keyes, Arundo Analytics (Top Rated Paper from IPTC Sponsoring Societies)

19258 The Use of Drones for Innovative Seismic Acquisition: A Change of Paradigm for HSE
I. Masoni, Total
Thursday, 28 March ● 1100-1230 hours ● Room 303
SESSION 59: GEOPHYSICAL RESERVOIR CHARACTERISATION

Session Chairpersons:
Mohammed Hussain, Saudi Aramco
Han XiaoLi, TopGeo Energy Services Co., Ltd.

Paper
19220 The Successful Application of Synthetic Seismic Amplitude Modelling in Defining a Stratigraphic Trap Play Concept Around a Structural High in the Eastern Rub’ Al-Khali Basin, Saudi Arabia
J.G. Zunino, R. Lubbe, D. Mackertich, and K. Mahmoud, Saudi Aramco

19180 3D Permeability Characterisation Based on Pore Structure Analysis and Multi-Parameters Seismic Inversion and Its Application in H Oilfield, Middle East
C. Xin, BGP, CNPC; Z. Liu, PetroChina Halfaya; W. Hongmei and Y. Xia, BGP, CNPC

19338 Linking Injection-Induced Seismicity to Permeability Changes
X. Zhang, CSIRO Petroleum; F. Zhang, Tongji U.; S. Wang, BGP, CNPC

Thursday, 28 March ● 1100-1230 hours ● Room 303
SESSION 60: INTEGRATED RESERVOIR CHARACTERISATION

Session Chairpersons:
Marwan M. Althagafy, Saudi Aramco
Yu Hongyan, Northwest U.

Paper
19293 Noble Gas Geochemistry: Implications for Hydrocarbon Exploration

19504 A Practical Method to Match Trajectories of a Horizontal Well in Time Domain and in Depth in Ancient Buried Hill
Z. Lv, CNOOC Ltd.; Tianjin Branch

19191 A New Method for Predicting Good Drilling Location in South Sulige Tight Sand Gas Field through Joint Geophysics, Geology and Gas Reservoir Integrated Study

Thursday, 28 March ● 1100-1230 hours ● Room 303/C/D/E
SESSION 61: RESERVOIR MANAGEMENT: UNCERTAINTY ASSESSMENT

Session Chairpersons:
Majid H. Al-Otaibi, Saudi Aramco

Paper
19415 Tap the Potentials and Reduce the Geological Uncertainties of Mature Complex Fluvial Reservoir: Case Study Redevelopment Plan of D-X Oilfield in Bohai Bay
Y. Su, CNOOC

19388 Bayesian Evidential Learning for Fast-Tracked Appraisal Insights and Value-of-Information
M. Baker and M. Hardy, Woodside Energy Ltd.

Thursday, 28 March ● 1100-1230 hours ● Room 303
SESSION 62: DRILLING FLUIDS MODELLING

Session Chairpersons:
Usman Ahmed, WellDog
Liu Hai, Schlumberger

Paper
19205 Development of a New Reservoir-Friendly Drilling Fluid for Higher Gas Production

19071 A Study on the Rheological Properties of Oil-Based Drilling Fluid with High Thixotropy
Y. Liu, Z. Yang, and Y. Jing, PetroChina Daqing Oilfield Co. Ltd.; Y. Xu, Harbin Inst. of Technology

19486 Friction Coefficient: A Significant Parameter for Lost Circulation Materials (LCMs) Selection
C. Xu, X. Yan, Y. Kang, L. You, and J. Zhang, Southwest Petroleum U.
Thursday, 28 March ● 1100-1230 hours ● Room 311B
SESSION 63: FLOW ASSURANCE: ADVANCEMENTS AND BEST PRACTICES

Session Chairpersons:
Emad Gharayaib, Baker Hughes, a GE company
Shripad Biniwale, Schlumberger

Paper
19136 Development of Erosion Dynamics Model and Its Application to Wells and Facilities

19146 Combining Dimensional Analysis and Neural Networks to Improve Flow Assurance Simulations
O. Bratland, Dr Ove Bratland Systems Pte. Ltd.

19044 Ultrasound Tomography Based Flow Metering System
T.J. Ahmad and M. Arsalan, Saudi Aramco

Thursday, 28 March ● 1400-1530 hours ● Room 308
SESSION 65: GAS HYDRATE

Session Chairpersons:
George Moridis, Texas A&M U. / Lawrence Berkeley National Lab
Andy Benson, Premier Oilfield Laboratories

Paper
19149 A Feasibility Study of a New Thermal Technique for Harvesting Natural Gas from Seabed Gas Hydrates
B. Guo, U. of Louisiana at Lafayette; L. Shan, Northeast Petroleum U.; N. Wei, Southwest Petroleum U.

19426 3D Geomechanical Evaluation of Jetting Operations for Producing the Hydrate Chimneys in Sea of Japan
P. Zhang and K. Qiu, Schlumberger; Y. Terao, JAPEX; Y. Pan, Schlumberger China SA

19373 A Comprehensive Review on Gas Hydrate Reservoirs: Formation and Dissociation Thermodynamics and Rock and Fluid Properties
Y.E. Elgahawy, U. of Calgary; S.M. Fakher, Missouri U. of Science and Technology

Thursday, 28 March ● 1100-1230 hours ● Room 311C
SESSION 64: DEEP WATER AND HP/HT

Session Chairpersons:
Ong See Hong, Baker Hughes, a GE company
Bahrom Madon, PETRONAS

Paper
19051 Understanding Geological Control on Origin and Distribution of Overpressures Aided in Successful Drilling in a High Pressure High Temperature (HPHT) Field in South East Asia
A. Chatterjee, A. Ghosh, and S. Bordoloi, Baker Hughes, a GE company

19403 Research and Practice of Full Life Cycle Well Integrity in HPTP Well, Tarim Oilfield
X. Yang, H. Liu, L. Cao, and N. Zeng, PetroChina Tarim Oilfield Co.

19313 Integrated Real-Time Pressure Monitoring Enabled the Success of Drilling a HTHP Offshore Well: A Casing Study in Ledong Area of Yinggehai Basin, South China Sea
P. Liu, Schlumberger; Y. Gao and M. Chen, CNOOC Ltd.

Thursday, 28 March ● 1400-1530 hours ● Room 303
SESSION 66: GEOPHYSICAL RESERVOIR MODELLING

Session Chairpersons:
Zhang Shaohua, BGP, CNPC
Prashant Jadhawar, U. of Aberdeen

Paper
19111 Challenges and Limitations in Integrated Modelling and Simulation of Late Cretaceous Carbonate Tidal Channel Reservoirs from Onshore Giant Oil Field in Middle East

19145 A New Reservoir Prediction Method Based on Geological Seismic Conditioning for Complex Barrier Island and Its Application at H Oil Field, Middle East
C. Xin, H. Wang, Y. Xia, and W. Tian, BGP, CNPC; Z. Liu and C. Yi, PetroChina

19541 Application of Seismic Amplitude Confidence Maps to Mitigate Noise and Reduce 3D Modelling Uncertainty
I.S. Alyami, Saudi Aramco
Thursday, 28 March ● 1400-1530 hours ● Room 305A/B
SESSION 67: GEOLOGICAL RESERVOIR MODELLING

Session Chairpersons:
Liu Keyu, China U. of Petroleum, East China
Jonathan Hernandez, Schlumberger

Paper
19454 Generating Geologically Realistic 3D Reservoir Facies Models Using Deep Learning of Sedimentary Architecture with Generative Adversarial Networks
T. Zhang, P. Tilke, E. Dupont, L. Zhu, L. Liang, and W. Bailey, Schlumberger

19257 Modelling Facies Cyclicality and Diagenesis with Geostatistics
T. Le Blévec, Imperial College London; O. Dubrule, Total; C.M. John and G. Hampson, Imperial College London

19267 Application of an Integrative New Technique on Modelling and Numerical Simulation for Fractured Reservoir Based on Unstructured Grid: A Case Study of JZS Buried Hill Reservoir
Z. Lv, L. Ge, X. Zhu, Z. Zhu, and J. Wen, CNOOC Ltd., Tianjin Branch

Thursday, 28 March ● 1400-1530 hours ● Room 305C/D/E
SESSION 68: INTEGRATED RESERVOIR DEVELOPMENT AND MANAGEMENT - CASE STUDIES

Session Chairpersons:
Li Bo, CNOOC International Ltd., Dipak Mandal, PETRONAS Carigali Sdn. Bhd.

Paper
19046 Hard Rock Horizontal Drilling Optimisation Using MSE and Downhole Vibrations Analysis to Drive Best Performance
A.B. Al-Lawati, Schlumberger

19483 A Geoenvironment Long March to Success: An Overview of the Development of a Unique Gas Field Development in Kucha Foreland Basin
T. Jiang and X. Yang, PetroChina; C. Xian and Y. Huang, Schlumberger

Thursday, 28 March ● 1400-1530 hours ● Room 311A
SESSION 69: DRILLING OPTIMISATION

Session Chairpersons:
Zhou Jianliang, CNOOC
Zheng Ziqiong, Haimo Technologies Group Corp.

Paper
19269 Optimisation of Drilling Performance Based on an Intelligent Drilling Advisory System
M.F. Abughabban, Saudi Aramco PE&D

19312 The Embedded VGG-Net Video Stream Processing Framework for Real-Time Quantification of Shaker Cutting Volume
X. Du, Y. Jin, and X. Wu, U. of Houston; Y. Liu and X. Wu, Shell Intl. Exploration and Production; O.K. Awan, Shell E&P Laboratories; N. Tognini, Shell Intl. Exploration and Production; J. Chen and Z. Han, U. of Houston

19481 Study on Failure Mechanism of Cement Sheath Sealing of Shale Gas Well Under Dynamic Loading and the Control Method
S. Zhou, R. Liu, and P. Lu, Sinopec Research Inst. of Petroleum Engineering

Thursday, 28 March ● 1400-1530 hours ● Room 311C
SESSION 70: WELL CONTROL

Session Chairpersons:
Ali Bin Ali, Saudi Aramco
Mark Rayfield, Ophir Energy

Paper
19057 Drilling through Data: Automated Kick Detection Using Data Mining

19521 Development of a Dual-Measured-Points Early Gas Kick Detection Method Based on the Measured Pressure Responses of Two PWD Tools
H. Yang, J. Li, and G. Liu, China U. of Petroleum, Beijing
Session ePoster

(Changes/additions made after 25 October 2018 will be reflected in the on-site programme.)

Session ePoster will feature a variety of technical presentations covering a range of related technical disciplines. An ePoster is an electronic version of the traditional poster, presented on a large digital flat screen. The electronic format offers the added benefit of animation and video to enhance the visual experience and provide greater interactivity between attendees and authors.

During the ePoster session, presenters will deliver their presentations in an informal setting and facilitate direct discussions with attendees at designated ePoster stations. Attendees are encouraged to attend the sessions for more knowledge sharing and networking opportunities. ePoster are also available for attendees' viewing at ePoster stations throughout the conference.

**E&P Geosciences**

A. Bakulin, I. Silvestrov, and M. Dmitriev, Saudi Aramco

(Alternate paper in Session 19: Advances in Time Processing)

19054 Scholte Wave Attenuation with Polarisation Filtering Using Pressure and Vertical Geophone Sensors
M. Diallo and M. Marzoq, Saudi Aramco

(Alternate paper in Session 66: Geophysical Reservoir Modelling)

19059 Strategic R&D Pillars of Electromagnetic Methods for Reservoir Mapping and Monitoring
A.F. Marsala, Saudi Aramco

(Alternate paper in Session 66: Geophysical Reservoir Modelling)

19062 Enhanced Complex Overburden Modelling and Imaging through Early Inclusion of Full-Waveform Inversion in the Model Building Process, North West Shelf, Australia
L. Zhang, H. Trihutomo, Y. Gong, B. Lim, and A. Karvelas, Schlumberger

(Alternate paper in Session 3: Full Wavefield Inversion & Velocity Model Building)

19068 Dynamic Capillarity During the Water Flooding Process in Fractured Low Permeability Reservoirs
Y. Li and H. Li, Southwest Petroleum U.; S. Chen and X. Li, U. of Calgary

(Alternate paper in Session 52: Integrated Reservoir Modelling)

19076 Enhancing Velocity Model for Gas-Cloud Using First Break Travel Time Tomography Full Waveform Inversion
S. Prajapati and D. Ghosh, U. Teknologi PETRONAS

(Alternate paper in Session 28: Geophysical Challenges)

19086 Application of the Broadband Seismic Acquisition in Huizhou Sag, Pearl River Mouth Basin, China

(Alternate paper in Session 43: Seismic Inversion)

19089 Laboratory Comparison of Natural Fracture and Induced Fracture Permeability Variations under Simulated Dynamic Reservoir Conditions
A. Santagati, Saudi Aramco; A.H. Makrami and E.T. Caliboso, Saudi Aramco PE&D

(Alternate paper in Session 44: Geological Reservoir Characterisation)

19094 Application of Full Wavefield Migration in Obtaining True Amplitude Below Gas Cloud

(Alternate paper in Session 11: Seismic Imaging & Migration)

19095 Best Practices of Using X-ray Tomography in Core Analysis
S.X. Caliskan, Saudi Aramco PE&D; A. Shebatalhamd, Saudi Aramco

(Alternate paper in Session 51: Rock Physics)
19096 Modelling Early Carbonate Diagenesis for Reservoir Quality Prediction: Constitutive Relations from Recent Marine Sediments
S. Zhang, Aramco Research Center - Houston; P. Lu, Saudi Aramco PE&D (Alternate paper in Session 67: Geological Reservoir Modelling)

19098 Unravelling the Hydrocarbon Charge, Origin and Distribution through Integrated Basin Modelling in North Seram Basin, Indonesia

19101 Salt Tectonic Control on the Subsalt Petroleum System in the Ultradeep Layer of the Kuqa Fold-Thrust Belt in Northwestern China
Y. Neng, China U. of Petroleum, Beijing at Karamay (Alternate paper in Session 12: Structural Systems and Trap Analysis)

19103 Seismic Acquisition of Walkaway VSP and Walk Around VSP in the Xihu Sag of East China Sea Basin
Z. Xiong, CNOOC Ltd., Shanghai Branch (Alternate paper in Session 27: Borehole Geophysics)

19105 Steam Chamber Description Using Seismic and Production Data
W. He, Y. Wang, H. Wang, Y. Wang, and T. Pan, BGP, CNPC (Alternate paper in Session 66: Geophysical Reservoir Modelling)

19113 Accumulation Stages Division of Carbonate Hydrocarbon Pool in the Western Yingxiuling Area of Qaidam Basin

19123 KPI Based Standardising Static Geomodelling Practices for QA and QC of Models

19127 Separation and Imaging of Diffraction Energy Towards Improved Interpretation of Small Size Geological Features

19139 Research on the Brittleness Evaluation of Fractured Carbonate Rock in Ordos Basin

19157 Oil Detection Based on Layer Buried-Depth Corrected Elastic Inversion in Deepwater of the Pearl River Basin

19163 New Frontiers in Reservoir Characterisation: Application of Time-Lapse Pressure Data to Validate Seismic Acoustic Impedance Based Reservoir Quality Map in a Heterogeneous Carbonate Reservoir

