SPE/IADC DRILLING CONFERENCE AND EXHIBITION
14–16 March 2017
The Hague, The Netherlands
www.spe.org/events/dc/2017

CONFERENCE PREVIEW
The SPE/IADC Drilling Conference and Exhibition is one of our industry’s key annual events. It is renowned for excellent technical content, and this year is no exception.

The 2017 conference will cover a variety of core drilling subjects, including drilling technology, risk management, zonal isolation, managed pressure drilling, well control, and drilling automation. In addition, the conference will address the future of providing energy in a sustainable way and how we can invest in energy and promote rapid adoption of practices and technologies from other industries. We will also host special events for the development of our young professionals and diverse talent pool.

The process of recovering hydrocarbons is becoming increasingly challenging, for a variety of economic, technological, social, and environmental reasons. However, our industry has faced and overcome similar challenges before. In the plenary session we will focus on how our industry can become safer and more competitive by learning from other industries. We will hear from industry leaders, innovators and investors from companies like McLaren, GE, Evercore and Energy Ventures.

This conference will take place in The Hague, The Netherlands – a perfect location for this event to continue its international status.

I encourage you and your colleagues to attend this great event and share your experiences with other industry professionals.

Leigh-Ann Russell
VP, BP Global Wells Organization
2017 SPE/IADC Drilling Conference Chair
Event Focus

For more than 30 years, the SPE/IADC Drilling Conference and Exhibition has been the leading drilling event in the E&P world. Alternating annually between Europe and North America, it provides the opportunity for producers, contractors, and service company professionals to meet, discuss, evaluate, and share ideas to promote advancements in worldwide drilling operations, address challenges, and to deliver improved performance.

Alongside the conference, the exhibition will showcase the latest technologies, new product launches, and industry services from around the world.

Topics Covered

- Case Studies
- Completions and Field Development Completion Technology
- Drilling Process and Technology
- Deepawater and Subsea
- Drilling Automation
- Tubulars
- Leading and New Technologies/Methodologies
- Management and Systems

About IADC

The International Association of Drilling Contractors (IADC) is dedicated to enhancing the interests of oil and gas and geothermal drilling contractors worldwide. IADC’s contract drilling members own most of the world’s land and offshore drilling units and drill the vast majority of the wells that produce the planet’s oil and gas. IADC’s membership also includes oil and gas producers, and manufacturers and suppliers of oilfield equipment and services. Founded in 1940, IADC strives to secure responsible standards, practices, legislation and regulations that provide for safe, efficient and environmentally sound global drilling operations. IADC holds Accredited Observer status at the International Maritime Organization and the International Seabed Federation, branches of the United Nations. The Association is a leader in developing standards for industry training, most notably its well control training and assessment program, WellSharp, and rig-floor orientation program, RigPass. IADC is headquartered in Houston, with offices and chapters located in all geographies where members are active worldwide. For more information, visit the IADC website at www.iadc.org.

About SPE

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 168,000 members in 144 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.

Income from this event will be invested back into SPE to support many other society programs. When you attend, sponsor, or exhibit at an SPE event, you help provide even more opportunities for industry professionals to enhance their technical and professional competence. Scholarships, certification, the Distinguished Lecturer programme, and SPE’s energy education programme—Energy4me—are just a few examples of programs that SPE supports. For more information, visit www.spe.org.
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John Thorogood
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Han Tiebout
GustoMSC
Ryan Weeden
ReedHycalog
Sabine Zeilinger
ExxonMobil
Schedule of Events

Monday 13 March
1300–1700  DSATS
1400–1900  Conference Registration
1700–1900  DSATS Cocktail Reception

Tuesday 14 March
0800–0900  Conference Registration
0830–1830  Exhibition
0900–1015  Opening Session: Welcome Address and Award Presentation
1015–1030  Coffee Break
1030–1230  Technical Session 1: Case Studies
Technical Session 2: Rigs and Rig Technology
Technical Session 3: Innovative Breakthrough on Plug and Abandonment Technologies
1215–1345  Luncheon
1345–1715  Technical Session 4: Drill Bits
Technical Session 5: Tubulars
Technical Session 6: Data Analytics
1515–1545  Coffee Break and Knowledge Sharing ePoster Session
1715–1830  Welcome Reception

Wednesday 15 March
0800–0900  Registration
0900–1030  Technical Session 7: Managing Major Accident Risk
Technical Session 8: Cementing and Zonal Isolation I
Technical Session 9: Pressure and Flow
0830–1630  Exhibition
1030–1100  Coffee Break and Knowledge Sharing ePoster Session
1130–1300  Plenary Session: Technology and Energy Innovation
1300–1415  Networking Luncheon
1300–1415  Young Professionals’ Luncheon
1415–1745  Technical Session 10: Drilling Dynamics and Mechanics
Technical Session 11: Cementing and Zonal Isolation II
Technical Session 12: Managed Pressure
1545–1615  Coffee Break and Knowledge Sharing ePoster Session

Thursday 16 March
0800–0900  Registration
0900–1230  Technical Session 13: Drilling Fluids and Geomechanics
Technical Session 14: Well Control
Technical Session 15: Downhole Tools
1030–1100  Coffee Break and Knowledge Sharing ePoster Sessions
0830–1430  Exhibition
1230–1330  Luncheon
1330–1630  Technical Session 16: Directional Drilling
Technical Session 17: Advancement in Completion and Intervention Technology Lowers Well Costs
Technical Session 18: Drilling Automation
1500–1530  Coffee Break
The award recognises outstanding achievements in, or contributions to, the advancement of the engineering discipline or field. The award will be presented during the opening session.

