SPE Symposium: Production Enhancement and Cost Optimisation
7 – 8 November 2017 | DoubleTree by Hilton Kuala Lumpur, Malaysia

EVENT PROGRAMME

PRODUCTION ENHANCEMENT
COST EFFICIENCY
WORKFLOW OPTIMISATION
DIGITAL ENERGY
ARTIFICIAL LIFT
SURVEILLANCE
EOR
RESERVOIR MANAGEMENT
ASSET INTEGRITY
COLLABORATION
TECHNOLOGY
TRANSFORMATION STRATEGY
FLOW ASSURANCE
WELL INTERVENTION
WELL OPTIMISATION
MESSAGE FROM THE SYMPOSIUM CO-CHAIRS

Dear Colleagues

The inaugural SPE Symposium: Production Enhancement and Cost Optimisation, from 7 – 8 November 2017 in Kuala Lumpur, Malaysia, aims to provide a timely platform for knowledge transfer, innovation and sharing of best practices in oil and gas production as we continue to evolve towards a sustainable model of enhanced operations and cost optimisation.

Enhancing production operations calls for an integrated approach across multidisciplinary teams that is beyond the traditional concept of collaboration but a collaboration with the intent to elevate the performance of the collective whole, the end-to-end value chain. With the proliferation of digital technology, this is an opportune time to ride on the digitalisation wave to deliver critical improvements in productivity, efficiency and cost management across this value chain.

In response to this, the symposium will feature more than 55 technical presentations highlighting technical know-hows, innovative methodologies, and practical case studies on the following core topics:

- Artificial Lift
- Digital/Production Optimisation
- Flow Assurance
- IOR/EOR
- Reservoir Studies and Surveillance
- Well Intervention and Monitoring
- Well Operations and Optimisation

In addition, high-level Executive Plenary and Panel sessions will feature in-depth discussions on innovations and best practices in upstream production, how collaboration would shape the next wave of industry performance in production enhancement and cost competitiveness, digital transformation and its role in pushing the boundaries of productivity, and overcoming roadblocks to technology development and deployment in Malaysia.

On behalf of the Symposium Technical Programme Committee, we thank you for your support and participation at this exciting event. Our industry is ever-growing and we hope this symposium will provide an informative and enriching experience for you.

Yours sincerely,

Bacho Pilong
Symposium Co-Chair
Vice President, International Assets, Development and Production, PETRONAS

Choong Yen Li
Symposium Co-Chair
General Manager, Venture Development, Sarawak Shell Berhad
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This conference programme is updated as at 2 November 2017

SYMPOSIUM COMMITTEE MEMBERS

Symposium Co-Chairs
Bacho Pilong, PETRONAS
Choong Yen Li, Sarawak Shell Berhad

Members
Jeffrey Dwiggins, Artificial Lift Solutions Pte. Ltd.
Eddy Kamaruddin, BelcipTecsol
Anton Kaiser, Clariant Oil Services
Ken Saveth, GE Oil & Gas
Sanjeev Gupta, Halliburton
Gunajit Das, Halliburton
Hiroki Iwama, INPEX
Takaaki Uetani, INPEX
Temmy Kurniawan, Pertamina
Wan Afiq Farhan Che Hamat, PETRONAS Carigali Sdn. Bhd.
Wan Rokiah Ismail, PETRONAS Carigali Sdn. Bhd.
Andrew Baker, Schlumberger
Gordon Goh, Schlumberger
Jeroen Groenenboom, Shell
Murat Kilic, Shell
Jacques Kieffer, SNF SAS
Tore Blaker, Statoil ASA
Vitaly S. Chernikov, Weatherford Asia Pacific
Michael Potts, Weatherford Asia Pacific
LIST OF EXHIBITORS

<table>
<thead>
<tr>
<th>Company Name</th>
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<tr>
<td>Advisian Malaysia Sdn Bhd</td>
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<td>Halliburton Energy Services (M) Sdn Bhd</td>
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<td>Process Systems Enterprise</td>
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<td>Society of Petroleum Engineers (SPE)</td>
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SYMPOSIUM SPONSORS

Symposium Bags Sponsor

Advisian - Worley Parsons Group
Silver Sponsor

AppSmiths
Silver Sponsor

EXPRO
Silver Sponsor

ExxonMobil
Energy lives here* Silver Sponsor

Petrofac
Silver Sponsor

Silver Sponsor
SCHEDULE OF EVENTS

MONDAY, 6 NOVEMBER
1200-1730 hours Registration – Foyer
1200-1730 hours Speaker/Author Check-In – Lotus Room