19166 Automatic Statics and Residual Statics Correction with Low-Rank Approximation
A.M. Alfaraj, U. of British Columbia; R. Kumar and F.J. Herrmann, Georgia Inst. of Technology (Alternate paper in Session 35: Advances in Seismic Acquisition & Processing)

19171 Original Resistivity Inversion of Flooded Reservoir Based on Electrical Interpretation Unit
H. Liu, J. Xu, and Y. Cui, CNOOC Ltd.; Tianjin Branch; X. Zhou, Schlumberger; W. Gao, CNOOC Ltd., Tianjin Branch (Alternate paper in Session 44: Geophysical Reservoir Characterisation)

19183 Forward Integration of Dynamic Data into 3-D Static Modelling Significantly Improves Reservoir Characterisation and History Match Quality

19188 A Seismic Insight to the Root Cause of Drilling Challenges in the Triassic Section in the Central Area of Saudi Arabia

19194 A Velocity Modelling Method of Converted Wave Pre-Stack Depth Migration and Its Application
B. Ning, D. Li, and J. Yang, BGP, CNPC (Alternate paper in Session 3: Full Wavefield Inversion & Velocity Model Building)

19196 Insights into the Extra Heavy Oil Property and Oil Charging Combining Rock Pyrolysis Parameters, Geochemistry Data and Seismic Multi-Attribute Transformation

19198 Integrated Full Waveform Inversion and Dip Constrained Tomography for Complex Carbonate Imaging: Case Study from Indonesia
19199 Calibration of Forward Depositional Models with Well Log Data Based on Advanced Bayesian Optimisation Methodology
Y. Li, Beijing Research Center, Saudi Aramco Asia; M.M. Mezghani, Saudi Aramco PE&D
(Alternate paper in Session 67: Geological Reservoir Modelling)

19200 Subsurface Stratigraphy Problem Resolved from Outcrop Stratigraphy: A Case Study from the Late Jurassic Hanifa Formation, Saudi Arabia
M. Fallatah, Saudi Aramco
(Alternate paper in Session 44: Geological Reservoir Characterisation)

19212 Risk Management in Deepwater Exploration Well: Reduced Depth Uncertainty through Acquiring Seismic while Drilling
(Alternate paper in Session 52: Integrated Reservoir Modelling)

19221 Calibrated Natural State Model in Sorik Marapi Geothermal Field, Indonesia
(Alternate paper in Session 52: Integrated Reservoir Modelling)

19225 Improved Seismic Imaging with Multi-Azimuth PSDM Processing: A Case History South China Sea
J. Liu and M. Zhong, China Oilfield Services Ltd., CNOOC
(Alternate paper in Session 11: Seismic Imaging & Migration)

19228 Comprehensive Seismic Data Conditioning Workflow of the Bioclastic Limestone in the Middle East
T. Lin, RIPED, CNPC
(Alternate paper in Session 43: Seismic Inversion)

19250 High Precision Velocity Model Building Technology for Gas Cloud Areas and Its Application in P Oilfield, Bohai Bay Basin
W. Li, L. Liu, J. Wang, and X. Liu, CNOOC Ltd., Tianjin Branch
(Alternate paper in Session 3: Full Wavefield Inversion & Velocity Model Building)

19266 Cohesive Approach for High-Resolution Seismic Imaging Using Diffraction and Inversion in Malaysian Carbonate Field
(Alternate paper in Session 28: Geophysical Challenges)

19270 Estimating Anisotropic Parameters via Joint Migration Inversion
A. Alshuhail, Saudi Aramco PE&D
(Alternate paper in Session 11: Seismic Imaging & Migration)

19273 Time-Frequency Analysis of Seismic Data Using a Specialised Curvelet Transform
S. Tyson, U. Teknologi Brunei; J. Wang and L. Zhenchun, China U. of Petroleum (East China); L. Gross, U. of Queensland
(Alternate paper in Session 19: Advances in Time Processing)

19278 A New Technique to Support Future Energy Exploration of Continental Sedimentary Basin: WBH Full-Frequency Fidelity and Amplitude Preserving Processing Technology
Y. Bao, C. Wang, S. Chen, J. Wang, Z. Chen, J. Pei, and J. Wu, E&D Research Inst., PetroChina Daqing Oilfield Co. Ltd.
(Alternate paper in Session 35: Advances in Seismic Acquisition & Processing)

19279 Great Breakthroughs and Key Technologies in Exploration of Ordovician Deep Buried Hill in Northern Jizhong Depression
(Alternate paper in Session 20: Geological Challenges)

19283 New Findings Source Rock Potential: Case Study West Natuna Basin, MA Block through Geochemistry Analysis and Hydrocarbon to Source Correlation
M. Arisandy, PETRONAS Carigali Indonesia
(Alternate paper in Session 20: Geological Challenges)

19285 Improving Imaging and Inversion through Least-Squares Q-Kirchhoff APSDM: A Case Study from Offshore China
C. Jiao, CGG Singapore
(Alternate paper in Session 11: Seismic Imaging & Migration)

19287 Pre-Drill and Real-Time Mitigation of Drilling Risks Associated with Allochthonous Rafts and Evaporite Mélanges in the Red Sea
(Alternate paper in Session 36: Integration Challenges)

19296 Drillcam: A Fully Integrated Real-Time System to Image and Predict Ahead and Around the Bit
A. Al-Muhaidib, E.A. Hemyari, and P. Golikov, EXPEC Advanced Research Center, Saudi Aramco; Y. Liu, Beijing Research Center, Saudi Aramco Asia
(Alternate paper in Session 27: Borehole Geophysics)
19298 Reactive Transport Modelling to Study Local Mesogenetic Dissolution in Carbonate and Sandstone Reservoirs Induced by Natural Gas Acidic Components  
G. Zhang, Zhejiang U.; P. Lu, Indiana U.; E. Sonnenthal, Lawrence Berkeley National Laboratory; C. Zhu, Indiana U.  
(Alternate paper in Session 52: Integrated Reservoir Modelling)

19301 An Equivalent Media Theory for Reservoir Characterisation  
S. Prajapati and D. Ghosh, U. Teknologi PETRONAS  
(Alternate paper in Session 51: Rock Physics)

19302 Identification and Analogy of Carbonate Geometries between Offshore Indus Basin in Pakistan and Proven Carbonate Play  
M.H. Khan, Petroleum Consultant  
(Alternate paper in Session 20: Geological Challenges)

19309 Structural Dip Estimation from Crossbedding on Borehole Images  
G.A. Sultan, Schlumberger Services Asia; M.A. Alboub, Schlumberger Australia Pty. Ltd.; W.S. Elbarghathee, Schlumberger Overseas S.A.  
(Alternate paper in Session 60: Integrated Reservoir Characterisation)

19320 Bioclastic Limestone Reservoir Characterisation of an Oilfield in the Middle East  
T. Lin, RIPED, CNPC  
(Alternate paper in Session 44: Geological Reservoir Characterisation)

19325 An Integrated Stratigraphic Modelling Approach to Understanding Tectono-Sedimentary Systems in Exploration Frontier Areas  
X. Wang, Beijing Research Center, Saudi Aramco Asia; P. Lu and M.M. Mezghani, Saudi Aramco PE&D; R. Borsato, R. Alasad, C.A. Almeida De Carvalho, T.K. Al-Shamsi, H.A. Shaks, R.J. Asuaje Talavera, and A.T. Hajiji, Saudi Aramco Exploration  
(Alternate paper in Session 4: Advanced Geological Concepts)

19329 The Application of High Frequency Resonance Based on MPD in the Identification of Oil and Water Layer  
P. Zhang, CNOOC Ltd., Tianjin Branch  
(Alternate paper in Session 59: Geophysical Reservoir Characterisation)

19339 Effect of Layered Induced Anisotropy in Seismic Reservoir Characterisation  
A. Babasafari, D.P. Ghosh, A. Salim, and S. Moussavi Alashloo, U. Teknologi PETRONAS  
(Alternate paper in Session 66: Geophysical Reservoir Modelling)

19343 A Close-the-Loop Well Delivery of Deepwater Exploratory Wells, Krishna Godavari Offshore, East Coast of India  
R. Rana, R.R. Kumar, and J. Basu, Schlumberger Asia Services Ltd.  
(Alternate paper in Session 36: Integration Challenges)

19345 A Case Study of Identifying Optimal Well Placement for a Stratigraphic Reservoir Truncation Play with Limited Geophysical and Offset Well Data  
(Alternate paper in Session 36: Integration Challenges)

19352 Advanced Meandering Fluvial Reservoir Characterisation for Static Model Improvement  
(Alternate paper in Session 67: Geological Reservoir Modelling)

19372 Stratigraphic Forward Simulation of the Miocene Fan Delta in the South of Albert Basin, Uganda  
W. Xu, L. Fang, and X. Zhang, CNOOC Research Inst. Co., Ltd.  
(Alternate paper in Session 4: Advanced Geological Concepts)

19392 Ultra-High Resolution Seismic for Near-Surface Characterisation and Shallow Drilling Hazard Prediction: A Realistic Synthetic Case Study  
P. Golikov, A.M. Al-Muhaidib, and A.R. Sena, Saudi Aramco PE&D  
(Alternate paper in Session 28: Geophysical Challenges)

19398 Reviving a Mature Basin through High-End Imaging Technology  
K. Zhao, M. Burke, X. Li, S. Birdus, A. Artemov, J. Zhou, and N. Mudge, CGG  
(Alternate paper in Session 3: Full Wavefield Inversion & Velocity Model Building)

19402 Radial Domain Interpolation: A New Way to Regularise Full Azimuth 3D Data while Preserving Its Azimuthal Attributes  
R. Li, Schlumberger; M. Zheng, J. Qiu, P. Huang, and H. An, PetroChina Southwest Weiyuandong Shale Gas Operating Co.; X. Ji and R. Zeng, Schlumberger  
(Alternate paper in Session 35: Advances in Seismic Acquisition & Processing)

19424 Borehole Electromagnetic Technique for Reservoir Imaging and Monitoring from Uncased Sections of a Well Using Adjacent Casings as Receiver Antennas  
A.R. Sena, Saudi Aramco PE&D  
(Alternate paper in Session 27: Borehole Geophysics)

19429 Facies Probabilities Driven by Seismic as a Training Image  
F.M. Al-Awam and S.K. Khattab, Saudi Aramco Exploration  
(Alternate paper in Session 67: Geological Reservoir Modelling)
19445 Fracture Network Mapping Using Integrated Micro-Seismic Events Inverse with Rate-Transient Analysis  
(Alternate paper in Session 59: Geophysical Reservoir Characterisation)

19475 Formation, Evolution and Dynamic Mechanism of Eastern Branch of the East African Rift System  
S. Jia, CNOOC Research Inst. Co., Ltd.  
(Alternate paper in Session 12: Structural Systems and Trap Analysis)

19476 Timing and Mechanism of Salt Movement in the Northern Red Sea  
H.Y. Daif, A. Afifi, and H. Al-Ramadhan, Saudi Aramco  
(Alternate paper in Session 12: Structural Systems and Trap Analysis)

19477 The Effect of High-Geothermal Field on the Diagenesis and Pore Evolution of Sandstone Reservoirs in Baiyun Sag, Pearl River Mouth Basin  
M.Y. Kun, CNOOC Ltd., Shenzhen Branch  
(Alternate paper in Session 4: Advanced Geological Concepts)

19490 Study of Seismic Data Processing Techniques in Deepwater Slope  
Q. Li, China Oilfield Services Ltd., CNOOC  
(Alternate paper in Session 19: Advances in Time Processing)

19492 Drilling High Productivity Horizontal Wells with the Aid of 3D Seismic and Geo-Mechanics Attributes  
F.O. Hakeem, Saudi Aramco  
(Alternate paper in Session 59: Geophysical Reservoir Characterisation)

19497 2D Sparse Radon Data Reconstruction  
M. Albannagi, Saudi Aramco; D. Verschuur, Delft U. of Technology  
(Alternate paper in Session 35: Advances in Seismic Acquisition & Processing)

19503 Seismic Facies Recognition and Stratigraphic Traps Characterisation Based on Neural Network in Saudi Arabia  
(Alternate paper in Session 66: Geophysical Reservoir Characterisation)

19505 Application of Seismic Avaz Ratio Method for Reservoir Fracture Characterisation  
M. Zagzoog, M.A. Hussain, and A. Suleiman, Saudi Aramco  
(Alternate paper in Session 51: Rock Physics)

19512 Salt Tectonics and Its Expression on the Seafloor Implications for Geochemistry Seeps and Pockmarks Studies  
J.A. Almeida De Carvalho, Saudi Aramco  
(Alternate paper in Session 20: Geological Challenges)

19513 Horizons Guided Velocity Autopicking and Multiple Discrimination  
N. El Yadari, A. Lefgoum, and J. Ahmad, Saudi Aramco  
(Alternate paper in Session 35: Advances in Seismic Acquisition & Processing)

19522 Walkaway VSP Velocity Estimation Using Nonlinear Inversion Framework  
A. Al-Ramadhan and A.A. Al-Dawood, Saudi Aramco  
(Alternate paper in Session 27: Borehole Geophysics)

19527 Control of Pore Types and Fracture Intensity on the P-Wave Velocity of Carbonate Rocks  
A.J. Abdilmutalib and O.M. Abdullatif, King Fahd U. of Petroleum and Minerals  
(Alternate paper in Session 36: Integration Challenges)

19535 VSP Inversion of Azimuthal Velocity Variations for Seismic Anisotropy  
K. Al Dulaian, Saudi Aramco  
(Alternate paper in Session 19: Advances in Time Processing)

19540 Comprehensive Identification Technology of Atypical Bright Spot Oil Reservoirs in Deepwater Area of Eastern South China Sea  
Z. Li, J. Liu, Z. Zhang, Z. Chen, B. Liu, and N. Shi, CNOOC Ltd., Shenzhen Branch  
(Alternate paper in Session 43: Seismic Inversion)

19544 Seismic Attribute Feasibility Study for Fault and Fracture Analysis and Integration with Spectral Decomposition: Application in Sarawak Basin  
(Alternate paper in Session 59: Geophysical Reservoir Characterisation)

19545 Predicting Porosity via Optimised Rock Physics Models  
M.S. Bin Gubair, Saudi Aramco PE&D EXPEC ARC; A.A. Ramadan and C. Ayadiuno, Saudi Aramco PE&D  
(Alternate paper in Session 51: Rock Physics)

19560 Factors Influencing Elastic Properties on Carbonate Rocks, Lessons Learnt from Two Case Studies  
F. Hong, Total; F. Bastide, MODIS  
(Alternate paper in Session 51: Rock Physics)

19567 Three Dimensional Finite Element Numerical Simulation Study of Focused Borehole to Surface Electric Imaging  
H. Hu, Z. Xiao, Z. Yu, R. Zhu, and J. Liu, CNPC Logging Co. Ltd., Oil and Gas Evaluation Center  
(Alternate paper in Session 27: Borehole Geophysics)