**2017 Award Recipient**

**Robello Samuel**, Halliburton

For his profound impact on Drilling, his unique blend of multi-disciplinary skills as a talented field drilling engineer, accomplished drilling researcher, prolific drilling engineering author, acknowledged drilling lecturer, and proficient professor. Dr. Robello Samuel is a Technology Fellow, working with Halliburton in Houston since 1998. He is currently the research, engineering and innovation lead for well engineering applications, responsible for research and scientific activities for new drilling technologies. His skills include practical and theoretical background in on-shore and off-shore well engineering, design, optimisation, automation, and creative establishment of project relationships through partnering and innovation. He is also responsible for analysing offerings for key technologies or niche capabilities and developing synergistic, strategic relationships in the energy industry. He is an SPE Distinguished member, and received the Distinguished Lecturer award in 2014 and Gulf Coast SPE Drilling Engineering Award in 2013. He has taught on the faculty of various universities and has held an adjunct professor appointment (concurrently) for 13 years, at the University of Houston. Dr. Samuel has published more than 160 technical papers, reports, 12 drilling books, holds 14 patents, and 75 patent pending applications. Dr. Samuel began his career working on rigs as a field and drilling engineer for nine years with the Oil and Natural Gas Corporation. He holds BS and MS degrees in Mechanical Engineering, as well as MS and PhD degrees in Petroleum Engineering.

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Confirmed as of 1 November 2016

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SPE/IADC Drilling Conference and Exhibition

SPECIAL EVENT

SPE DSATS / IADC ART Symposium

Monday, 13 March 2017 | 1300–1700

Networking Reception | Monday, 13 March 2017 | 1700–1900

DSATS (SPE’s Drilling Systems Automation Technical Section) and ART (IADC’s Advanced Rig Technology Committee) will hold a half-day symposium featuring two keynote presentations on automation and robotics. The Programme will take place at the Huisman facility in Rotterdam and conclude with a tour of the unique Huisman Innovation (Drilling) Tower which has been built as a demo unit on the dockside.

Four industry leading speakers will address the state of the art drilling automation and robotics followed by a panel session.

Keynote Speakers:

- **Space Robotics**, Gianfranco Visentin, Head, Automation & Robotics Section, European Space Agency (ESA)
- **The State of Drilling Automation Compared to Other Industries**, Ekaterina Minyaeva, OTM
- **Continuous Motion Rig**, Odd Skaerseth, CEO, WEST Group
- **Drilling Automation Advances**, Eric Quinlan, Huisman
- **Shell’s Drilling Automation Project – SCADAdrill**, Mark Anderson, Manager Drilling Mechanics Technologies, Shell

Space is limited so be sure to register early which also ensures the early bird rate for members. The meeting will be followed by a sponsored reception for symposium attendees. Registration opens mid-November 2016 at www.spe.org/events/dc/2017.

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<tr>
<th>Membership Type</th>
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<th>after 17 February</th>
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<tr>
<td>IADC/SPE Member</td>
<td>EUR 40</td>
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<td>Student</td>
<td>EUR 20</td>
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Please collect your badge at registration at the World Forum on Monday by 1100. Buses will depart for the Huisman Facility directly from there. Access will be restricted to pre-registered attendees only and Identity Numbers will be required. Strictly no photography and cell phones will be required to be left at security upon arrival.

Sponsored by Huisman

www.spe.org/events/dc/2017
Young Professionals’ Luncheon

Wednesday 15 March 2017 | 1300–1415

A young professionals’ luncheon will be held from 1300–1415 on Wednesday, 15 March. Young professionals will have the chance to discuss industry and career topics with experienced professionals in a relaxed setting. Simply indicate that you are a young professional on the registration form to receive information about the luncheon.

Keynote Speakers:

Colette Cohen, CEO, The Oil and Gas Technology Centre

Colette Cohen, Chief Executive Officer for the Oil and Gas Technology Centre (OGTC) has worked in the oil and gas industry for more than 20 years.

The OGTC aims to become the ‘go to’ centre for adapting, developing & deploying technology to help the UK North Sea extend its competitive life, and develop into a world class hub for Innovation and Technology in the Energy Industry, with a special focus on the offshore mature basin, subsea and decommissioning challenges.

Since starting her career with BP in 1991, Colette has worked for operators including ConocoPhillips and Britannia in the North Sea, the US and Kazakhstan, where she received a Jubilee Medal from the Kazakh Prime Minister in recognition of her contribution to the country’s oil and gas industry.