TUESDAY, 7 NOVEMBER
0600-0730 hours Exhibitor Move-In – Foyer
0730-1800 hours Registration – Foyer
0730-1800 hours Speaker/Author Check-In – Lotus Room
0900-1030 hours Opening and Executive Plenary Session – Ballroom B
0900-1830 hours Technical Showcase – Foyer
1030-1100 hours Coffee Break / Knowledge Sharing ePoster Session 1 – Foyer
1100-1230 hours Panel Session 1: Synergy in Action: Industry Collaboration towards Sustainable Efficiency and Cost Optimisation – Ballroom B
1230-1400 hours Networking Luncheon – Ballroom A
1330-1400 hours Knowledge Sharing ePoster Session 2 – Foyer
1400-1530 hours Technical Session 1: IOR/EOR – Ballroom B
1400-1530 hours Technical Session 2: Artificial Lift – Hibiscus Room
1530-1600 hours Coffee Break and Knowledge Sharing ePoster Session 3 – Foyer
1600-1730 hours Technical Session 3: Well Operations and Optimisation 1 – Ballroom B
1600-1730 hours Technical Session 4: Reservoir Studies and Surveillance – Hibiscus Room
1730-1830 hours Welcome Reception – Foyer

WEDNESDAY, 8 NOVEMBER
0800-1700 hours Registration – Foyer
0800-1600 hours Speaker/Author Check-In – Lotus Room
0900-1030 hours Panel Session 2: Digital Transformation Journey: People, Technology, Strategy – Ballroom B
0900-1730 hours Technical Showcase – Foyer
1030-1100 hours Coffee Break / Knowledge Sharing ePoster Session 4 – Foyer
1100-1230 hours Technical Session 5: Well Intervention and Monitoring – Ballroom B
1100-1230 hours Technical Session 6: Digital/Production Optimisation – Hibiscus Room
1230-1400 hours Networking Luncheon – Ballroom A
1330-1400 hours Knowledge Sharing ePoster Session 5 – Foyer
1400-1530 hours Panel Session 3: Technology Development and Deployment in Malaysia: Addressing the Challenges Faced by the Oil Industry, Now and in the Future – Ballroom B
1530-1600 hours Coffee Break / Knowledge Sharing ePoster Session 6 – Foyer
1600-1730 hours Technical Session 7: Well Operations and Optimisation II – Ballroom B
1600-1730 hours Technical Session 8: Flow Assurance – Hibiscus Room
1800-2000 hours Exhibition Move-Out – Foyer
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<th>Date</th>
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<th>Hibiscus Room</th>
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<td>0900 - 1030 hours</td>
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<td>Technical Session 2 Artificial Lift</td>
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<td>1730 - 1830 hours</td>
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<td>Wednesday, 8 November</td>
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<td>Digital Transformation Journey: People, Technology and Strategy</td>
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<td>Technical Session 5 Well Intervention and Monitoring</td>
<td>Technical Session 6 Digital/Production Optimisation</td>
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<td>Panel Session 3 Technology Development and Deployment in Malaysia: Addressing the Challenges Faced by the Oil and Gas Industry, Now and in the Future</td>
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<td>1530 - 1600 hours</td>
<td>Coffee Break / Knowledge Sharing ePoster Session 6 - Foyer</td>
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<td>1600 - 1730 hours</td>
<td>Technical Session 7 Well Operations and Optimisation II</td>
<td>Technical Session 8 Flow Assurance</td>
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OPENING & EXECUTIVE PLENARY

Production Enhancement and Cost Optimisation
Tuesday, 7 November • 0900 – 1030 hours • Ballroom B

Welcome Remarks and Executive Plenary Session Chairperson:
- Bacho Pilong, Symposium Co-Chairperson and Vice President, International Assets, Development and Production, Upstream, PETRONAS