19568 Challenges and Lessons Learnt in Unlocking the Value of Shallow Clastic Reservoirs in Malay Basin: The Road from Appraisal to Development  
E.E. Chong and F.S. Rahmat, Petrofac Malaysia Ltd.  
(Alternate paper in Session 36: Integration Challenges)
19045 Combining the Power of IoT and Big Data to Unleash the Potential of Digital Oil Field
A.H. Al-Bar, Saudi Aramco; N.H. Ansari, A.A. Goz, and H.M. Ashoor, Saudi Aramco PE&D
(Alternate paper in Session 58: IoT & Robotics)

19050 Innovative Autonomous Maritime ISO-Container Vehicles (AMISOCSVs) or Drones
J.S. Whang and W. Teppig, Jr., AEPLOG, Inc.
(Alternate paper in Session 58: IoT & Robotics)

19060 Automated Pressure Transient Analysis: A Cloud-Based Approach
Y. Guo, I.M. Mohamed, A.S. Abou-Sayed, and O.A. Abou-Sayed, Advantek Waste Management Services LLC
(Alternate paper in Session 2: Cloud Computing)

19075 Soft Computation Application: Utilising Artificial Neural Network to Predict the Fluid Rate and Bottom Hole Flowing Pressure for Gas-Lifted Oil Wells
M.M. Bahaa, GUPOC-BP
(Alternate paper in Session 26: Reservoir & Production Machine Learning)

19077 A New Method to Predict Residual Oil Saturation of Light Oil Reservoir Based on Big Data Analytics
Y. He, CNOOC

19087 Towards Automatic Well Log Depth Matching by Leveraging Machine Learning Based Approaches
T. Zimmermann, École Polytechnique Fédérale de Lausanne; L. Liang, Schlumberger; S. Zeroug, Schlumberger - Doll Research
(Alternate paper in Session 50: Formation Evaluation Machine Learning)

19091 Gasoline Demand Forecast Using Artificial Intelligence: A Case Study of Saudi Arabia
S.M. Al-Fattah, Saudi Aramco
(Alternate paper in Session 34: Artificial Intelligence for the Oil & Gas Industry)

19093 Unique Data Standardisation Challenges and Solutions: Raw and Basic Processed Microseismic Data
L. Al-Thani, A.A. Al-Zayer, R. Al-Naim, and A.M. Bin Mahfoodh, Saudi Aramco PE&D

19100 A Consolidated Method for Selecting Drilling Parameters
H.G. Suryadi, Schlumberger
(Alternate paper in Session 10: Big Data)

19107 Use of Data Analytics to Incorporate Geophysical Surface Uncertainty into Subsurface Modelling
M. Hardy and A. Lockwood, Woodside Energy Ltd.
(Alternate paper in Session 34: Artificial Intelligence for the Oil & Gas Industry)

19122 Hybrid Strategy for Porosity Distribution Mapping on a Heterogeneous Reservoir Using Artificial Intelligence Method
A. Shahbaz, Asia Pacific U. of Technology & Innovation; M. Soleimani Monfared, Shahrood U. of Technology
(Alternate paper in Session 26: Reservoir & Production Machine Learning)

19143 Chan Plot Signature Identification as a Practical Machine Learning Classification Problem
C.A. Garcia and H. Torres, Schlumberger; A. Mukhanov, MIT
(Alternate paper in Session 50: Formation Evaluation Machine Learning)

19155 Autonomous Underwater Vehicles Used for Seafloor Seismic Acquisition
C. Tsingas, Saudi Aramco PE&D
(Alternate paper in Session 58: IoT & Robotics)

19174 An Improved Model for Gas-Liquid Flow Pattern Prediction Based on Machine Learning
X. Wu, U. of Oklahoma
(Alternate paper in Session 26: Reservoir & Production Machine Learning)

19179 Improving Drilling Simulation Computation Performance with Smart Logic and Machine Learning
H.G. Suryadi and T. Yu, Schlumberger
(Alternate paper in Session 42: Drilling & Completion Machine Learning)

19193 Digitisation Using IIoT and Cloud Technology in Oil and Gas Upstream - Merits, Financial Impact and Challenges
A.C. Dange, Flare Petroleum Ltd.; H.M. Mesbah, Ajal Contracting and General Trading Co. WLL; K. Kerur, Sunlux Technovations
(Alternate paper in Session 2: Cloud Computing)

19220 A Novel Machine Learning Model for Early Kick Detection
M.A. AlGhazal, Saudi Aramco; V.V. Vedpathak, U. of Southern California
(Alternate paper in Session 42: Drilling & Completion Machine Learning)

19242 A Working Condition Diagnosis Model of Sucker Rod Pumping Wells Based on Big Data Deep Learning
X. Wang and Y. He, Changzhou U.

19248 Accelerate Non-Metallic Seal Development for Downhole Applications by Applying Big Data Method in Material Data
X.B. Huang, Baker Hughes Solutions; F. Wayne, Baker Hughes, a GE company
(Alternate paper in Session 10: Big Data)
19291 Learning from Experience: Stuck Pipe Prediction System Using an Unsupervised Learning and Fuzzy System
E. Alkamil, Missouri U. of Science and Technology & U. of Basrah; R.E. Flori, Missouri U. of Science and Technology; L. Brito da Silva, Missouri U. of Science and Technology & CAPES Foundation; D. Wunsch II, Missouri U. of Science and Technology
(Alternate paper in Session 18: Data Analytics for Drilling & Completion)

19299 The Fundamental Work to the Pre-Frac Evaluation of Deep Shale Reservoir: Evaluating Reservoir Heterogeneity Based on Neural Network and Principal Components Analysis Method
(Alternate paper in Session 34: Artificial Intelligence for the Oil & Gas Industry)

19328 Enabling Smart Real Time Petrophysical Decision Making through Machine Learning
S. Saumya and J. Vij, Schlumberger; J. Singh, Schlumberger Asia Services Ltd.; S.K. Sarkar, Schlumberger Oilfield Services; B. Das, Schlumberger Asia Services Ltd.; A. Nandi and O. Pasupilate, Schlumberger
(Alternate paper in Session 50: Formation Evaluation Machine Learning)

19330 Data-Driven Approach to Handling High-Dimensional Data Integration Challenges: A Case of Carbonate Reservoir Cementation Factor Prediction
F.A. Anifowose, C. Ayadiuno, and F.S. Al-Reschedan, Saudi Aramco PE&D
(Alternate paper in Session 34: Artificial Intelligence for the Oil & Gas Industry)

19386 Prediction Methods of Key Development Indexes of Large Gas Fields Based on Big Data Analysis
Y. Sun, RIPED, CNPC
(Alternate paper in Session 10: Big Data)

19410 Use Big Data Analytics to Build an Intelligent Energy Management and Optimisation System
S. Lee, M.A. Batouq, and O.A. Mohisin, Saudi Aramco SAOO
(Alternate paper in Session 34: Artificial Intelligence for the Oil & Gas Industry)

19414 A Technology Overview of Unmanned Aerial Vehicles for the Oil and Gas Industry
B. Li, C. Tsingas, M.M. Mezghani, and A. Saeed, Saudi Aramco PE&D
(Alternate paper in Session 58: IoT & Robotics)

19417 Digitalisation and Automation of Subsea Asset Integrity Data
J.H. Vincent, OneSubsea LLC; N. Salman, Schlumberger; I. Darilmaz and G. Papadopoulos, Shell

19423 Artificial Lift Selection Using Machine Learning
T. Ounsakul, W. Pattarachupong, T. Sirirattanachatuchawan, Y. Yokrat, and P. Ekkawong, PTTEP
(Alternate paper in Session 42: Drilling & Completion Machine Learning)

19430 A Data Driven Approach of ROP Prediction and Drilling Performance Estimation
J. Han, PCITC
(Alternate paper in Session 10: Big Data)

19458 Research and Application of Big Data Analysis Platform for Oil & Gas Production
J. Shi, R. Zhao, and J. Zhang, RIPED, CNPC
(Alternate paper in Session 10: Big Data)

19473 Dark Lining Beneath a Booming Cloud - Data Security in the Global Oil and Gas Industry
S. Sarkar and R.K. Saraiya, Schlumberger; C. Majumdar, Schlumberger Asia Services Ltd.
(Alternate paper in Session 2: Cloud Computing)

19485 Data Mining of Hidden Danger in Enterprise Production Safety and Research of Hidden Danger’s Mode Conversion
K. Tian, H. Yan, Y. Mao, and S. Wu, CNPC Research Inst. of Safety & Environment Technology

19489 A New Method to Detect Influx and Loss During Drilling Based on Machine Learning
X. Shi, CNPC Engineering Technology R&D Co. Ltd.
(Alternate paper in Session 18: Data Analytics for Drilling & Completion)

19508 A Model Designed for HSE Big Data Analysis in Petroleum Industry
T. Wu, CNPC

19532 Predicting Formation Type from Geological Log Data with Python’s Machine Learning Algorithms
S.M. Amir and E. Pancharoensawad, Texas Tech U.
(Alternate paper in Session 50: Formation Evaluation Machine Learning)

19533 A Real-Time Pipeline Tracking Using a Forward-Looking Sonar
P. Hoonuswan, PTTEP; Y. Tipsuwan and T. Kasetkasem, Kasetseart U.

19548 Prediction of Rate of Penetration of Deep and Tight Formation Using Artificial Intelligence Techniques
A. Ahmed, King Fahd U. of Petroleum and Minerals
(Alternate paper in Session 18: Data Analytics for Drilling & Completion)

19556 A Machine Learning Method for Predicting Optimal Formation Pressure Testing Zones and Parameters
A. Garcia-Mayans, M.A. Munoz Salinas, S. Park, F.X. Dubost, and M.L. Vizcaino, Schlumberger
(Alternate paper in Session 26: Reservoir & Production Machine Learning)
19557 Prediction of Two-Phase Flow Relative Permeability in Discrete Fractures
A.A. Alturki, Saudi Aramco; R. Ghamdi, M. Maucec, and M. Baddourah, Saudi Aramco PE&D
(Alternate paper in Session 50: Formation Evaluation Machine Learning)

UNCONVENTIONAL

19069 Characteristics and Influence Factors of the Middle-Lower Jurassic Tight Sandstone Reservoirs in the Taibei Sag, Turpan-Hami Basin
X. Si, Y. Xu, X. Wang, H. Guo, and Y. Li, PetroChina Hangzhou Research Inst. of Geology
(Alternate paper in Session 41: Tight Sandstone Oil and Gas)

19078 Study on Seven-Property Relation of Tight Oil Reservoirs via Well Logs

19081 Characterisation of Continental Shale Gas with Integrated Geoscience-Engineering Approach
(Alternate paper in Session 1: Unconventional Reservoirs)

19085 Consistent Evaluation of the Organic Content of the Qusaiba Shale Using Digital-Rock Methodology
(Alternate paper in Session 17: Unconventional Geological Reservoir Characterisation and Modelling)

L.P. Lalu and R.K. Lal, Pandit Deendayal Petroleum U.
(Alternate paper in Session 49: Heavy Oil and Coalbed Methane)

R. Yang and J. Guo, Southwest Petroleum U.
(Alternate paper in Session 25: Fracturing Materials & Monitoring)

19106 Impact of Composition on Natural Gas Desorption from Kerogen
W. Pang, Sinopec Research Inst. of Petroleum Engineering; I. Akkutlu, Texas A&M U.
(Alternate paper in Session 17: Unconventional Geological Reservoir Characterisation and Modelling)

19108 A Permeability Evolution Model for Natural Gas Hydrate Formation with CO2 Injection
Z. Fan, R. Zheng, and X. Li, The U. of Kansas
(Alternate paper in Session 65: Gas Hydrate)

19110 Geomechanical Anisotropic Method Increased Fracturing Efficient in Tight Oil Production: A Case Study of Yanchang Formation, Ordos Basin
P. Liu, Schlumberger
(Alternate paper in Session 33: Fracturing Modelling and Design)

19115 Evaluation of Dynamic Reserves in Ultra-Deep Naturally Fractured Tight Sandstone Gas Reservoirs
R. Luo, Y. Wan, and J. Feng, RIPED, CNPC
(Alternate paper in Session 41: Tight Sandstone Oil and Gas)

19119 Environmental Impact Study and Experience Sharing of Produced Water Reinjection from Unconventional Gas Development
C. Chen, X. Li, B. Wu, K. Zhang, and Q. Song, CNPC Research Inst. of Safety & Environment Technology
(Alternate paper in Session 57: Advancing in Fracturing Technology)

19150 Increasing SRV in Unconventional Reservoirs: Microstructural and Rock Mechanical Study
A.R. Al-Nakhli, Saudi Aramco PE&D; H. Al-Badairy, Saudi Aramco; M.H. Alqam, Saudi Aramco PE&D
(Alternate paper in Session 33: Fracturing Modelling and Design)

19151 Numerical Simulation Study of Surfactant Huff and Puff of Horizontal Well with SRV in Tight Oil Reservoirs
W. Li, Peking U.
(Alternate paper in Session 25: Fracturing Materials & Monitoring)

19164 A Comparison of Gas Hydrate Petroleum Systems in Marine and Permafrost Regions in China
H. Lau, National U. of Singapore; M. Zhang, PetroChina
(Alternate paper in Session 65: Gas Hydrate)

19165 The Development and Field Test of Fiber Microseismic Fracturing Monitoring Technology
(Alternate paper in Session 25: Fracturing Materials & Monitoring)
19167 Study on the T-Type Pipe Confluence in Completion Section of Wellbore with Gas Production from Gas Hydrate by Depressurisation
Y. Xia and D. Song, Changzhou U.
(Alternate paper in Session 65: Gas Hydrate)

19178 Case History: Real-Time Fiber Optic Technology Maximises Tight Carbonate Formation Returns in Kuwait by Optimising Stimulation, Multistage Acid Fracturing Diagnostics, Post-Treatment Flowback Allocation, and Production Profiling
B. Gorgi, Halliburton Energy Services Group; A.E. Al-Ebrahim, Kuwait Oil Co.
(Alternate paper in Session 57: Advancing in Fracturing Technology)

19197 Integrated Geology Sweet Spot and Micro Seismic Monitor to Optimise Reservoir Stimulation - A Case for Shale Gas, China
G. Yu, W. Liu, G. Xu, and X. Wan, BGP, CNPC
(Alternate paper in Session 33: Fracturing Modelling and Design)

19209 Hydraulic Fracture Calibration for Unconventional Reservoirs: A New Methodology for Predictive Modelling
P. Pankaj, Schlumberger; P. Shukla, Schlumberger Technology Corp.
(Alternate paper in Session 33: Fracturing Modelling and Design)

19214 The Novel Dissolution of Bitumen by Commercial Enzymes
M. Mislan and I. Gates, U. of Calgary
(Alternate paper in Session 49: Heavy Oil and Coalbed Methane)

19216 Molecular Simulation of Methane Adsorption Behaviour in Kerogen Nanopores for Shale Gas Resource Assessment
(Alternate paper in Session 1: Unconventional Reservoirs)