From August 2013 to July 2016, Colette was Senior Vice President for Centrica Energy’s Exploration and Production business in the UK and The Netherlands.

Colette, a chemistry graduate from Queens University Belfast and a member of the Society of Petroleum Engineers, was appointed in her current role as CEO of the OGTC in August 2016.

Colette has been a Member of the Oil & Gas UK Executive Board since July 2014 and in January 2015 was appointed as Chair of the National College for Onshore Oil and Gas.

Anchala Klein, VP, Wells, Global Wells Organization, BP

Anchala Klein has 26 years industry experience in Wells services, engineering and operations. In the last 18 years Anchala has held technical and leadership roles across BP’s portfolio from deepwater developments to onshore exploration in the North Sea, Angola, Russia, North Africa and Australia as well as in Drilling Technology. Anchala holds a Bachelor of Sciences degree in Aeronautical Engineering from City University, London.
Addressing the Gender Gap

Wednesday 15 March 2017 | 1745–2030

The 2016 World Economic Forum in Davos marked a major change in the commitment of CEO’s to ensuring the delivery of a more diverse workforce in the oil and gas industry. By signing up to a 7-point plan twenty of the world’s leading oil and gas companies and their suppliers have committed to changing the way they recruit, retain and promote talented women in the workplace.

At this special event we invite companies to tell us what good practise looks like as the industry strives to turn itself around. Participants will gain insight into what good leadership looks like and how companies set goals to deliver on aspirations. Come and see how to build a successful pipeline of talented women in Science, Technology, Engineering and Maths. Find out how top companies deliver an inclusive corporate culture and a great working environment without destroying work life balance.

These issues are important for all members of the Drilling and Completions Community and we invite you to participate in this interactive session to learn more about what you could be doing to address the gender gap.

Session Chair:

Oonagh Werngren MBE, current Chair of The Girls’ Network

Oonagh Werngren is Chair of Trustees for The Girls’ Network, an award winning charity that provides mentors to girls and young women from disadvantaged backgrounds. A keen advocate of diversity in the work place she aims to highlight best practise following the 2016 Davos Agreement to address the significant gender gap within the energy industry.

Oonagh is a former Operations Director at Oil & Gas UK responsible for establishing pan- industry projects to increase production in the UKCS and had a crucial role in setting up the Government funded Seismic Programmes for Rockall and the MNSH. Prior to that she held leadership roles in Wells, Developments and Technology for BP, GDF SUEZ, Arco and Tricentrol.

Oonagh is a former President of the PESGB (the 2nd woman to hold the position in 52 years) and has held positions as Non- Executive Director for both OGIC and ITF. She was awarded an MBE in the 2011 Queen’s Birthday Honours List for services to the oil and gas industry.

Speakers:

Hege Kverneland, Corporate Vice President and Chief Technology Officer for NOV

Hege received an M.Sc. in Mechanical Engineering from the Norwegian University of Science in 1990 and graduated from the General Management Program (GMP) in Harvard Business School in 2009.

Hege has more than 20 years of engineering and product management experience, contributing to quality assurance, research, and product development for NOV. While at NOV, she contributed many new product developments such as a new mud pump design, different PM-motor designs, heave compensation systems and automated drilling systems. She has served on several SPE / IADC committees, and is currently holding the position as Corporate Vice President and Chief Technology Officer at NOV.

Katie Mehnert, CEO of Pink Petro, a successful start-up geared at supporting women in Energy.

She is the Founder and Chief Everything Officer of Pink Petro™, the global community and career resource aimed at disrupting the energy gender gap. Supported by Shell, Halliburton, KPMG, and JIVE Software, Pink Petro has a growing list of international accolades including members in 31+ countries and over 500 companies.

Katie has 19 years of delivering change, learning, and culture transformations. A Who’s Who in Energy and Top 40 under 40 honoree, Katie has held global leadership roles with industry giants BP and Shell in health and safety during periods of financial crisis, spills, divestment, and globalization. Prior to Big Oil, she hailed consulting roles de-risking and driving change at Duke Energy, Waste Management, Entergy, and Enron. Her chaotic imperfect corporate path drove her to build Pink Petro to deal with the looming talent and reputational crisis ahead.

Katie serves on the Board of Directors of the Junior Achievement, Offshore Energy Center, and Ellevate Network. She is a graduate of Louisiana State University in Communications, Rice University’s Executive Energy program and The Center for Houston’s Future.

www.spe.org/events/dc/2017
Technical Programme

Tuesday, 14 March 2017 | 0900–1015

Opening Session

This session will include welcome speeches from the 2017 SPE/IADC Conference Chair, Leigh-Ann Russell, BP; 2017 SPE President, Janeen Judah, Chevron; 2017 IADC Chair, Andy Hendricks Patterson-UTI Energy; and the presentation of the SPE Drilling Engineering Award.