Speakers:
- Aravindh Kaniappan, Oilfield Services Lead, Southeast Asia, Baker Hughes, a GE company
- Melanie Cook, Senior General Manager, Production, ExxonMobil Exploration and Production Malaysia Inc.
- Anuar Ismail, Head, Sarawak Oil Malaysian Assets, Development and Production, Upstream, PETRONAS
- Simon Durkin, Vice President, Upstream Operated Malaysia and Philippines, Sarawak Shell Berhad / Sabah Shell Petroleum Co. Ltd
- Azhar Abdullah, Managing Director, Malaysia, Schlumberger Malaysia
- Keith Collins, Chief Executive Officer, Vestigo Petroleum

PANEL SESSIONS 1

Synergy in Action: Industry Collaboration towards Sustainable Efficiency and Cost Optimisation
Tuesday, 7 November • 1100 – 1230 hours • Ballroom B

Session Chairperson:
- Eddy Kamaruddin, Partner, Geosciences, BeicipTecsol

Speakers:
- Megat Zariman Abdul Rahim, Vice President, Commercial Offshore Marine Services, Bumi Armada Berhad
- Abdul Malek Ismail, General Manager, Subsurface Engineering, ExxonMobil Exploration and Production Malaysia Inc.
- Lau Hon Chung, Professor, National University of Singapore
- Hajejah Ali, Head of Coral 2.0, PETRONAS
PANEL SESSIONS 2
Digital Transformation Journey: People, Technology and Strategy
Wednesday, 8 November • 0900-1030 hours • Ballroom B

Session Chairperson:
• Kevin Chong, Business Chief Information Officer, PETRONAS

Speakers:
• Arnold Volkenborn, Managing Director and APAC Lead, Accenture Strategy Energy
• Lachlan Hope, Lead Digital Solutions Architect, Baker Hughes, a GE company
• Trygve Randen, Vice President, Middle East and Asia - SIS, Schlumberger

PANEL SESSIONS 3
Technology Development and Deployment in Malaysia: Addressing the Challenges Faced by the Oil Industry, Now and in the Future
Wednesday, 8 November • 1400-1530 hours • Ballroom B

Session Chairperson:
• Michael C. Poppelreiter, Shell Chair of Petroleum Geoscience, Sarawak Shell Berhad

Speakers:
• Mohammad Azmel Harun Rasheed, Vice President, Innovation & Technology, Malaysia Petroleum Resources Corporation
• Nasir Darman, Head of Group Research and Technology, Project Delivery & Technology, PETRONAS
• Max Prins, Global Technology Manager, Shell International
• Mohd Shahir Liew, Deputy Vice Chancellor of Research and Innovation, Universiti Teknologi PETRONAS
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Tuesday, 7 November ● 1600 – 1730 hours
TECHNICAL SESSION 3: WELL OPERATIONS AND OPTIMISATION I
Ballroom B

Session Chairpersons:
Robin Kueh Jing Zhi, PETRONAS Carigali Sdn. Bhd.
Murat Kilic, Shell

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<tr>
<th>Time</th>
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<th>Title</th>
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<tr>
<td>1600</td>
<td>189213</td>
<td>The 7 Sins of Managing Acoustic Sand Monitoring Systems</td>
<td>P. Lee and K. S. Frederiksen, DONG Energy Oil &amp; Gas A/S; C. Quinn, ClampOn AS</td>
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Tuesday, 7 November ● 1600 – 1730 hours
TECHNICAL SESSION 4: RESERVOIR STUDIES AND SURVEILLANCE
Hibiscus Room

Session Chairpersons:
Gunajit Das, Halliburton
Andrew Baker, Schlumberger

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<th>Title</th>
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<tr>
<td>1640</td>
<td>189205</td>
<td>Decline Curve Analysis for Production Forecasting Based on Machine Learning</td>
<td>Y. Li, Texas A&amp;M U.; Y. Han, U. of Oklahoma</td>
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### TECHNICAL SESSION 5: WELL INTERVENTION AND MONITORING

**Session Chairperson:**
Andrew Baker, Schlumberger

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<tr>
<td>1100</td>
<td>189248</td>
<td>First Removal of Manganese Tetraoxide Water-Based Mud Cake in High Pressure High Temperature (HPHT) Wells with H2S and CO2 Environment Using Acetic Acid Conveyed with Coiled Tubing</td>
<td>L. Chendrika, I.M. Purwitaningtyas and M. Fuad, Schlumberger; M.O. Etuhoko, S. Nurdin, L. Jihong and B. Rusli, Husky-Cnooc Madura Ltd.</td>
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### TECHNICAL SESSION 6: DIGITAL/PRODUCTION OPTIMISATION