19217 Feasibility, Application and Evaluation of Dilation by Polymer Injection Technology to Improve SAGD Process
G. Liang, S. Liu, Y. Liu, Y. Luo, B. Han, and J. Huang, RIPED, CNPC
(Alternate paper in Session 49: Heavy Oil and Coalbed Methane)

19229 Exploration and Practice of “Methane-Leading” Reservoir Stimulation Technology of High-Rank Coalbed Methane
(Alternate paper in Session 49: Heavy Oil and Coalbed Methane)

19232 Unravel the Lacustrine Shale Oil Reservoir Potential in China by Integrating Advanced Logging Technologies and Special Core Measurements
G. Liu, CNPC; Y. Hou, PetroChina Changqing Exploration, CNPC; H. Ji, PetroChina Jilin Exploration, CNPC; J. Wu, Schlumberger China S.A.; X. Zhao, Schlumberger
(Alternate paper in Session 1: Unconventional Reservoirs)

19238 A 3D Hydraulic Fracture Propagation Model Applied for Multiple-Layered Formation of Longmaxi Shale
J. Tang and K. Wu, Texas A&M U.; B. Qian, C. Yin, and Y. Li, CNPC Chuanqing Drilling Engineering Co. Ltd.; C. Ehlig-Economides, U. of Houston; L. Zuo, Texas A&M U.
(Alternate paper in Session 33: Fracturing Modelling and Design)

19244 Applications of Stress Field Modelling for Shale Gas in Sichuan Basin
R. Guo, S. Wang, S. He, H. Lin, and W. Xu, BGP, CNPC
(Alternate paper in Session 1: Unconventional Reservoirs)

19253 Utility of Sonic Anisotropic Measurements in Accurate Rock Mechanics Calculation for Hydro-Fracturing Design and Wellbore Stability Analysis in Unconventional Reservoirs
R.R. Kumar, A. Singh, and R. Talreja, Schlumberger Asia Services Ltd.
(Alternate paper in Session 57: Advancing in Fracturing Technology)

19265 Yanbei-Unlocking the Tight Gas Green Field Development Potential through Integrated Technology Application
M.Z. Zaini and K. Du, Schlumberger
(Alternate paper in Session 41: Tight Sandstone Oil and Gas)

19280 More Accurate Forecasts of Unconventional Play Production
G.W. Walkup, Berkeley Research Group LLC
(Alternate paper in Session 9: Unconventional Production)

19282 Innovative Reservoir Classification with Natural Fracture Geometry to Guide Well Stimulation for Unconventional Tight Gas Field
J. Xu, Schlumberger
(Alternate paper in Session 41: Tight Sandstone Oil and Gas)

19295 Study of Ultra-Dry CO₂ Foam Fracturing Fluid Enhanced by Graphene
Q. Lv, Z. Li, and R. Zheng, China U. of Petroleum, Beijing
(Alternate paper in Session 57: Advancing in Fracturing Technology)
19307 An Innovative Sandstone Stimulation Method Using In-Situ Heat Generating Fluid: Field Deployment and Lab Study
(Alternate paper in Session 41: Tight Sandstone Oil and Gas)

19308 Flow Enhancement by High Power Laser Technology
S.I. Batarseh and A. Alarith, Saudi Aramco PE&D
(Alternate paper in Session 17: Unconventional Geological Reservoir Characterisation and Modelling)

19360 Evaluation of Cyclic Gas Injection in Unconventional Oil Reservoirs; Effects of Hydraulic Fracture Spacing and Type of Injection Gas: A Bakken Case Study
Y. Assef and P. Pereira Almao, U. of Calgary
(Alternate paper in Session 9: Unconventional Production)

19411 Shale Resource Assessment in Presence of Nanopore Confinement
W. Pang, Sinopec Research Inst. of Petroleum Engineering; I. Akkutlu, Texas A&M U.
(Alternate paper in Session 1: Unconventional Reservoirs)

19416 Static and Dynamic Elastic Moduli of Bakken Formation Samples
J. He, K. Ling, and P. Pei, U. of North Dakota
(Alternate paper in Session 9: Unconventional Production)

19420 Implications of Pressure Interference on Production Performance of Unconventional Coal Bed Methane (CBM) Wells
A. Mirani, N. Thakuria, A. Dash, Essar Oil and Gas Exploration and Production Ltd.
(Alternate paper in Session 49: Heavy Oil and Coalbed Methane)

19421 Interdependence of Flow and Geomechanical Processes During Short- and Long-Term Gas Displacement EOR Processes in Fractured Shale Oil Formations
G.J. Moridis, Texas A&M U. and Lawrence Berkeley National Laboratory; A.F. Queiruga, Lawrence Berkeley National Laboratory
(Alternate paper in Session 57: Advancing in Fracturing Technology)

G. Myers, J.M. Pope, J.R. Walker and U. Ahmed, WellDog
(Alternate paper in Session 17: Unconventional Geological Reservoir Characterisation and Modelling)

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19067 Mature Field Revitalisation: An Integrated, Rapid, Collaborative Approach for Candidate Selection and Reservoir Optimisation
(Alternate Paper in Session 15: Well and Asset Management for Improved Reservoir Performance)

19137 3D Acid Fracturing Simulation and Application in the Upper Sinian Dengying Fm Gas Reservoirs in China
H. Xue and Z. Huang, China ZhenHua Oil Co., Ltd.; F. Liu, Engineering Technology Research Inst., PetroChina Southwest Oil & Gas Field Co.; P. Liu, Southwest Petroleum U.; H. Wang, B. Zhang, F. Liu, Y. Cheng, and Y. Xiao, China ZhenHua Oil Co., Ltd.

19190 Dynamic Analysis in Wellbore Vortex Flow Field and Optimal Design of Downhole Vortex Tool
(Alternate Paper in Session 15: Well and Asset Management for Improved Reservoir Performance)

19195 A Holistic Approach to Life Extension of Fixed Offshore Platforms in Malaysian Waters
(Alternate Paper in Session 15: Well and Asset Management for Improved Reservoir Performance)

19235 Study and Analysis of Engineering Factors for Prolonged Gas Production in Xujiahe Tight Sandstones
Y. Yao and Q. Yuan, PetroChina; J. Zhu, CNOOC; G. Hu, S. Tang, and J. Ruan, PetroChina
(Alternate Paper in Session 47: Gas Production Performance)
19240 Extended Acoustic Sand Monitoring Helps to Understand Ceramic Sand Screen Failure: A Case Study

19255 Interpretation of Downhole Temperature Measurements for Multiphase Flow in Hydraulic Fractured Horizontal Wells

19264 Experimental Study of Sand Erosion in Multistage Electrical Submersible Pump (ESP): Performance Degradation, Wear and Vibration

19304 Mathematical Model of Acid Wormhole Expansion in Combination Diverting Acid with Solid Diverting Agent

19324 A New Multiple Chelating Acid System with Low Damage and Weak Dissolution

19333 Integrated Detection of Water Production in a Highly Heterogeneous and Tight Formation Using CRM Model: A Case Study on Water Flooding Gaither Draw Unit, Wyoming, USA

19355 Innovative Permanent Down-Hole Scale and Corrosion Monitoring System Using Ultrasound Guided Waves Technology

19362 A Novel Approach to Detect Events and Anomalies from Permanently Installed Distributed Temperature Sensor in Injector/Producer Wells

19389 Case Study: Metallurgy Selection and Choke Design Incorporating Trim Interchangeability to Cater to the Entire Production Lifecycle of Raageshwari Deep Gas Field
C. Bhardwaj, V. Ranjan, S.K. Jetley, A. Ghosh, S. Sharma, S. Tiwari, A. Bohra, A. Kumar, A. Beohar, and P. Sidharth, Cairn India Ltd. (Alternate Paper in Session 47: Gas Production Performance)

19390 A Multiphase Choke Temperature Calculation Model for High-Pressure Condensate Gas/Water/Methanol Mixtures

19404 Research and Application of Retreatment Technology to Tap Remaining Oil in Changing Low Permeability Oilfield

19413 Insight of Corrosion Inhibitor for Acidising: Structure and Inhibitive Performance of the Indolizine Derivatives

19434 Assessment of Multi-Stage Fractured Wells Using Pressure Transient Analysis: Theory and Practice

19463 Experiments and Dimensional Analysis for Emulsion Rheology Modelling on an Electric Submersible Pump
H.M. Banjar, Saudi Aramco; H. Zhang, The U. of Tulsa (Alternate Paper in Session 7: Artificial Lift: Performance Monitoring and New Advancements)

19465 Pilot Test and Effect Evaluation for the Water Shutoff Technology with Concentric Tube in Horizontal Well of Bohai Oilfield
G. Zhang, Y. Li, S. Wang, H. Zheng, and J. Zhang, CNOOC Ltd., Tianjin Branch (Alternate Paper in Session 7: Artificial Lift: Performance Monitoring and New Advancements)

19482 New Innovation Formulation for Iron Sulfide Scale Removal: A Field Application in a Sandstone Reservoir in Egypt
E.H. Riad, SAPESCO (Alternate Paper in Session 23: Corrosion and Sand Management: Monitoring and Treatments)
19488 Improved Gas Recovery for Bottom-Water-Drive Gas Reservoir Using Downhole Water Drain Technique: A Success Story from Arthit Field, Thailand
S. Phummanee, N. Phongchawalit, A. Rittirong, and W. Pongsripian, PTTEP
(Alternate Paper in Session 47: Gas Production Performance)

19495 Computer Assisted Study on Phase Change Behavior of Alkanes in the Crude Oil, and the Evaluation of Effects of Selected Chemical Inhibitors on Phase Change
(Alternate Paper in Session 23: Corrosion and Sand Management: Monitoring and Treatments)

19496 Minimise System Upsets in High Oil Production Facility throughout Demulsifier Chemical Trial

19506 Total Well Management: Maximising Well Lifecycle Value - A Regulator Perspective
W. W Razali, R. Masoudi, R. Singh, R. Wibisono, and N. Ahmad, PETRONAS
(Alternate Paper in Session 15: Well and Asset Management for Improved Reservoir Performance)

19559 A Case Study for the First Successful Refracturing on Horizontal Well in Tight Volcanic Gas Reservoir in China
W. Wang and H. Guo, PetroChina Co. Ltd.; Y. Huang, D. Li, Y. Yu, Q. Li, and H. Sui, PetroChina Daqing Oilfield Co. Ltd.
(Alternate Paper in Session 55: Productivity Enhancement through Stimulation: Case Studies)

19563 Application of Group Fracturing Technology in the Old Area of Low Permeable Oilfield: A Case from Jilin Oilfield, Songliao Basin
C. Zhao, H. Liu, and G. Xuan, PetroChina Jilin Oilfield Co.
(Alternate Paper in Session 55: Productivity Enhancement through Stimulation: Case Studies)

19566 Multiwell Deconvolution as Important Guideline to Production Optimisation: Western Siberia Case Study
I.S. Kaeshkov, Gazpromneft Science & Technology Centre; R. Asmandiyarov, Gazpromneft NTC; A. Aslanay, TGT Oil & Gas Services; M. Bikkulov, Gazpromneft-Khantos; R. Farakhova, Sofoil; V.M. Krichevsy, and D.N. Gulyaev, Sofoil LLC
(Alternate Paper in Session 15: Well and Asset Management for Improved Reservoir Performance)

19109 Anti-Channelling Cementing Technology for Ultra-Deep High-Temperature and High-Pressure Gas Wells
Y. Zeng, Y. Gao, Z. Shiming, L. Sang, G. Yang, and P. Lu, Sinopec Research Inst. of Petroleum Engineering
(Alternate Paper in Session 64: Deep Water and HP/HT)

19117 Weight-on-Bit Self-Adjusting Dual-Diameter Bit Lead a Step Change in Drilling Bit Technology
H. Hu, Z. Guan, B. Wang, and D. Liang, China U. of Petroleum (East China); M. Sun, Qingdao Shidahuatong Technology Co. Ltd.; X. Wang, China U. of Petroleum (East China); W. Chen, King Fahd U. of Petroleum and Minerals
(Alternate Paper in Session 6: Drilling Technology: Success Cases)

19124 Real-Time Interpretation of Supercharged Formations during Pore Pressure Monitoring
(Alternate Paper in Session 70: Well Control)

19126 A Modified Drucker-Prager Model for Wellbore Failure Modelling: An Analytical Approach
A. Younessi, Baker Hughes, a GE company
(Alternate Paper in Session 56: Risk Management)

19144 Experimental Investigation on Wellbore Strengthening Mechanism and Tight Plugging Pressure-Resistance Drilling Fluid Based on Particulate Matter Mechanics
J. Liu, Shengli Petroleum Engineering Corp. Ltd., Sinopec
(Alternate Paper in Session 70: Well Control)

19160 Shaped Memory Polymer: An Innovative Approach to Sand Control Open Hole Completion in Thin, Multilayered, Depleted Low Permeability Gas Reservoirs
(Alternate Paper in Session 54: Completion Technology)

19204 Real-Time Automated Drilling Optimisation and Operations Benchmarking Services Deliver a Step Change in Khalda Western Desert Operations
A.M. Osman, Schlumberger; H.A. Samad, Khalda Petroleum Co.; D. Muir, Apache Corp.; M.A. Elsayed, Khalda Petroleum Co.; M.M. Siam, Schlumberger
(Alternate Paper in Session 69: Drilling Optimisation)

19222 A Novel Workflow for Far-Field Stress Characterisation Using Stress-Sensitivity of Anisotropic Formations to Acoustic Waves
R. Patro, Schlumberger; C. Chatterjee, A. Kumar, and B. Das, Schlumberger Asia Services Ltd.
(Alternate Paper in Session 70: Well Control)
The Application of Thermal Cyclone Desorption Technology for OBM Drill Cuttings Disposal
J. Wu, J. Pan, and H. Wang, China U. of Science and Technology, East China; L. Wang, X. Lan, and L. Yang, PetroChina Southwest Oil & Gas Field Co. Chendgu Natural Gas Chemical General Plant; W. Liu, SJ Petroleum Machinery Co., Sinopac
(Alternate Paper in Session 38: Innovative Drilling Fluids)

Enhancing the Gel Transition Time and Right-Angle-Set Property of Oil Well Cement Slurries by Incorporating CSA Cement and Gypsum
A. Prabhakar, National U. of Singapore; N. Lee, Korea Inst. of Civil Engineering and Building Technology; K. Ong, M. Zhang, J. Moon, and A. Cheng, National U. of Singapore
(Alternate Paper in Session 14: Cementing Technology Advancements)

Experimental Investigation of Particulate Polylactic Acid Diversion in Matrix Acidising
R.M. Shirley and A.D. Hill, Texas A&M U.
(Alternate Paper in Session 30: Coiled Tubing Operations)

Application of Underbalanced Coiled Tubing Drilling Technology to Enhance Gas Production in Deep Carbonate Reservoirs
P.H. Guizada, Saudi Aramco PE&D
(Alternate Paper in Session 6: Drilling Technology: Success Cases)

Geomechanical Consideration of Drilling through Heavily Faulted Formation
(Alternate Paper in Session 56: Risk Management)