Tuesday, 14 March 2017 | 1030–1230

Case Studies Technical Session

Innovation abounds when our industry is pushed to the limits to drive efficiency. Each year, the committee identifies unique cases where a broad range of technology applications have resolved drilling challenges. This session will expose some of these applications, allowing our audience to see opportunities to adapt something new for their own challenges. Through repeat and repurpose of great ideas, efficiency across the industry will improve everyone’s bottom line.

Session Chairperson(s): Blaine Dow, Schlumberger and Liam Lines, Weatherford

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<tr>
<th>TIME</th>
<th>PAPER #</th>
<th>PRESENTATION</th>
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<tbody>
<tr>
<td>1100</td>
<td>184667</td>
<td>Case History: How to Enable the Horizontal Development of Shallow Reservoirs  W. Mathis, H. Strand, NeoDrill AS</td>
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<tr>
<td>1130</td>
<td>184626</td>
<td>A Case History of the First Drilling with Liner Application in Romania  M.A. Qureshi, OMV PETROM S.A.; S.M. Rosenberg, M.G. McGrath, M.Z. Tan, Weatherford International Ltd.</td>
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<tr>
<td>1200</td>
<td>184599</td>
<td>Relief Well Process: From Planning to Successful Execution  B.H. Poedjono, Schlumberger; L.P. Macresy, A. Sikal, Pathcontrol</td>
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<tr>
<td>Alternate 184596</td>
<td>Case Study of Section Milling Run in Abrasive Salt Dome Formation and Technological Development for Multi-String Section Milling  M.A. Haq, R. Segura, D. Teale, Weatherford</td>
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<tr>
<td>Alternate 184652</td>
<td>Extended Reach Drilling to Maximise Recovery From a Mature Asset, A Case Study  R.R. Anton, N.R. Armstrong, M.D. Blakely, Merlin ERD Ltd; N. Muecke, A. Wroth, Vermilion Energy</td>
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<td>Alternate 184708</td>
<td>Application of Deep Directional Resistivity Reservoir Mapping Tool on Arctic Field Development—Case Study From the Goliat Field in the Barents Sea  G. Tosi, Eni Norge; H. Wang, Schlumberger</td>
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Tuesday, 14 March 2017 | 1030–1230

Rigs and Rig Technology Technical Session

Session Chairperson(s): Igor Brucher, Transocean and Han Tiebout GustoMSC Inc

The Rigs and Rig Technology session will highlight specific aspects related to drilling with real-time rig based surveillance, the application of closed-loop vision technology as applied to tripping operations, a concept called “floating factory” and an extreme wireline pull conveyance system for deepwater applications will complete this session.

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<th>TIME</th>
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<tr>
<td>1030</td>
<td>184615</td>
<td>A Real-Time Rig-Site Based Surveillance and Optimization Platform for Drilling: Technology, User Experience and Field Results  G.S. Payette, B. Spivey, L. Wang, ExxonMobil Upstream Research Co.; J.R. Bailey, ExxonMobil Development Co.; R. Kong, M. Pawson, A. Eddy, Pason Systems Corporation</td>
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<td>1100</td>
<td>184664</td>
<td>Tripping Operations Optimized Through Closed-Loop Vision Technology  Y.S. Vintervold, M. Holmstrom, H.L. Rosano, National Oilwell Varco</td>
</tr>
</tbody>
</table>
Technical Programme

1130 184650  The Floating Factory Concept: Engineering Efficiencies Up Front to Reduce Deepwater Well Delivery Cost
J. Hebert, Diamond Offshore Drilling Inc

1200 184732  The 30,000 lbs Extreme Pull Wireline Conveyance System And the Highest Pull ever help Repsol Gulf of Mexico Operations Save 5 MUSD By Avoiding Drill Pipe Conveyance And Tool Fishing Operations In The Most Challenging Deepwater Well
D. Garcia Cristobal, A. Ortin Aguilaniedo, A. Martin Vicente, V. Williams, Repsol USA; S.A. Sarian, D. McManus, P. Lake, C. Babin, J. Varkey, Schlumberger

Alternate 184621  Rethinking the Typical Line-Item DWOP Exercise: Does it Present a Complete Picture?
P.O. Nwokoma, Huisman-Itrec; X. Knobben, Huisman Equipment BV

Alternate 184663  A Study of the Dynamics of Lateral Fastline Vibrations
A. Kyllingstad, National Oilwell Varco

Tuesday, 14 March 2017 | 1030–1230
Innovative Breakthroughs in Plug and Abandonment Technologies Technical Session
This session will demonstrate innovative technologies and resources which have been developed for effective well abandonment operations. The presentations will introduce recent advances and the associated applications to deal with aging offshore assets in the oil and gas industry.
Session Chairperson(s): Thomas Gee, Weatherford and Jim McNicol, Archer

1030 184653  Improved through Christmas Tree P&A Plug Placement with New Innovative Cementing Methodology
M. Olsen, M. Waagen, T. Sætre, Halliburton; C. Lindanger, J. Gustafsson, B. Sirevaag, Statoil

1100 184716  Successful Multi-Well Deployment of a New Abandonment System for Major Operator
T.A. Stokkeland, J. McNicol, Archer; G. McWilliam, Maersk Oil UK