**Session Chairpersons:**
Jeff Dwiggins, Artificial Lift Solutions Pte. Ltd.
Jeroen Groenenboom, Shell

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<th>Time</th>
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<tr>
<td>1200</td>
<td>189220</td>
<td>Acid-Fracturing Unlocked the Production Potential of Tight Tuba Carbonate Reservoir, North Kuwait</td>
<td>A. Al-Hassan, Kuwait Oil Co.; M. Abdel-Basset, Schlumberger; B. Al-Enezi, S.R. Al-Mosaileekh, A. Al-Qenaie and E. Saleem, Kuwait Oil Co.</td>
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</table>
**Wednesday, 8 November ● 1600 – 1730 hours**

**TECHNICAL SESSION 7: WELL OPERATIONS AND OPTIMISATION II**

**Ballroom B**

**Session Chairpersons:**
Robin Kueh Jing Zhi, PETRONAS Carigali Sdn. Bhd.
Murat Kilic, Shell

**Time** 1600  189207

**Papers**

**Trials of Coiled Tubing Operations in Ultra-Deep HTHP Wells in Tarim Basin, Western China**
H. Liu and X. Yang, Tarim Oilfield Co., PetroChina; W. Zhang, Tarim Oilfield Co. of PetroChina; Y. Zhang, Drilling Research Inst. of China National Petroleum Corporation; P. Zhou, X. Wang, Tarim Oilfield Co. of PetroChina

**1620  189225**

**Improving Existing Perforation Efficiency via Thru-Tubing Dynamic Underbalance Application in Offshore Field in Malaysia**

**1640  189227**

**Cost-Optimised Exploration Drilling, Offshore South West Java: Recipe of a Successful “Jack Up” Switch**

**1700  189232**

**Collaborative Engineering Results in Application-Specific Hybrid Bit which Achieves Record Performance in Sichuan Basin**
L. Zhang, F.G. Valbuena and J. Zeng, Baker Hughes, a GE co.; M. He, CCDC Chuanxi Drilling Co.; H. Li, CNPC Chuanqing Drilling Engineering Co. Ltd.

**Wednesday, 8 November ● 1600 – 1730 hours**

**TECHNICAL SESSION 8: FLOW ASSURANCE**

**Hibiscus Room**

**Session Chairpersons:**
Hiroki Iwama, INPEX

**Time** 1600  189221

**Papers**

**Solving Unexpected Sanding Issues in HP/HT, Tight-Sandstone Keshen Gas Reservoir, Western China**
X. Yang, Tarim Oilfield Co.; Y. Huang, Schlumberger; Y. Zhang, PetroChina; K. Qiu, Schlumberger; W. Fan, PetroChina; Y. Pan, Schlumberger; G. Xu, PetroChina; C. Xian, Schlumberger

**1640  189215**

**The Impact of Field Measurements, Data Handling Procedures and Software Selection on Carbonate and Sulphide Scale Predictions**
G.V. Ness and K.S. Sorbie, Heriot-Watt U.

**1700  189246**

**Multifunctional Polymeric Scale Inhibitor for High Brine Systems: Development, Implementation and Evaluation**
S. Wang, A. Miller, C. Haugen, C. Okocha, A. Mahmoudkhani and A. Kaiser, Clariant Oil Services
KNOWLEDGE SHARING ePOSTER SESSIONS

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, authors will present their technical papers at designated ePoster stations. Attendees are encouraged to attend the sessions for more knowledge sharing and networking opportunities. ePosters are also available for attendees’ viewing at ePoster stations throughout the conference.

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<td>1030 – 1100 hours</td>
<td>ePoster stations are located at Foyer, Level 10</td>
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<td>7 November 2017</td>
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**STATION 1**

**Tuesday, 7 November 2017**

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<tr>
<td>1030</td>
<td>189255 How to Select Polymer Molecular Weight and Concentration to Avoid Blocking in Polymer Flooding? H. Guo, China U. of Petroleum-Beijing (Alternate Paper in Technical Session 1)</td>
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**STATION 1**

**Wednesday, 8 November 2017**

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STATION 2

Tuesday, 7 November 2017

Time  Papers
1030  189198  Innovative Production Optimisation Technique for Smart Well Completions Using Real-Time Nodal Analysis Applications
A.M. Al Anazi, O. Isichei, M. Al-Yaha and F.M. Al-Shammeri, Saudi Aramco
(Alternate Paper in Technical Session 3)