Investigation of Multi-Scale Approach for Damage Control in Ultra-Deep Tight Sandstone Gas Reservoirs Based on the Multi-Scale Formation Damage Mechanisms
(Alternate Paper in Session 38: Innovative Drilling Fluids)

Full Scale Geomechanics Understanding and Risk Assessment Assisting Drilling Risk Mitigation in Wushi Sag, Beibu Gulf, China
S. Guo and Y. Gao, CNOOC; F. Gui, S. Wang, S. Bordoloi, and S. Ong, Baker Hughes, a GE company
(Alternate Paper in Session 64: Deep Water and HP/HT)

A New Casing Design to Optimise the Drilling Process in Basra Oil Fields, Iraq
M. Al-Maliki and Y. Alishawi, Basra Oil Co.
(Alternate Paper in Session 22: Drilling Efficiency)

Novel Plant-Based Particulate and Fibrous LCM Products for Loss Control while Drilling
M. Amanullah, M.K. Al-Arfaj, and R.A. Alouhali, Saudi Aramco PE&D
(Alternate Paper in Session 38: Innovative Drilling Fluids)

The Evolution of Completions Benchmarking in Malaysia: A New Way of Working
S.R. Mohd Mokhtar, N. Omar, M. Bakar, S. Fazilah, M. Khalid, and M. Zakaria, PETRONAS
(Alternate Paper in Session 30: Coiled Tubing Operations)

Safety Analysis of String for Deepwater Tubing-Conveyed Perforating
D. Qiao, China U. of Petroleum, Beijing
(Alternate Paper in Session 64: Deep Water and HP/HT)

Geosteering and Drilling Optimisation in Low Resistive and Thin Layer Reservoirs Northern Oman
(Alternate Paper in Session 21: Drilling Technology for Difficult Environments)

Elevating Drilling Performance & Efficiency to Highest Levels in Adhi Field: A Success Story
(Alternate Paper in Session 22: Drilling Efficiency)

Higher Precision Automated Managed Pressure Drilling Control Achieved through the Addition of a Thermal Model
Q. Gu, A. Fallah, and D. Chen, The U. of Texas at Austin; A. Ambrus, Intl. Research Inst. of Stavanger; P. Ashok and E. van Oort, The U. of Texas at Austin
(Alternate Paper in Session 70: Well Control)

Effect of SiO$_2$ and Graphene Oxide Nanoparticles on the Thermal Stability and Inhibition Capabilities of a Water-Based Drilling Fluid Applied to Unconventional Shale
J. Aramendiz, Missouri U. of Science and Technology
(Alternate Paper in Session 62: Drilling Fluids Modelling)

New Ultra-Strong and Catalyst-Free PDC Cutting Element Technology
G. Zhan, Saudi Aramco EXPEC Advanced Research Center; T.E. Moellendick, M.S. Albadran, B. Li, and C.P. Gooneratne, Saudi Aramco PE&D; D. He, Sichuan U.
(Alternate Paper in Session 21: Drilling Technology for Difficult Environments)
19368 Application of Anisotropic Wellbore Stability Model and Unconventional Fracture Model for Lateral Landing and Wellbore Trajectory Optimisation: A Case Study of Jingmen Shale Gas Field  
H. Wen, Schlumberger  
(Alternate Paper in Session 56: Risk Management)

19371 Shale Gas Drilling Performance Breakthrough in Wei Yuan: Relentless Scientific and Engineering Approaches for the Unconventional Resources in Central China  
X. Zheng, China National Petroleum Corp.; T.C. Moh, Schlumberger China SA; N. Huang, N. Ke, and G. Geng, Schlumberger  
(Alternate Paper in Session 69: Drilling Optimisation)

19375 Successful Execution of a Challenging Well Intervention on First of Its Kind Unconventional Dual Completion Well in South East Kuwait Field: A Case Study  
(Alternate Paper in Session 46: Well Integrity)

19376 New Low-Shock Low-Debris Guns Technology with Reliable Gunshock Simulation and Optimisation  
C.E. Baumann, D. Damm, and M.E. Smart, Schlumberger; X. Yang, J. Liu, and W. Zhang, PetroChina Tarim Oilfield Co.  
(Alternate Paper in Session 54: Completion Technology)

19380 Concurrent Real-Time Distributed Fiber Optic Sensing of Casing Deformation and Cement Integrity Loss  
Q. Wu, S.D. Nair, and E. van Oort, The U. of Texas at Austin; A. Guzik and K. Kishida, Neubrex Co., Ltd.  
(Alternate Paper in Session 30: Coiled Tubing Operations)

19381 New Modified Plane of Weakness Method Enables Drilling Horizontal Wells Successfully in Ordos Basin, China  
P. Liu and G. Yan, Schlumberger  
(Alternate Paper in Session 69: Drilling Optimisation)

19393 The Development of New Formulation of Geopolymer Cement for Wellbore Integrity Improvements  
M. Ahdaya and A.H. Imqam, Missouri U. of Science and Technology  
(Alternate Paper in Session 46: Well Integrity)

19394 Detection of Stuck Pipe Early Signs and the Way Toward Automation  
A.A. Alshaikh, Saudi Aramco; M.K. Albassam, S.H. Gharbi, and A.S. Al-Yami, Saudi Aramco PE&D  
(Alternate Paper in Session 21: Drilling Technology for Difficult Environments)

19395 First Onsite Automatic Geomagnetic Observatory Improves Well-Bore Positioning  
S. Shabanov, Total E&P; F. Humbled, RMI Geophysical Center; M. Garbers, Total E&P; A. Sikal and F. Momot, Pathcontrol; A. Gonsette, RMI Geophysical Center; O. Cousoo, Total E&P  
(Alternate Paper in Session 6: Drilling Technology: Success Cases)

19412 Field Testing of High-Strength Rotary Shouldered Connections in Difficult Drilling Conditions  
K. Li, Schlumberger IPM-WCI; M.H. Du, F. Song, and D.L. Smith, Schlumberger; W. Blackman, Schlumberger D&M  
(Alternate Paper in Session 21: Drilling Technology for Difficult Environments)

19428 Novel Methods and Test Fixtures for Comprehensive Evaluation and Characterisation of LCM Products  
M. Amanullah, R.A. Alouhali, and M.K. Al-Arfaj, Saudi Aramco PE&D  
(Alternate Paper in Session 62: Drilling Fluids Modelling)

19435 Numerical and Experimental Analysis of BHA Lateral Motion in Highly Deviated Wells  
H. Wang, Z. Guan, Y. Shi, and D. Liang, China U. of Petroleum (East China)  
(Alternate Paper in Session 6: Drilling Technology: Success Cases)

19436 Sensors and Instrumentation for Downhole Environments - Challenges and Opportunities  
C.P. Gooneratne and B. Li, Saudi Aramco PE&D; G. Zhan, Saudi Aramco; T.E. Moellendick, Saudi Aramco PE&D  
(Alternate Paper in Session 54: Completion Technology)

19438 Managed Pressure Drilling Saves Multimillion Dollar Well from Abandonment; Enables Operator to Drill and Isolate Section to Target Depth in a Challenging Plastic Salt Formation  
Q.A. Chaudary, Weatherford Middle East  
(Alternate Paper in Session 46: Well Integrity)

19441 The Successful Implementation of Adjust While Drilling (AWD) Flowchart in BZ19-4 Offshore Oil Field of Bohai Bay, China  
Y. He, CNOOC  
(Alternate Paper in Session 69: Drilling Optimisation)
19449 Geomechanical Approach Lead to Successful Implementation of the First Highly Deviated Well at Kuqa Depression in Tarim Basin
(Alternate Paper in Session 6: Drilling Technology: Success Cases)

19450 Innovative Downhole Flow Control Solution and Challenges in a Brown, Highly-Depleted and High Water Cut Carbonate Field Offshore Indonesia

19453 Fault Slippage Identification and Influence on Casing Deformation for Horizontal Shale Gas Wells Based on Focal Mechanism
X. Guo, J. Li, and L. Gonghui, China U. of Petroleum, Beijing
(Alternate Paper in Session 46: Well Integrity)

19456 Experimental Investigation of the Impact of Modified Nano Clay on the Rheology of Oil Well Cement Slurry
M. Murtaza, W. Chen, and A. Jamaluddin, King Fahd U. of Petroleum and Minerals
(Alternate Paper in Session 14: Cementing Technology Advancements)

19457 Designing Cement Jobs for Success - Get it Right the First Time!
(Alternate Paper in Session 14: Cementing Technology Advancements)

19478 Design for Well Longevity: Optimising Cement Barrier Quality in UGS Wells
(Alternate Paper in Session 46: Well Integrity)

19487 Integrating Qualitative and Quantitative Drilling Risk Prediction Methods for Shale Gas Field in the Sichuan Basin
C. Zhao, Schlumberger China
(Alternate Paper in Session 70: Well Control)

19493 Converting Waste Vegetable Oil to Emulsifier for Invert-Emulsion Oil Based Mud
J. Ramasamy and M. Amanullah, Saudi Aramco PE&D
(Alternate Paper in Session 38: Innovative Drilling Fluids)

19498 Drilling Dynamics Measurements with Positive Displacement Motors Enhances Performance and Reliability
R.V. Neelgund, Schlumberger UK PLC; F. Li and D. Smith, Schlumberger; W. Blackman, Schlumberger D&M
(Alternate Paper in Session 21: Drilling Technology for Difficult Environments)

19499 Current Methods and Novel Solutions for Mitigating Lost Circulation
J. Ramasamy, C.P. Gooneratne, and M. Amanullah, Saudi Aramco PE&D
(Alternate Paper in Session 38: Innovative Drilling Fluids)

19509 The Impermeable Anti-Collapsing Drilling Fluid System Technology Used in Argentina San Jorge Oilfield
W. Tang, Sinopec Research Inst. of Petroleum Engineering
(Alternate Paper in Session 62: Drilling Fluids Modelling)

19510 Research of Formation Protection Technology in Complex Fault Block Oilfield Production
S. Fan, J. Dong, Q. You, X. Wang, and X. Yang, PetroChina Dagang Oilfield Co. Ltd.
(Alternate Paper in Session 56: Risk Management)

19515 Novel Surfactant Chemistry Helps Memory Polymer Activate in Open Hole Sand Control Applications
A.V. Addagalla, I. Maley, and L.P. Moroni, Baker Hughes, a GE company
(Alternate Paper in Session 30: Coiled Tubing Operations)

19517 Digital Reamers to Mitigate Narrow Margin Drilling Hazards for Deepwater ERD Wells in Malaysia
M. Lim and R. Singh, Baker Hughes, a GE company; J. Khor, M. Md Radzi, and Y. Wong, Sarawak Shell Bhd.
(Alternate Paper in Session 22: Drilling Efficiency)

19524 Drill-to-Production: How to Enable a Challenging Task to be Truly Optimal and Systematic?
C. Liu and Y. He, PetroChina; C. Xian, Schlumberger; C. Zhao, Schlumberger Trinidad Inc.
(Alternate Paper in Session 22: Drilling Efficiency)

19528 Optimisation of Suitable Measurement Position through Fluid Dynamics in Early Kick Detection
H. Sun, CNPC Bohai Drilling Engineering Co. Ltd.; L. Lao, Cranfield U.; D. Li, Q. Tao, Y. Liu, and H. Li, CNPC Bohai Drilling Engineering Co. Ltd.
(Alternate Paper in Session 70: Well Control)

19539 Intelligent Under Reamer a Solution for Lean Casing Profile
A. Khaw and D. Miguel, Baker Hughes, a GE company; Q.A. Vu, PVD Baker Hughes
(Alternate Paper in Session 21: Drilling Technology for Difficult Environments)

19543 Treatment Technology of Brine Contamination and Barite Settlement for the High Temperature and High Density OBM for Ultra-Deep Well Drilling in Western China
J. Wang, H. Yang, and X. Xu, CNPC Engineering Technology R&D Co. Ltd.
(Alternate Paper in Session 62: Drilling Fluids Modelling)
19558 In House Drilling Simulator Modelling & Bi-Centre Drill Bit Technology Sets a New Benchmark by Reducing Maximum Tool Diameter Distance between Bit and Gamma Ray Improving Reservoir Surveying on One of the Largest Brown Field in Norwegian Seas S. Hussain, Schlumberger D&M (Alternate Paper in Session 69: Drilling Optimisation)

19565 High Pressure Sealing Lost Circulation Pill to Cure Severe Losses Q. Li and Z. He, Xinjiang Grand Oilfield Technology Inc. (Alternate Paper in Session 62: Drilling Fluids Modelling)

19570 4D Geomechanical Simulation in Fractured Carbonate Reservoir for Optimum Well Construction and Reservoir Management, Case Study in Offshore North Madura Area L. Anis, Schlumberger; A. Murtani, A. Hidayat, and Z. Syarif, Saka Indonesia Pangkah; A. Setiawan, Schlumberger (Alternate Paper in Session 56: Risk Management)


19516 Using Asphaltene Nano-Science to Guide Geology Realisation and Field Development
(Alternate Paper in Session 37: Integrated Reservoir Management for Challenging Environments)

RESERVOIR

19043 Advanced Vertical Interference Test Modelling by Considering Petrophysical and Image Based Rock Typing for a Better Kv Estimation in a Heterogeneous Reservoir: A New Workflow
A. Kumar, S.S. Batshas, S. Singh, S. Dutta, and G. Nagaraj, Schlumberger Asia Services Ltd.
(Alternate Paper in Session 5: Reservoir Evaluation and Monitoring: Recent Advancement)

19048 An Experimental Study of the Dynamic Mass Transfer Process During Carbonated Water Injection
J. Zou, China U. of Petroleum, Beijing; Z. Chen, The U. of Texas at Austin
(Alternate Paper in Session 29: Advancement and Application of IOR/EOR)

19049 Automated Workflow for Unstructured Grid Reservoir Simulation
X. Ding, Saudi Aramco PE&D
(Alternate Paper in Session 13: Advances in Reservoir Simulation)

19063 Factors Affecting Water Alternating Hydrocarbon Gas Miscible Flooding in a Low Permeability Reservoir
J. Dong and S. Wu, RIPED, CNPC
(Alternate Paper in Session 29: Advanced and Application of IOR/EOR)

19070 Multi-Component while Drilling (MCWD) Resistivity Inversion for Challenging Thin Carbonate Reservoirs
M. Larbi Zeghlache, Saudi Aramco PE&D; A. Mumtaz and E. Ferreira, Baker Hughes, a GE company
(Alternate Paper in Session 5: Reservoir Evaluation and Monitoring: Recent Advancement)

19097 Effect of Pore Pressure Depletion on Wellbore Stability and Hydraulic Fracturing in Sandstone Reservoir
M. Al-Dossary, Saudi Aramco PE&D

19129 Disclose Hidden Hydrocarbon (HC) Reserves from Additional Zone of Interest (AZIs) Using DT logR Method in Lunar Field, Gulf of Thailand

19131 Optimising Hardware and Workflow while Drilling to Successfully Maximise Formation Fluid Scanning and Sampling in Highly Unconsolidated Formations
S.H. Paul, Schlumberger; I. De Santo, Schlumberger D&M; S.A. Haq, Y. Blanco, and M. Turner, Schlumberger; V. Agarwal, Schlumberger Technology Corp.; D.R. Murray, Schlumberger Oilfield Services

19133 Investigation of Anhydrite Dissolution as a Potential Low Salinity Waterflooding Mechanism
T. Uetani, H. Kaido, and H. Yonebayashi, INPEX Corp.
(Alternate Paper in Session 29: Advancement and Application of IOR/EOR)

19140 Integrated Study of Shear Wave and Resistivity Anisotropy in an Inclined Well Providing Insight to the Geomechanical Model
S. Das, Baker Hughes, a GE company; T. Zhang and V. Vevakanandan, Sabah Shell Petroleum Co. Ltd.; M. Abd Rahim, Sarawak Shell Bhd.