1130 184675  True Self-Healing Geopolymer Cements for Improved Zonal Isolation and Well Abandonment
X. Liu, M. Ramos, S.D. Nair, D. Espinoza, E. van Oort, The University of Texas at Austin

1200 184640  Development of Experimental Equipment and Procedures to Evaluate Zonal Isolation and Well Abandonment Materials
J. Van Eijden, Shell Global Solutions Int; F. Ruckert, Shell Global Solutions Int.; E. Cornelissen, Shell Global Solutions Int

Alternate 184696  Ensuring Zonal Isolation While Abandonment by Utilizing Innovative Coiled Tubing Placement Technique
E. Tanoto, M.F. Jaffery, M. Pasteris, Schlumberger; R. Ramadhan, I. Wijanarko, Chevron

Tuesday, 14 March 2017 | 1345–1715
Drill Bits Technical Session
Session Chairs: Danielle Fuselier, Hughes Christensen and TBC
Every well begins with the bit, which is an often overlooked critical driver of well completion costs – up or down. Drill bits have gone through dramatic upgrades and evolution cycles over the past 116 years to keep up with ever-increasing application and operating challenges. The papers in this session highlight the latest breakthroughs enabling drill bits to further push performance and become an active optimization tool to partner with the rest of the BHA. Stronger connections, in bit data capture and downhole adjustable components are just some of the incredible technologies revolutionizing the way new hole is made. In today’s cost conscious market, these innovations are more valuable than ever to complete wells and bring production online in less time.

1345 184628  PDC Bit Connections: A Time for Change
S. Anderle, R.W. Arfele, B. Hinz, Halliburton; E. Shafer, Conoco Phillips

1415 184676  Assuring Efficient PDC Drilling
J.H. Wingate, BP; D.A. Curry, Baker Hughes Inc; R.C. Pessier, Hughes Christensen; R. Spencer, Baker Hughes; A. Kuesters, BP Exploration & Production; M. Al Alawi, BP
### Technical Programme

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<tr>
<th>Time</th>
<th>Paper Number</th>
<th>Title</th>
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<tr>
<td>1445</td>
<td>184736</td>
<td>Mitigating Drilling Dysfunctions and Enhancing Performance with Self-Adjusting Bit Technology: Analytical and Experimental Case Studies</td>
<td>J.R. Jain, G. Ricks, A. Phillips, Baker Hughes Incorporated</td>
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<td>1545</td>
<td>184738</td>
<td>Drilling Dynamics Data Recorders Now Cost-Effective for Every Operator - Compact Embedded Sensors in Bit and BHA Capture Small Data to Make the Right Decisions Fast</td>
<td>S. Jones, Scout Downhole/Sanvean Technologies; J. Sugiura, Scout Downhole Inc</td>
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<tr>
<td>1615</td>
<td>184646</td>
<td>From Laboratory HPHT Technology to Field Success: A Case Study on New Anti-Balling Coating Development</td>
<td>B. Yu, A.J. Goodman, B. Hayes, J. Stevens, T. Vondenstein, R. Callais, Baker Hughes; J. Harvey, J. Honeycutt, J.S. Mcevers, Antero Resources; J.K. Lindsey, Talos Energy</td>
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<td>1645</td>
<td>184714</td>
<td>PDC Bit with Industry’s Largest Cutter Achieves Breakthrough Performance and Savings in Kuwait</td>
<td>B.D. Grimes, Baker Hughes Inc.; M.G. Omar, Baker Hughes; R. Lee, Baker Hughes Inc; H.J. Almayyan, A. Al Sharhan, Kuwait Oil Company</td>
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<td>1645</td>
<td>184734</td>
<td>Curved Nozzle Design for PDC Bits Enhances Hydraulics for Bit Cleaning and Cooling Improvements</td>
<td>K. Rose, B. Cuillier, M. Schnuriger, Varel Oil &amp; Gas Drill Bits</td>
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<td>1645</td>
<td>184679</td>
<td>A Stochastic Approach to Drillstring Vibrations While Backreaming</td>
<td>C.E. Agostini, Petróleo Brasileiro S.A. – Petrobras</td>
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<td>1645</td>
<td>184740</td>
<td>Recorded Dynamics Measurements While Coring Enhances Performance and Recovery</td>
<td>S. Jones, Sanvean Technologies; J. Sugiura, Scout Downhole Inc</td>
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<td>1645</td>
<td>184645</td>
<td>New Innovative Underreamer Technology Simultaneously Drilled and Reamed with Two Activated Reamers</td>
<td>S. Grymalyuk, Baker Hughes Solutions; M. Schimanski, Baker Hughes</td>
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### Tubulars Technical Session

**Session Chairperson(s):** Thomas Redlinger, T H Hill Associates, Inc. and Robello Samuel, Halliburton

This session explores performance and technical considerations for casing, tubing and drill pipe. The session will review advances in the performance limits as well as casing integrity design. Real world case studies will review the impact of coatings, casing make-up stresses, and connection performance in complex load situations.