1330  189196  Viscoelastic Properties and Gelation Behavior of Waxy Crudes and Condensates from Eagle Ford: New Insights into Wax Formation and Mitigation for Shale Oils
A. Mahmoudkhani, R. Smith, A. Miller, A. Yousef, M. Feustel and J. Wylde, Clariant

1530  189269  Power Study and Tailored Solution for High H2S Environment Extends ESP Run Life in Douglas Field in the Irish Sea
L. Pastre, Schlumberger, A. Carolini, J. Williams and G. Foglio, ENI, A. Kriptanto, Schlumberger
(Alternate Paper in Technical Session 2)

STATION 2

Wednesday, 8 November 2017

Time  Papers
1030  189261  Aligning Field Development Options to Stringent Economic Conditions in an Offshore Brownfield

1330  189206  Flow Assurance Analysis on a Subsea Network Offshore Peru: Lobitos Asset - Case Study
J.H. Alzate Buitrago and C.Y. Vargas Cardenas, Weatherford; A. Agurto Saldana and G.A. Russo, Savia Peru S A
(Alternate Paper in Technical Session 8)

1530  189274  Channel Fracturing Boosts Production in Structurally Complex Brownfields of Upper Assam
L. Sharma and A. Shah, Schlumberger Asia Services Ltd.; V.R. Mukku and K. Bordeori, Schlumberger
(Alternate Paper in Technical Session 6)

STATION 3

Tuesday, 7 November 2017

Time  Papers
1030  189236  A Comprehensive Reservoir Characterisation and Water Flooding Optimisation for Different Types of Reservoir: Case Study of a Giant Carbonate Reservoir in the Middle East
C. Wei, L. Xiong, J. Zheng, C. Tian and B. Li, Research Inst. of Petroleum Exploration & Development, PetroChina
(Alternate Paper in Technical Session 4)

1330  189219  Effects of Selected Process Variables on the Stability of Petroleum Emulsions Co-Stabilized by Carbon Black and Surfactants
(Alternate Paper in Technical Session 8)

1530  189230  Applying Edge Computing to Autonomous Well Control
J.L. Pitcher and M.J. Pry, Safoco Inc.
(Alternate Paper in Technical Session 3)
**STATION 3**
Wednesday, 8 November 2017

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<tr>
<td>1330</td>
<td>189264</td>
<td>Innovative Solutions to Increase Banyu Urip Production at Lower Cost</td>
<td>P.R. Anisa and S. Bahri, ExxonMobil Cepu Ltd.</td>
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**STATION 4**
Tuesday, 7 November 2017

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<th>Time</th>
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</table>
| 1030  | 189234 | Near Wellbore Characterization from Temperature Transient Analysis: Accounting for Non-Darcy Flow Effect | Y. Mao and M. Zeidouni, Louisiana State U. 
(Alternate Paper in Technical Session 5) |
(Alternate Paper in Technical Session 2) |
(Alternate Paper in Technical Session 3) |

**STATION 4**
Wednesday, 8 November 2017

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<tr>
<td>1030</td>
<td>189210</td>
<td>An Intelligent Optimisation Technique of Beam Pumping Unit with Flexible Control System</td>
<td>R. Song, H. Wu, R. Wang and X. Wu, China U. of Petroleum, Beijing</td>
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| 1330  | 189217 | Applying the Integrated 3D Acid Fracturing Model Using a New Workflow in a Field Case Study | X. Jin, Texas A&M U.; H. Zhang, G. Yin and X. Han, PetroChina; D. Zhu, Texas A&M U. 
(Alternate Paper in Technical Session 6) |

**STATION 5**
Tuesday, 7 November 2017

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**Compositional Simulation of CO2 Storage in a CO2 Flooded Carbonate Reservoir**  
S. Bender, Turkish Petroleum; S. Akin, Middle East Technical U.  
(*Alternate Paper in Technical Session 1*)

**Comparative Financial Analysis of IPC, the New of Iran's Oil Fields Development and Production Enhancement Framework, vs. Buyback Contracts**  
M. Soleimani, Pars Oil & Gas Co.; M. Tavakkolian, OIEC (Oil Industries Engineering & Construction)  
(*Alternate Paper in Technical Session 1*)
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