19152 A Novel True 3-Dimensional Discrete Fracture Network Model of Naturally Fractured Shale Reservoir
L. Mi and B. Yan, Texas A&M U.
(Alternate Paper in Session 13: Advances in Reservoir Simulation)

19170 Development of a New Parallel Polymer Flooding Simulator for Naturally Fractured Reservoirs
H. Liu and Z. Chen, U. of Calgary
(Alternate Paper in Session 13: Advances in Reservoir Simulation)

19218 Reviving Idle Wells and Unlocking Potential Production Gain In Offshore Sarawak through Exposing BCO-LRLC Opportunities

19297 Pressure Transient Behavior for Alternating Polymer Flooding in a Three-Zone Composite Reservoir
X. Kang and Y. Zeng, CNOOC

19369 Innovative Mini-DST and Production Evaluation Approach at Challenging HPHT Condition for KeShen Tight Gas Reservoir, a Case Study at Tarim basin
Y. Zhao and Q. Guo, PetroChina Tarim Oilfield Co.; J. Chen and Z. Fan, Schlumberger
(Alternate Paper in Session 5: Reservoir Evaluation and Monitoring: Recent Advancement)
19408 Application of Artificial Intelligence for Big-Loop Integration of Static and Dynamic Data for Modelling, Assisted History Matching, and Production Forecasting of Geologically Complex Reservoirs
(Alternate Paper in Session 13: Advances in Reservoir Simulation)

19419 Unravelling Complex Resistivity Responses, a Comparison of Low Frequency LWD Laterolog to High Frequency Propagation and Wireline Dielectric
X. Wang, CNOOC Ltd., Shenzhen Branch; D. Xiao, CNOOC Ltd.; L. Guan, CNOOC Ltd., Shenzhen Branch; D.C. Maggs, Schlumberger Oilfield Services; Y. Shim, C.J. Maeso, F. Legendre, and R. Leech, Schlumberger; O. Moyal, Schlumberger Trinidad Inc.; R. Dua, Schlumberger D&M
(Alternate Paper in Session 5: Reservoir Evaluation and Monitoring: Recent Advancement)

19442 Effective Igneous Reservoir Identification and Controlling Factor Analysis in Eastern Sag of Liaohe Depression, China
Z. Hu, PetroChina Liaohe Oilfield Co.; F. Wu, X. Liu, J. Wu, S. Li, and Y. Wang, Schlumberger

19472 Reservoir Fluid Geodynamics, a New Way to Evaluate the Reservoir Connectivity
L. Chen, B. Gao, J. Chen, and J.A. Canas, Schlumberger; R.R. Jackson, Schlumberger IPM-WCI; O.C. Mullins, Schlumberger
(Alternate Paper in Session 5: Reservoir Evaluation and Monitoring: Recent Advancement)

19514 Capillary Pressure Quality Control and Curve Fitting Workflow
N.I. Bulushi, G. Kraishan, and G. Hursan, Saudi Aramco PE&D

19581 From Molecules to Barrels: A Case Study on Redefining Hydrocarbon Spectrum and DNA Tracing through Gas-Chromatograph Fingerprinting

19564 Open Hole Multistage Completion Evaluation Incorporating Deployment of Downhole Shut-in Tool Application in Sour Carbonate Gas Wells, Field Case
M.A. Espinosa Galvis, Saudi Aramco SAOO

19154 Stress and Structural Analysis of Inner Pipe of Cryogenic Flexible Hose
(Alternate Paper in Session 24: LNG & GTL)

19239 Research on Natural Gas Separation Flow Laws in a New Type of Supersonic Cyclone Separator
H. Liang, U. of North Dakota; S. Zhang and Y. Kang, Xi’an Shiyou U.; K. Ling, U. of North Dakota
(Alternate Paper in Session 24: LNG & GTL)

19294 Exploring Opportunities for Capacity Enhancement in Sour Gas Treatment Unit
S.B. Deshpande, ONGC Ltd.
(Alternate Paper in Session 32: Gas Processing)

19379 Prediction of Thermal Stress and Microannulus Formation in Cement Sheaths During CO2 Injection Based on Unsteady Heat Transfer
Y. Bin, Southwest Petroleum U.
(Alternate Paper in Session 40: CO2)

19384 Measurement of CO2 Solubility in Pure Water for Temperatures between 313.15 to 473.15 K and Pressure between 0.5 to 200 MPa
(Alternate Paper in Session 40: CO2)

19396 Separator Pressure Optimisation and Cost Evaluation of a Multistage Production Unit Using Genetic Algorithm
M. Motie, P. Moein, and A. Hadipour, Tarh-O-Palayesh Engineering Co.
(Alternate Paper in Session 32: Gas Processing)

19491 4D Geomechanics Modelling for Potential CO2 Storage Site in Malaysia- Fault Reactivation and Maximum Pressure Injection Limit
(Alternate Paper in Session 40: CO2)
PROJECT MANAGEMENT FACILITIES

19083 Assessment the Uncertainties and Improve Results of Offshore Megaprojects
H. Shi, CNOOC
(Alternate Paper in Session 48: Concept Engineering, Construction, and Commissioning (The 3 Cs))

19153 Monte Carlo Optimisation for Site Selection of Process Facilities in Oilfields Considering Environment
B. Wang, China U. of Petroleum, Beijing
(Alternate Paper in Session 48: Concept Engineering, Construction, and Commissioning (The 3 Cs))

19189 Development of Scientific Fundamentals of Control for Physical and Mechanical Soil Properties in the Extreme North Conditions
V. Burkov and P. Burkov, Tomsk Polytechnic U.; L.K. Altunina, Inst. of Petroleum Chemistry RAS
(Alternate Paper in Session 48: Concept Engineering, Construction, and Commissioning (The 3 Cs))

19236 Corporate Portfolio Management in NOCs: The Implementation Dilemma in Real-Life Business
(Alternate Paper in Session 16: Project Management & Facilities Discipline)

19246 A Risk-Effectiveness Design Method for Flare Height of Natural Gas Pipeline System
X. Wu, C. Li, and W. Jia, Southwest Petroleum U.; J. Mu, Kongsberg Digital AS
(Alternate Paper in Session 48: Concept Engineering, Construction, and Commissioning (The 3 Cs))

19262 Case Study of Pilot Application and Efficiency Analysis of Waste Heat Recovery from Gas Engine Generator Jacket Cooling Water to Heat Waxy Multiphase Fluid at Offshore Platform
S. Adiyodi Kenoth, Dragon Oil Ltd.
(Alternate Paper in Session 16: Project Management & Facilities Discipline)

19551 Risk Assessment for Karst Hazards at an Industrial Facility in Saudi Arabia, A Case Study
B.A. Nawaz, Saudi Aramco; N. Al-Shayea, King Fahd U. of Petroleum and Minerals; M.A. Alkami, Saudi Aramco SAOO
(Alternate Paper in Session 16: Project Management & Facilities Discipline)

TECHNOLOGIES IN SUSTAINABILITY

19175 Reducing Carbon Intensity: Towards a More Sustainable Industry
(Alternate Paper in Session 8: Environment & Technologies for Sustainability)

19331 Use of Drone-Mounted Sensors to Effectively Monitor Methane Emissions in Onshore Fields
A.C. Machado Miguens, Equinor US; A. Aubreya and B. Smith, SeekOps Inc; D. Sundararajan, Equinor ASA; D. Evans, Equinor US
(Alternate Paper in Session 8: Environment & Technologies for Sustainability)

19367 The Potential of Greenhouse Gas Emission During Flowback Process in Weiyuan Shale Production Site, China
M. Xue, J. Fan, Y. Weng, X. Cui, and X. Li, CNPC Research Inst. of Safety & Environment Technology
(Alternate Paper in Session 8: Environment & Technologies for Sustainability)

19407 Is Surfactant Environmentally Safe for Offshore Use and Discharge? An Evaluation Strategy for Chemical EOR Application in Malaysia
(Alternate Paper in Session 8: Environment & Technologies for Sustainability)
Closing Session

Thursday, 28 March • 1545-1700 hours
Convention Hall 3, Level 1

The Closing Session will briefly highlight the three-day programme and the major topics that have been presented and discussed. In addition, the winners of the Education Week student projects will be announced. The session will close with an expression of thanks to the host & co-host organisations and volunteers, and will include the introduction of the next IPTC in Dhahran in January 2020 and a chance to win lucky draw prizes.

Sponsored By:
Educational Activities

Education Week

Sunday, 24 March to Thursday, 28 March

IPTC continues to organise Education Week for the benefit of the best 3rd and 4th year undergraduate students in science, geoscience and engineering from international institutions. The purpose of Education Week is to give university students a clear insight into the oil and gas industry, to work together on a joint technical project and to provide opportunities for students to form new friendships and to extend their network. At the same time, the students will be interacting with a number of major industry employers who always look to recruit the best global talent from international institutions. 70 of the best students will be selected to participate in the Education Week.

Preliminary Programme

Sunday, 24 March
Registration and Hotel Check-In, Welcome Reception & Dinner.

Monday, 25 March
Presentations by Industry Executives, Panel Session with Young Professionals, Session with Education Week Sponsors, and Group Project Assignments begin.

Tuesday, 26 March
Attend the Opening Ceremony and CEO Plenary Session and Group Project Assignments continue.

Wednesday, 27 March
Attend the Technical Session/ePoster Presentations, Field Trip and Group Project Assignments continue.

Thursday, 28 March
Judging of the Group Projects Presentation, Award Presentation at Closing Session and Hotel Check-Out.

Sponsored by:
Educational Activities

Emerging Leaders Workshop

Monday, 25 March ● 0800-1700 hours ● Room 305, Level 3

Theme: “The Role of Young Professionals in the Transformation to Industry 4.0: Innovate to Fuel Tomorrow”

The oil and gas industry has experienced turbulent times in the last two years, and companies in the sector have made massive efforts to curb costs and scale back on new project development. Analysis of the usual practices in the oil and gas industry suggests that the industry is undergoing digital disruption and a technological re-organisation to fully utilise the Fourth Industrial Revolution or Industry 4.0. While many companies are hard at work to adopt Industry 4.0 into their core functions, the leaders of tomorrow, a generation that is born with technology, will play an eminent role into transforming the industry.

To address this issue, IPTC has developed an interactive Emerging Leaders Workshop with the theme “The Role of Young Professionals in the Transformation to Industry 4.0: Innovate to Fuel Tomorrow” to engage enthusiastic Young Professionals (YPs) and industry experts to chart a road map to achieve a swift transformation. This road map will highlight how various technical disciplines will benefit from such transformation as well as the skillset and trainings required for YPs to lead the transformation. It will include real life industry case studies for participants to exercise their ingenuity and prepare them for such opportunities. YPs from various organisations will have the opportunity to devise solutions, contribute as a group and present their findings in a competitive environment.

Preliminary Programme

• Welcome and Introduction by Co-Chairperson
• Remarks by Liu He, Academician of Chinese Academy of Engineering and Deputy Chief Engineer, RIPED, CNPC
• Panel Session by Industry Executives:
  - Zhao Wenzhi, Academician of Chinese Academy of Engineering and President, RIPED, CNPC
  - Ahmed Al-Zawawi, Chief Technologist, EXPEC ARC/CMT, Saudi Aramco
  - Kamal Embong, Head of Geology and Reservoir Solutions, PETRONAS
  - Artyom Semenikhin, Industrial Research Solutions Manager, IBM Science and Technology Center
  - Richard Ward, Vice President, Marketing and Strategy, Baker Hughes, a GE company
• Group Breakout Discussion
• Group Presentations
• Presentation of Awards to Winning Group
• Charge to Young Professionals by Khalid Zainalabedin, Manager, Reservoir Description and Simulation Dept., Saudi Aramco
• Closing by Co-Chairperson

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Training Courses

Getting Started With Deep Learning

By International Petroleum Technology Conference (IPTC)

Monday, 25 March ● 0900-1600 hours

Instructors: Olivier Dubrule and Lukas Mosser, Imperial College London

Deep Learning (DL) is already bringing game-changing applications to the petroleum industry, and this is certainly the beginning of an enduring trend. Many petroleum engineers and geoscientists are interested to know more about DL but are not sure where to start. This one-day course aims to provide this introduction. The first half of the course presents the formalism of Logistic Regression, Neural Networks and Convolutional Neural Networks and some of their applications. Much of the standard terminology used in DL applications is also presented. In the afternoon, the on-line environment associated with DL is discussed, from Python libraries to software repositories, including useful websites and big datasets. The last part of the course is spent discussing the most promising subsurface applications of DL.

Who Should Attend?

This course, aimed at petroleum engineers and geoscientists, requires basic knowledge of Probability, Regression and Linear Algebra.

Agenda/Topics

Module 1: Supervised vs Unsupervised Learning, Regression, Logistic Regression. Basic theory, terminology and examples.

Module 2: Feed-Forward Neural Networks and Convolutional Neural Networks. Basic theory, terminology and examples.

Module 3: Getting Started using open on-line resources: Python environment, DL libraries, software repositories, large datasets, useful websites, etc.

Module 4: Examples of successful DL industry applications.

Instructor Biography

Professor Olivier Dubrule is a Visiting Professor seconded by Total at the Department of Earth Science and Engineering at Imperial College London. He has spent most of his career developing new tools in relation with Geostatistics, Gaussian Processes and more recently Machine Learning. He is currently teaching the Machine Learning module of the new MSc Advanced Computational Science and Engineering at Imperial College. Olivier has been the 2003 SEG/EAGE Distinguished Instructor, and has taught many courses through the four IPTC Professional Societies in the last twenty-five years. He has authored two books, one of which has been translated in Russian and Farsi.

Lukas Mosser is a PhD Student in Machine Learning. Since he started his PhD in October 2016, Lukas has published important papers on Machine Learning in major peer-reviewed publications such as Transport in Porous Media and Physical Review Letters E. He specializes in the development of methods based on Generative Adversarial Networks (GANs) in relation to subsurface applications. Lukas has obtained numerous awards in the Machine Learning hackathons in which he recently competed.