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<tr>
<td>1345</td>
<td>184614</td>
<td>Tubular Connection Integrity: A Comparison of Pipe Makeup Methods</td>
<td>F. Amezaga, Weatherford</td>
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<tr>
<td>1415</td>
<td>184690</td>
<td>The Role of Phosphate Conversion Coatings in Make-up of Casing Connections</td>
<td>D. Ernens, Shell Global Solutions International BV; M.B. de Rooij, D.J. Schipper, University of Twente; H. Pasaribu, E. van Riet, W. van Haften, Shell Global Solutions International BV</td>
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<tr>
<td>1445</td>
<td>184703</td>
<td>Improving Casing Integrity by Induction Brazing of Casing Connections</td>
<td>D. Ernens, M. Shuster, W. van Haften, Shell Global Solutions International BV; P.R. Hariharan, Shell International Exploration &amp; Production; H. Pasaribu, Shell Global Solutions International BV; M. Jabs, R.N. McKim, Shell Exploration &amp; Production Company</td>
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<tr>
<td>Alternate</td>
<td>184745</td>
<td>Innovative Drill Stem Rotary Shoulder Connection Designed for Cost Efficient Operations in the Most Challenging Drilling Environments</td>
<td>M. Lafuente, Vallourec Drilling Products; F. Carrois, Vallourec</td>
</tr>
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</table>
Data analytics is a new topic for this conference and represents a fast-growing technology trend in drilling. Papers are presented that discuss data aggregation in drilling operations including Human Machine Interface, real-time drilling optimization, education for “drilling engineers of the future” on big data analytics and automation, automated quantitative risk analysis for drilling operations plans, statistical methods using real-time sensor data for automatic fingerprinting, machine learning to reduce lost circulation, and automated trend monitoring, alerting leading to standardized best practices.

1345 184743 Human Factors Engineering in the Design and Deployment of a Novel Data Aggregation and Distribution System for Drilling Operations
M. Behounek, T.S. Thetford, Y. Yang, Apache Corp.; P. Ashok, A. Ambrus, J. Lutteringer, Sentinel Real Time LLC

1415 184739 Future Workforce Education through Big Data Analysis for Drilling Optimization
Y. Zhou, T. Baumgartner, The University of Texas At Austin; G. Saini, P. Ashok, University of Texas at Austin; M.R. Isbell, D.K. Trichel, Hess Corp.; E. van Oort, The University of Texas At Austin

1445 184744 Real-Time Drilling Optimization and Rig Activity-Based Models Deliver Best-In-Class Drilling Performance— Case History

1545 184693 Use of Quantitative Risk Analysis Methods to Determine the Expected Drilling Parameter Operating Window Prior to Operation Start: Example from two Wells in the North Sea
E. Cayeux, B. Daireaux, R. Mihai, Intl Research Inst of Stavanger; S.T. Havardstein, ConocoPhillips; L.M. Stokland, Wintershall

1615 184735 Statistical Method for Error Prediction in Decision Support and Control Systems
M. Aghito, K. Bjorkevoll, R. Nybo, SINTEF Petroleum Research

1645 184741 Taking a Different Approach to Drilling Data Aggregation to Improve Drilling Performance
M. Behounek, Apache Corp.; E. Hofer, M. White, Apache Corp; T.S. Thetford, Y. Yang, Apache Corp.; M. Taccolini, Tatsoft LLC

Alternate 184724 Efficiency Improvement in the Bakken Realized Through Drilling Data Processing Automation and the Recognition and Standardization of Best Safe Practices
W.J. Duffy, Statoil; J.M. Rigg, TDE Petroleum Data Solutions Inc.

Alternate 184733 Developing Remote Operations Capabilities in the US-land Market
J. Huckeby, Halliburton

Alternate 184623 Machine Learning Strategy Minimizes Loss Circulation Events In Brazilian Deep Water Pre-salt Drilling
A.L. Martins, A.A. Waldmann, Petrobras; G.C. Longhin, Simworx-Engineering R&D; R. Cristofaro, SIMWORX

Alternate 184737 Automated Trend-Based Alerting Enhances Real-Time Hazard Avoidance
D.R. Kumar, G.S. Smith, R. Micksens, Weatherford International
Managing Major Accident Risk Technical Session

Session Chairperson(s): Karen Bashford-Provence, ConocoPhillips and John Thorogood, iDrilling Global Consultant LLP

Major accidents do untold damage to the Environment, our industry’s reputation, putting our social licence to operate at risk and can threaten the viability of even the largest companies. Two of the papers deal with serious risks faced by our operations on a daily basis, that of well collisions which have been the cause of costly accidents in the past and, from a drilling contractor’s perspective, how the ever present risk, not just of well control but also marine events, is managed in a logical and rigorous manner. The final paper describes how modern simulation technology helps to prepare teams that are engaged in managed pressure drilling operations to respond to unforeseen events.