Advanced Geochemical Technologies and Methods to Unravel Complex Petroleum Systems

By American Association of Petroleum Geologists (AAPG)

Monday, 25 March ● 0900-1700 hours

Instructor: J. M. (Mike) Moldowan, CEO/President, Biomarker Technologies, Inc. and Professor, Department of Geological Sciences, Stanford University

Exploration is all about creating prospects that can yield new discoveries. While older geochemical technologies such as isotopes of oils and oil fractions and biomarkers are extremely useful, they have already been applied to most of the basins in the world and therefore, are unlikely to yield many new exploration ideas. In this workshop you will be introduced to new organic geochemical techniques that can provide crucial information that was previously unobtainable. These methods can be used to get a totally new picture of the petroleum systems in mature basins and will allow for the creation of more accurate basin models. These will in turn allow for the recognition of new plays and drilling targets.

Examples of applications of these revolutionary technologies to both conventional and unconventional petroleum systems will be presented. The focus will be on three topics:

(1) Diamondoids, which are used for determining the maturity of any oil sample in both conventional and unconventional applications and for correlating co-sourced oil mixtures of any maturity (e.g., from black oil to condensate). Correlation is accomplished by compound specific isotope analysis (CSIA) of the segregated diamondoids and by fingerprinting arrays of the large diamondoid molecules: triamantane, three tetramantanes, four pentamantanes and cyclohexamantane.
Training Courses

(2) CSIA (isotopes) of biomarkers, which together with diamondoid correlation, is useful for source determination and unraveling co-sourced oil mixtures, and

(3) Age-related biomarkers for constraining the geologic age of an oil sample to determine its possible source, the foundation of any basin model.

Who Should Attend?
• Exploration and production geoscientists and engineers who wish to understand what impact the recent advances in molecular geochemistry can have on E&P projects.
• Basin modelers who wish to apply new technologies that help to reveal the complete petroleum system.
• Exploration managers who wish to stay abreast of available geochemical methods to reduce exploration risks.

Agenda/Topics
• Brief introduction: organic matter production, accumulation, preservation, maturation, and how molecular organic geochemistry provides essential information on oil and gas provenance.
• The ins and outs of age-related and taxon-specific biomarkers
• Compound specific isotope analysis of biomarkers
• Introduction to diamondoids - application as maturity indicators
• Use of diamondoids for source correlation of all thermal hydrocarbon fluids
• Biomarker acids used to dissect biodegraded oilfields
• Diamondoid for allocation of production from unconventional wells
• De-convolving oil mixtures.

Instructor Biography

Professor J. M. (Mike) Moldowan obtained a Ph.D. degree in Chemistry in 1972 from The University of Michigan. He became an early member and eventual leader of the Chevron biomarker team from 1974 to 1993, which conducted major pioneering efforts to establish the application of biological marker technology to petroleum exploration. Dr. Moldowan joined the Department of Geological Sciences at Stanford University as Professor (Research) in 1993, where he conducted research and taught courses on molecular geochemistry related to petroleum exploration and production, while advising numerous graduate students on their Ph.D. thesis research. In 2012 he founded the laboratory enterprise, Biomarker Technologies, Inc., which offers unique applications of advanced geochemical technologies to industry. He has served as Chair of the Division of Geochemistry of the American Chemical Society, twice been awarded “The Best Paper Award” by the Organic Geochemical Division of the Geochemical Society for publications in organic geochemistry, and published more than 100 articles on geochemistry, including two editions of “The Biomarker Guide” in 1993 and 2005. In 2011, Professor Moldowan received the Treib’s Medal, considered the ultimate career award for Organic Geochemistry.

Integrated Production Optimisation in Shale

By Society of Petroleum Engineers (SPE)
Monday, 25 March • 0900-1700 hours

Instructor: Ibrahim Abou-Sayed, President, i-Stimulation Solutions, Inc.

The Integrated Production Optimization in Shale (IPO-Shale) course is designed to demonstrate an integrated approach for shale formations through the field life cycle:
• Appraisal
• Delineation
• Development
• Production
• Evaluation, and Field Optimisation

Who Should Attend?
This course is designed for oil and gas professionals interested in knowing more about current shale development practices and how they might be improved for future wells.

Agenda/Topics
1. Integrated Production Optimization (IPO) Shale Overview
   • Hydrocarbon resource impacts
   • Petroleum system implications
   • IPO Shale Elements
Training Courses

2. Development Optimization
   • Key Element for Successful Shale Development
   • Field Development – Phased Approach
     - Exploration / Early Development Phase
     - Pilot Test and Modelling
     - Commercial Development
     - Long Term Production
   • Recommended Testing, Delineation and Development Plan

3. Field Optimization
   • Well Concept
   • Landing Zone
   • Drilling Fluid Selection
   • Pad Optimization
   • Completion Selection
   • Perforation Optimization
   • Frac Fluid Selection
   • Well Interference
   • Cluster Spacing
   • Well Spacing

Instructor Biography

Dr. Ibrahim S. Abou-Sayed is the founder and president of i-Stimulation Solutions, Inc. Dr. Abou-Sayed has more than 37 years of industry experience focused on well stimulation and production enhancement for tight reservoirs and shale plays.

Since early 2008, he has focused his activities in support of developing Haynesville, Bossier, Marcellus, Eagle Ford, and Utica shale plays. His responsibilities included geomechanical modeling, lateral landing zone selection, setting stimulation strategy and implementation, failure analysis & remedy, developing the extended drawdown management program, and shale refracturing technology.

Previously, he worked for Advantek International, Inc. In ExxonMobil, where he worked for more than 22 years, Ibrahim was responsible for Stimulation R&D, technical services and training. He is one of the pioneers of horizontal well stimulation technology. He also worked for Gulf Oil in the well stimulation and production engineering areas. Ibrahim has worked in more than 15 countries and authored more than 40 papers and has co-authored 5 patents. Dr. Abou-Sayed has received a number of SPE awards and recognitions including Distinguished Member and Distinguished Service awards.

To register, please go to www.iptcnet.org/19IPTC/home/, or complete the registration form on page no. 80.

<table>
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<th>Fee per Course</th>
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<tr>
<td>Member</td>
<td>US$695</td>
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<tr>
<td>Nonmember</td>
<td>US$795</td>
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• Fees include coffee breaks, lunch and course note.
• Training courses may be cancelled if undersubscribed.

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Tel: +603 2182 3145
Email: nchantrell@iptcnet.org.
Exhibition Information

List of Exhibitors (As of 25 October 2018)

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<th>Exhibitors</th>
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<td>Baker Hughes, a GE company</td>
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<td>Japan Oil, Gas and Metals National Corporation</td>
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<td>King Fahd University of Petroleum &amp; Minerals</td>
<td>F101</td>
</tr>
<tr>
<td>PTT Exploration &amp; Production Public Company Limited</td>
<td>D201</td>
</tr>
<tr>
<td>Sandvik</td>
<td>F102</td>
</tr>
<tr>
<td>Saudi Arabian Oil Company</td>
<td>B101</td>
</tr>
<tr>
<td>Schlumberger China S.A.</td>
<td>A103</td>
</tr>
<tr>
<td>Total China</td>
<td>B201</td>
</tr>
<tr>
<td>Weatherford</td>
<td>A105</td>
</tr>
<tr>
<td>Wood</td>
<td>B105</td>
</tr>
</tbody>
</table>

Exhibition Hours

- 1000-1730 hours Tuesday, 26 March
- 0900-1730 hours Wednesday, 27 March
- 0900-1630 hours Thursday, 28 March

Visitor Profile

- Executive Management from NOCs, IOC's & Service Companies
- Geoscience and Reservoir Experts
- Drilling and Completion Experts
- Contracts and Procurement Heads
- Production and Operation Experts
- Projects, Facilities and Construction Experts
- Digital Energy Experts
- HSE Experts
- Gas Processing Experts
- Scientists, Technologists and Researchers
- Academia
- IT & Data Scientists

Exhibition Map
General Information

Climate
In March, on average temperature reaches 11°C (52°F) during the day, and at night can drop to -1°C (30°F).

Currency
The national monetary unit is Chinese Yuan (CNY), but is more commonly referred to as Renminbi (RMB). Foreign currency can be exchanged at the airport, local banks and hotels.

Voltage
Electric current in China is 220 volts, 50 cycles. Chinese wall sockets accommodate appliances with two round prongs, the three flat prongs. Adapters and converters can usually be purchased at local department store.

Complimentary Shuttle Service
Available to/from InterContinental Beijing Beichen Hotel to the Beijing International Convention Centre on a limited scheduled basis, beginning Tuesday, 26 March 2019 to Thursday, 28 March 2019.

Tour Information
Tours are optional and guests may obtain further information and make direct reservations at the tour desk of Beijing N Plus Travel Agency Co., Ltd. at the Beijing International Convention Center. Tours can also be booked in advance through Ms. Jun Liang of N Plus Travel Agency Co., Ltd. Tel: +86.10.8752.7380; Mobile: +86.133.8120.8722 or email at: enjialvxing@163.com.

You may visit the IPTC website at www.iptcnet.org/19IPTC/home/ for a list of tour options. Please quote ‘IPTC Beijing’ when making your tour booking.

Policies and Procedures

Safety & Security
IPTC has worked closely with CNPC and Beijing International Convention Center in preparing this event. The safety and security of IPTC attendees are of utmost importance. Please be aware of and observe the following:

• No one under the age of 15 is permitted in the exhibition halls during official exhibition hours.
• Conference and exhibition badge are non-transferable and must be worn at all times while in the convention center.
• If you lose your badge, please return to the registration counter to obtain a replacement.
• Use of a badge by a person not named on the badge is grounds for confiscation.
• Please carry your official photo identification at all times, should this be required for verification purposes.
• There will be bag checks at all entrances, therefore we recommend that you do not bring bags or luggage into the center to avoid delays.
• Be aware of your surroundings, remain alert and vigilant.
• Should you observe any suspicious packages and behaviour, please report to IPTC staff or convention center staff immediately.
• Due to the popularity of some session topic, it is possible for overcrowding to occur in a session or meeting. Should this occur, IPTC must comply with policies regarding room capacity and limit attendance to a room that is at capacity. Please make plans to arrive early for sessions that you have strong interest in attending.
• Please remember to stay hydrated throughout the conference.
• In the event of an emergency, IPTC’s and/or the Convention Center’s staff will provide conference delegates with the necessary information and instructions.

Mobile/Cell Phone Policy
As a courtesy to the speakers and your fellow attendees, please turn off all mobile phones during meetings and sessions.

Photography Policy
All conference sessions and the exhibition are protected by international copyright laws. Photography and video/audio recording of any kind are strictly prohibited in the sessions throughout the exhibition area.

Alcohol Policy
We recognise that legitimate serving of alcohol beverages in the process of conducting business and social activities is acceptable. However, we also recognize that the use and consumption of alcohol carries with it the requirement for all attendees to consume those beverages responsibly and in keeping our professional code of ethics and conduct. We oppose the abuse and misuse of alcohol.

Sustainability Statement
IPTC is committed to ensuring that the environmental impact of our events is kept to a minimum. We aim to make progress in the field of sustainability through reducing energy usage, promoting eco-friendly mobility, reducing water consumption and limiting waste, all core value in keeping with those of the oil and gas industry.
Registration Information

HOW TO REGISTER
➢ Online at http://www.iptcnet.org/19iptc/attend/registration/
➢ Email or Fax – Please complete the Registration Form or Group Registration Form with payment information and email to iptcreg@iptcnet.org or fax: +65.6290.5887

PAYMENT DETAILS
➢ Credit Card – Payment in U.S. Dollars Only.
  • Payment via credit card (American Express, Visa, MasterCard and Diners Club) is available online.
  • For manual payment via credit card. You will receive an e-mail with instructions on securely submitting your payment.
➢ Telegraphic Transfer – Payment in U.S. Dollars Only.
➢ Bank Transfer - Payment in Chinese Yuan (Renminbi) Only.
  If you require the China Tax Invoice to be issued for your registration fee, payment must be made in Chinese Yuan (Renminbi) by bank transfer. China Tax Invoice will be issued once the full payment have been received.

PACKAGES AND FEES

<table>
<thead>
<tr>
<th>Registration Type</th>
<th>Early Bird by 22 Jan 2019</th>
<th>AFTER 22 Jan 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Conference Registration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member – AAPG/EAGE/SEG/SPE</td>
<td>US$995</td>
<td>US$1,095</td>
</tr>
<tr>
<td>Nonmember</td>
<td>US$1,095</td>
<td>US$1,195</td>
</tr>
<tr>
<td>Presenter/Author/Panelist/Committee/Session Chair</td>
<td>US$900</td>
<td>US$1,000</td>
</tr>
<tr>
<td>Student – With valid student ID only (excludes daily luncheons and digital proceedings)</td>
<td>Complimentary</td>
<td></td>
</tr>
<tr>
<td>Includes: Access to opening ceremony, plenary, panels, special and technical sessions, session ePosters, exhibition, coffee breaks, daily luncheons, and one (1) copy of the digital proceedings.</td>
<td></td>
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</tr>
<tr>
<td>One-Day Registration</td>
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<td></td>
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<tr>
<td>Registration Day: Tuesday, Wednesday, and Thursday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member – AAPG/EAGE/SEG/SPE</td>
<td>US$400</td>
<td>US$500</td>
</tr>
<tr>
<td>Nonmember</td>
<td>US$500</td>
<td>US$600</td>
</tr>
<tr>
<td>Visitors (Access to Exhibition Only)</td>
<td>Complimentary</td>
<td>US$25</td>
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<tr>
<td>Includes: Access to plenary, panels, special and technical sessions, session ePosters, exhibition, coffee breaks, and daily luncheons for the day you have selected.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emerging Leaders Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One day programme on Monday, 25 March</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Conference Delegates Only</td>
<td>Complimentary</td>
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<tr>
<td>Others</td>
<td>US$50</td>
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<tr>
<td>Includes: Access to full programme, coffee break and luncheon</td>
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</tr>
<tr>
<td>Group Registration</td>
<td></td>
<td></td>
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<tr>
<td>For every group of four (4) full conference delegates registered by one (1) company, that company will receive:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Four (4) full conference delegate registrations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• One (1) complimentary full conference delegate registration (valued at US$1,095).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Five (5) complimentary exhibition visitor passes (valued at US$125).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please refer to the terms specified on the Group Registration Form.</td>
<td></td>
<td>US$4,380</td>
</tr>
</tbody>
</table>

TAXES
Registration fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are your sole responsibility.

CANCELLATION AND REFUND POLICY
• Cancellation received by 22 January 2019 will be refunded less US$150 processing fee.
• Cancellation received after 22 January 2019 will be refunded less US$150 or 25% of registration fee whichever is greater.
• Cancellation after 11 March 2019 is not eligible for a refund. Substitution will be accepted.
• No refund if delegate fails to attend.
Conference Preview

APEC-JRC: (er9POiOd6ONE2a)

OWN nrt2EALRaSISiO2EMrEL: (dUdeONMnEIr)

CQ2nBbEBaINLdCFC0nGMs.

ROPSLAPA9rNTR: (uAraR2HOT).

REGISTRATION FORM
INTERNATIONAL PETROLEUM TECHNOLOGY CONFERENCE
26–28 MARCH 2019 | BEIJING INTERNATIONAL CONVENTION CENTER
BEIJING, CHINA

All portions of this form must be completed. Print your name as they should appear on meeting badge. Registration would not be processed without payment. By completing this Registration Form you agree to the IPTC Privacy Policy listed here: http://iptcnet.org/privacy-policy/

PARTICIPANT PROFILE
Registrant’s First Name (Forename) Last Name (Family Name)
Badge Name
Registrant’s Nationality (Country of Citizenship) Job Title or Position
Company
P.O. Box or Street Address
City State/ Province
Country Zip/Postal Code
Office Telephone (include country/city code) Mobile (include country/city code)
E-mail Address Facsimile (include country/city code)
Emergency Contact Name Emergency Contact Telephone (include country/city code)

Membership, please check all that apply: AAPG EAGE SEG SPE Membership #

Technical Discipline (Please check one only): Petroleum Engineering Geosciences Others:

I would like to receive updates on products, services and events from IPTC. Yes No
If yes, your information will be used in accordance with IPTC Privacy Policy and you can unsubscribe at any time by sending your request to iptc@iptcnet.org.

FEE PER PERSON QTY COST FULL CONFERENCE REGISTRATION (26-28 MARCH 2019)

early bird By 22 Jan 2019 after 22 Jan 2019 Full conference registration includes opening ceremony, plenary, panels, special and technical sessions, session ePosters, exhibition, coffee breaks, daily luncheons, and one (1) copy of the digital proceedings.

US$995 US$1,095 Member
US$1,095 US$1,195 Nonmember
US$900 US$1,000 Presenter/Author/Panelist/Committee/Session Chair

Complimentary Comp. Student - With valid student ID only (includes technical sessions and exhibition)

ONE DAY REGISTRATION

US$400 US$500 Member Includes plenary, panels, special and technical sessions, session ePosters, exhibition, coffee breaks, and daily luncheon for the day you have selected. Indicate Day: Tuesday, Wednesday, Thursday.

US$500 US$600 Nonmember

Complimentary US$25 Visitor (Exhibition Only) Indicate Day: Tuesday, Wednesday, Thursday

ADDITIONAL TICKETS AND DIGITAL PROCEEDINGS

US$55 US$55 Daily Luncheon Indicate Day(s): Tuesday, Wednesday, Thursday

US$200 US$200 Digital Proceedings - Member

US$300 US$300 Digital Proceedings - Nonmember

WORKSHOP (25 MARCH 2019)

Complimentary Comp. Emerging Leaders Workshop (Full Conference)

US$50 Emerging Leaders Workshop (Student, One Day & Visitor)

TRAINING COURSES (25 MARCH 2019)

□ Getting Started with Deep Learning – Organised by IPTC
□ Advanced Geochemical Technologies and Methods to Unravel Complex Petroleum Systems – Organised by AAPG
□ Integrated Production Optimization in Shale – Organised by SPE

US$695 US$795 Member

US$795 US$895 Nonmember

TOTAL US$:

REGISTRATION/ ENQUIRIES PAYMENT METHODS

ONLINE http://www.iptcnet.org/9iptc/home/

FAX +65.6290.5887

TOLL +65.6297.9322

E-MAIL iptcreg@iptcnet.org

□ Credit Card = Payment In U.S. Dollars Only. Payment via credit card (American Express, Visa, MasterCard and Diners Club) is available online at http://www.iptcnet.org/9iptc/home/.

For manual payment via credit card, you will receive an e-mail with instructions on securely submitting your payment.

□ Telegraphic Transfer = Payment In U.S. Dollars Only.

□ Bank Transfer = Payment In Chinese Yuan Renminbi (CNY) Only.

If you require the China Tax Invoice (Fapiao) to be issued for your registration fee. Payment must be made in Chinese Yuan Renminbi (CNY) by bank transfer. China Tax Invoice (Fapiao) will be issued once the full payment have been received.

Taxes: Registration fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are your sole responsibility.

Cancellation Policy:
□ Cancellation received by 22 January 2019 will be refunded less US$150 processing fee.
□ Cancellation received after 22 January 2019 will be refunded less US$150 or 25% of registration fee whichever is greater.
□ Cancellation after 11 March 2019 is not eligible for a refund. Substitution will be accepted.
□ No refund if delegate fails to attend.
This form must be completed in its entirety for a company to claim the group registration promotion.

**Group Promotion:**
For every group of four (4) full conference delegates registered by one (1) company, that company will receive:
- Four (4) full conference delegate registrations.
- One (1) complimentary full conference delegate registration (valued at US$1,095).
- Five (5) complimentary exhibition visitor passes (valued at US$125).

**Before 11 March 2019**

US$4,380

**Terms:**
- This promotion is for registrations of full conference delegates only (i.e. full conference period member and non-member registration category).
- The group promotion will not apply for the following registration categories: Presenter/ Author / Panelist/ Committee / Session Chair; One-Day Member; One-Day Non-Member; Exhibitor; Stand Personnel; or Exhibition Visitor.
- This promotion cannot be applied retroactively, i.e. employees of a company will not be able to register individually and then the company request for IPTC to apply the promotion once 4 individuals register.
- The promotion is only applicable for companies who register via this Group Registration Form or via the IPTC website (http://www.iptcnet.org/19iptc/home/).
- For payment via telegraphic transfer, companies will have 14 days from date of invoice to settle payment.
- Upon settlement of payment, the registering company will receive the following:
  - Registration confirmations for their paid registrants and complimentary registrant(s).
  - The qualifying company will receive a unique online exhibition visitor registration code to claim their complimentary exhibition visitor passes.
- This promotion is not available on-site or during the conference period.

**Taxes:**
Registration fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are your sole responsibility.

**Cancellation Policy:**
- Cancellation received by 22 January 2019 will be refunded less US$600 processing fee.
- Cancellation received after 22 January 2019 will be refunded less US$600 or 25% of registration fee whichever is greater.
- Cancellation after 11 March 2019 is not eligible for a refund. Substitution will be accepted.
- No refund if delegate fails to attend.

By completing this registration form you agree to the IPTC Privacy Policy listed here: [http://iptcnet.org/privacy-policy/](http://iptcnet.org/privacy-policy/)

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**COMPANY INFORMATION**

<table>
<thead>
<tr>
<th>Contact Person Name</th>
<th>Job Title</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Company Name</th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>Mailing Address</th>
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<table>
<thead>
<tr>
<th>City</th>
<th>State/Province</th>
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<table>
<thead>
<tr>
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<th>Zip/Postal Code</th>
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<table>
<thead>
<tr>
<th>Mobile</th>
<th>Email Address</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Telephone</th>
<th>Fax/Mobile</th>
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</table>

Interested companies may register online or download the complete Group Registration Form at [www.iptcnet.org/19IPTC/attend/registration/](http://www.iptcnet.org/19IPTC/attend/registration/) and then email to iptcreg@iptcnet.org.
Visa Information

IPTC delegates travelling to China must be in possession of passports valid for at least six (6) months on arrival, delegates must hold a visa issued by the local Chinese officials prior to departure from their home countries.

It is the sole responsibility of the delegates to obtain the necessary paperwork for entry to China. IPTC delegates should contact their local Chinese Embassy or Consulate to confirm visa requirements.

An invitation letter to facilitate the application of visa will be issued to IPTC delegates upon request. Official invitations will be issued by China National Petroleum Corp. (CNPC) through International Petroleum Technology Conference, Limited within ten (10) working days.

Please complete and return the following documentations to us via e-mail iptcreg@iptcnet.org or fax +603.2182.3030 before 15 February 2019.

1. **Request for China Visa Invitation Letter**
   Please complete the request form with your personal particulars.

2. **Letter of Guarantee**
   Please update all the highlighted area in the sample letter and print the letter of guarantee on your company letterhead.

   **SAMPLE LETTER**

   (Please print the letter of guarantee on your company letterhead)

   To: CNPC International

   **Letter of Guarantee**

   We are hereby, certifying that (your organization name) delegation invited by Research Institute of Petroleum Exploration and Development (RIPED), PetroChina is going to visit China on (date) to attend the International Petroleum Technology Conference (IPTC). The duration of staying in China will be (xx) days. All the expense of the delegation, including round-trip tickets, health insurance, accommodation, etc. will be borne by (organization name or self-financed).

   We guarantee that they will abide by the law of China and return to (country name) on time after their travel. Please authorise the applicants to do business on short term visa.

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Date of Birth</th>
<th>Occupation/Job title</th>
<th>Passport No.</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

   Sincerely Yours,

   [Signature (legal representative/ applicant)]
   [Liaison Person: <Name>]
   [Date <date-month-year>]

3. **Passport copy**
   Please provide us a copy of your passport with personal particulars.
REQUEST FOR CHINA VISA INVITATION LETTER
INTERNATIONAL PETROLEUM TECHNOLOGY CONFERENCE
26-28 MARCH 2019 | BEIJING INTERNATIONAL CONVENTION CENTER
BEIJING, CHINA

All particulars must be completed. Please type or print.

**Applicant’s Details:**

<table>
<thead>
<tr>
<th><em>List full name as indicated on your passport</em></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full Name:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Family Name:</strong></td>
<td><strong>Given Name:</strong></td>
</tr>
<tr>
<td><strong>Nationality:</strong></td>
<td><strong>Gender:</strong></td>
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<tr>
<td><strong>Date of Birth:</strong></td>
<td><strong>Place of Birth:</strong></td>
</tr>
<tr>
<td><strong>Passport No.:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Date of Issue:</strong></td>
<td><strong>Date of Expiry:</strong></td>
</tr>
<tr>
<td><strong>Date of Arrival:</strong></td>
<td><strong>Date of Departure:</strong></td>
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<tr>
<td><strong>Company Name:</strong></td>
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<td><strong>Position/Job Title:</strong></td>
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<td><strong>Company Address:</strong></td>
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</tr>
<tr>
<td><strong>Phone No.:</strong></td>
<td><strong>Fax No.:</strong></td>
</tr>
<tr>
<td><strong>E-mail Address:</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Accompanying Partner/Spouse/Kid(s):**

<table>
<thead>
<tr>
<th><em>List full name as indicated on your passport</em></th>
<th></th>
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</thead>
<tbody>
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<td><strong>Full Name:</strong></td>
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</tr>
<tr>
<td><strong>Family Name:</strong></td>
<td><strong>Given Name:</strong></td>
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<tr>
<td><strong>Nationality:</strong></td>
<td><strong>Gender:</strong></td>
</tr>
<tr>
<td><strong>Date of Birth:</strong></td>
<td><strong>Place of Birth:</strong></td>
</tr>
<tr>
<td><strong>Passport No.:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Date of Issue:</strong></td>
<td><strong>Date of Expiry:</strong></td>
</tr>
<tr>
<td><strong>Occupation/Employment:</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Contact details of Chinese Embassy/Consulate where you intend to apply for the visa:**

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Address:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>City:</strong></td>
<td><strong>Country</strong></td>
</tr>
<tr>
<td><strong>Phone No.:</strong></td>
<td><strong>Fax No.:</strong></td>
</tr>
<tr>
<td><strong>E-mail (if available):</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Purpose of Visit:** To attend the International Petroleum Technology Conference (IPTC).

**E-mail or Fax to:** International Petroleum Technology Conference, Limited
Kuala Lumpur, Malaysia
Fax No.: +60,3,2182,3030
E-mail: iptreg@iptcnet.org

**Notes:**

- IPTC delegates travelling to China must be in possession of passports valid for at least six (6) months on arrival, delegates must hold a visa issued by the local Chinese officials prior to departure from their home countries.
- Please provide us a copy of your passport with your personal particulars for our record.
HOTEL INFORMATION
INTERNATIONAL PETROLEUM TECHNOLOGY CONFERENCE
Beijing International Convention Center
26-28 March 2019, Beijing, China

Please select the hotel of your choice and reservations can be made by fax, email or online to the hotel directly. All reservations must be received by 15 February 2019 to be guaranteed. Requests will be accepted after this date, but special hotel rates and accommodation cannot be guaranteed.

### InterContinental Beijing Beichen
InterContinental Beijing Beichen Hotel, a five-star hotel, is situated next to the Olympic National Stadium – Bird’s Nest and Water Cube. It is approximately 5-10 minutes drive by car from the Beijing International Convention Center (BICC). IPTC will provide scheduled shuttle between hotel and BICC from 26-28 March 2019.

Address: 8, Beichen West Road, Chaoyang District, Beijing 100105, China
Tel: +86.10.8437.1304 or 1305
Fax: +86.10.8437.1318
Email: reservations@icbjb.com
Website: [http://www.intercontinental.com/bjbeichen](http://www.intercontinental.com/bjbeichen)

- Early departure will be charged for the duration as originally reserved.
- Any cancellation received within 30 days prior to guest arrival or no show on day of arrival, will result in a late cancellation charge equivalent to full duration of stay as originally reserved. Cancellation should be communicated to hotel in writing.

#### Room Type

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Single (CNY)</th>
<th>Double (CNY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deluxe Room</td>
<td>1,700.00</td>
<td>1,850.00</td>
</tr>
<tr>
<td>Executive Deluxe Room*</td>
<td>2,200.00</td>
<td>2,200.00</td>
</tr>
</tbody>
</table>

*Complimentary executive club benefits inclusive.

#### Club Benefits:
- Personalised private check-in/out
- Complimentary food & beverage services (buffet breakfast, afternoon tea & evening cocktail) • 2-hour complimentary use of meeting room • Daily pressing of 3 pieces of clothing • Complimentary rental of maximum 3 music CDs

The above room rates are inclusive of service charge, government tax and daily breakfast.

### Beijing Continental Grand Hotel
Beijing Continental Grand Hotel, a four-star hotel, is located next to the Beijing International Convention Center. It is with 531 rooms of different types, several restaurants of different styles and multi-function halls. The 13th floor is the executive floor, it can provide guests with one-stop butler service, such as check-in, departure, business, conference and catering.

Address: 8, Beichen East Road, Chaoyang District, Beijing 100101, China
Tel: +86.10.8498.5588
Fax: +86.10.8497.0107
Email: yudingbu@bicc.com.cn
Website: [http://www.continentalgrandhotelbeijing.com/](http://www.continentalgrandhotelbeijing.com/)

- Early departure will be charged for the duration as originally reserved.
- Any cancellation received within 45 days prior to guest arrival or no show on day of arrival, will result in a late cancellation charge equivalent to full duration of stay as originally reserved. Cancellation should be communicated to hotel in writing.

#### Room Type

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Single/Double (CNY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deluxe Room</td>
<td>710.00</td>
</tr>
<tr>
<td>Executive Room*</td>
<td>1,060.00</td>
</tr>
<tr>
<td>Suite Room*</td>
<td>1,150.00</td>
</tr>
</tbody>
</table>

*Complimentary executive club benefits inclusive.

#### Club Benefits:
- Personalised private check-in/out on Executive Floor • Complimentary food & beverage services (buffet breakfast, afternoon tea & evening cocktail) • 1-hour complimentary use of Conference Room • Complimentary use of Executive Floor’s meeting room

The above room rates are inclusive of service charge, government tax and daily breakfast. Additional breakfast at CNY80.00

![Online booking](https://www.bcghotel.com/english/order.asp?id=397)
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(Additions/changes made after 25 October 2018, will be reflected in the on-site programme.)

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