0900 184730  Well Collision Avoidance Management and Principles
S.J. Sawaryn, Consultant

0930 184700  Real Time Engineering-Based Simulation Training Addresses Risk in Managed Pressure Drilling
R. Rommetveit, eDrilling; I.A. Davidson, IANADAV LLC; M. Svendsen, eDrilling

1000 184637  An Offshore Drilling Company’s Approach to Process Safety Management
J. Gidley, D. Campbell, Atwood Oceanics Inc.

Alternate 184681 Safety Culture Leads to Reduced TRIR
S. Robert, W.S. Fiffick, R. Guillory, Canrig Drilling Technology Ltd.; K. King, Canrig Drilling Technology

Alternate 184672 High Assurance on Barrier Placement and Evaluation for Deepwater Wells in Brazil
V. Reveth, Schlumberger; G.C. Ortuno, Repsol S.A.; K.M. Bersaas, Statoil ASA; J.R. Contreras Escalante, Schlumberger; J. Barron, Repsol; F. Moretti, Schlumberger

Alternate 184669 How Experience Transfer And Learning Can Lift Knowledge From Individuals To The Organizational Level
P.A. Mathisen, AGI Petroleum Services AS

Cementing and Zonal Isolation

Session Chairperson(s): Martijn Bogaerts, Schlumberger and Iain Cooper, Schlumberger

As we move to increasingly more complex environments, we face escalating challenges in Cementing and Zonal Isolation. This session addresses innovative fluid designs and successful cementing practices, which contribute to achieving well integrity.

0900 184616  Novel Flexible Cement Technology Applied with Managed Pressure Cementing to Achieve Well Integrity in HPHT Field in North Sea
N. Gupta, Schlumberger Petrotechnical Services; P. Bonomi, Schlumberger Saudi Arabia; C. Wight, Shell UK

0930 184631  A Novel Rheological Hierarchy Optimization Methodology with Artificial Intelligence and Inverse Technique Improves Spacer Design
L. Xie, S. Chaudhary, Z. Chen, Baker Hughes

1000 184597  Specially Customized System for Cementing Glass Reinforced Epoxy (GRE) Casings—Development and Field Trials in a Geothermal Project
N. Recalde Lummer, R. Block, Y. Yagidgarov, Fangmann Energy Services GmbH & Co. KG; F. Engert, TU Bergakademie Freiberg

Alternate 184613 Permeability Study of API Class G and B Cements considering Seawater and WBM Contamination
E. Schnell, I. Unanue Rodriguez, A. Chang, I.A. Massie, Halliburton; J. Le Minous, D. Mutti, Perenco

Alternate 184605 Improved Primary Cement Jobs and Mitigation of Sustained Casing Pressure Through the use of Foamed Spacer Design Technology
A. Kumar, J. Li, R. Mehr, Halliburton; J.N. Gillies, Halliburton Malaysia

Alternate 184630 Engineered Solution Helps Tackle Tricky Shale Gas Cementing Challenge in HP/HT to Deliver Good Cement Bond Across Shale Section Located in Western India
T. Ganjoo, V. Iyer, A. Kumar, Halliburton; D. Chandrasekhar, Oil and Natural Gas Corporation Limited
Wednesday, 15 March 2017 | 0900–1030

**Pressure and Flow Technical Session**

**Session Chairperson(s):** Jonathan Ruszka, Baker Hughes Intl Inc and Hermann Spoerker, Saudi Arabian Oil Company

Understanding, predicting, controlling and managing pressure in well construction is central to safe, reliable, efficient operations and delivery of a successful well. Maintaining up-to-date knowledge of the latest advances in this area is therefore of great interest to a broad range of technical professionals in the industry. In this session we will hear about breakthroughs in research, technology and regulatory requirements associated with pressure. This will include discussions on; the implications of new wording in documentation from the Bureau of Safety and Environmental Enforcement on well control, advances in research associated with the prediction of gas carrying capacity of oil-based drilling fluids to aid earlier kick detection and a case study on the deployment of new reservoir isolation valve technology saving time and cost.

- **0900 184706** Intervention-less Reservoir Isolation Valve Removes the Requirement for an Intermediate Completion—A Case Study
  A. Edwards, Weatherford

- **0930 184731** Unifying Conventional and Contemporary Concepts: Returns Flow Control-HSE
  J. Lee, University of Houston; D.M. Hannegan, Weatherford International Ltd.

- **1000 184710** Methodology for Predicting Gas Loading Capability in Oil-based Drilling Fluids
  J. Skogestad, H. Linga, K. Bjorkevoll, SINTEF Petroleum Research; A. Saasen, Det Norske Oljeselskap ASA

- **Alternate 184728** Advances in Elastomer Technology for Drill-Through Equipment
  M. Berckenhoff, J. Hack, Cameron

- **Alternate 184606** Low Injection Squeeze to Reduce Gas Oil Ratio and Gain Significant Crude Production using Epoxy Resin Technology
  A. Singhal, A. Deo, Cairn India Ltd.; A. Kumar, Cairn Energy India Pty. Ltd.

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Plenary Session: Technology and Energy Innovation

Our industry faces difficult times ahead, regardless of the oil and gas price. Weathering further decline in prices, maintaining profitability at current prices or managing an upturn all pose challenges to our teams. Hear from some of the best global experts in the oil and gas investing community on future commodity price predictions and how we maintain our safe, efficient and profitable agenda, regardless of what happens to oil and gas prices. In addition, the digital oilfield is becoming a fast opportunity to become safer and more competitive. What can we learn from outside industry on become a lean high performance industry? What does F1 racing and drilling have in common and how can we learn from a high performance, automated sport to make our operations better? How have GE, a leader in transformation, used digital technologies to transform their business and how can we apply these practices to transform our industry? The 2017 DC panel session promises to be a diverse, exciting learning opportunity for us all.

**Panel Members:**

- Mike Phillips, Commercial Director, McLaren
- Lorenzo Simonelli, CEO, GE Oil and Gas
- Kjell Jacobsen, Chairman and Senior Partner, Energy Ventures
- James West, CEO, Evercore

James West is a Senior Managing Director responsible for the research coverage of the Oil Services, Equipment and Drilling industry consisting of detailed fundamental research on around 60 companies at Evercore ISI. Prior to joining Evercore ISI, Mr. West was a Managing Director and Senior Research Analyst at Barclays and Lehman Brothers for a combined 15 years. Since assuming lead coverage in 2011, Mr. West has been top ranked in Institutional Investor, including number three in 2011, number two in 2012 and number one in 2013, 2014, 2015 and 2016. Prior to joining Lehman Brothers, Mr. West worked at Donaldson, Lufkin & Jenrette. Mr. West received his B.A. in Economics and a minor in History from the University of North Carolina at Chapel Hill.
While commodity prices stay low, it is ever more important to maximize value through improved drilling efficiency and the elimination of non-productive time during operations. Improving our understanding of downhole dynamics and mechanics enables earlier intervention and mitigation against equipment dysfunction or failure. This session showcases the advancement in various drilling dynamics and mechanics modelling, prediction, measurement and analysis techniques. Presentations on papers include; under-reamer performance/reliability improvement using downhole drilling mechanics measurement, torsional drillstring vibration modeling and control, a comparison of stick-slip mitigation tools, improved drilling friction tests, torque and drag prediction improvement from an enhanced understanding of the wellbore trajectory, and small-diameter tubing operational improvement with downhole WOB measurement.

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<th>Time</th>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>1415</td>
<td>184674</td>
<td>Improving Reliability and Performance of Under-Reaming Operations</td>
<td>A.J. Belloso Damiano, Baker Hughes Inc; F.G. Valbuena, Baker Hughes; R.C. Pessier, Hughes Christensen; H. Oueslati, Baker Hughes</td>
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<td>1445</td>
<td>184697</td>
<td>Torsional Drillstring Vibration Modelling and Mitigation with Feedback Control</td>
<td>C. Pehlivanturk, D. Chen, E. van Oort, The University of Texas at Austin</td>
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<tr>
<td>1515</td>
<td>184658</td>
<td>A Comparison of Stick-Slip Mitigation Tools</td>
<td>A. Kyllingstad, National Oilwell Varco</td>
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<tr>
<td>1615</td>
<td>184657</td>
<td>Challenges and Solutions to the Correct Interpretation of Drilling Friction Tests</td>
<td>E. Cayeux, B. Daireaux, H. Skadsem, Intl Research Inst of Stavanger; R. Holand, Statoil ASA</td>
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<td>1645</td>
<td>184611</td>
<td>Improving Torque and Drag Prediction using the Advanced Spline Curves Borehole Trajectory</td>
<td>M.F. Abughaban, A.W. Eustes, Colorado School of Mines; J.P. de Wardt, DE WARDT &amp; CO.; M. Willerth, Scientific Drilling International</td>
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<td>Alternate</td>
<td>184687</td>
<td>Minimization of Downhole Tool Failures Using Nash Equilibrium and Downhole Data</td>
<td>W. Jiang, University of Houston; R. Samuel, Halliburton</td>
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<td>Alternate</td>
<td>184684</td>
<td>A New Analytical Model for Jarring Analysis</td>
<td>Y. Zhang, R. Samuel, Halliburton</td>
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<td>Alternate</td>
<td>184670</td>
<td>Changing the Chalk Drilling Paradigm in The Netherlands</td>
<td>S. Brands, Schlumberger; T. Matvijikiv, Schlumberger D&amp;M; R. Bocquet, Total E&amp;P Netherlands B.V.; A. van der Pouw Kraan, Schlumberger</td>
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<td>Alternate</td>
<td>184600</td>
<td>Analyzing Drilling Vibrational Effects Based on Mechanical Specific Energy and Rock Mechanics Principles in the Oriente Basin, Ecuador</td>
<td>C. Pinto, A. Janne, Halliburton</td>
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</tbody>
</table>
Cementing and Zonal Isolation II Technical Session

Session Chairperson(s): Martijn Bogaerts, Schlumberger and Iain Cooper, Schlumberger

This session encompasses analyses of both annular pressure build-up and cement logging from the Gulf of Mexico; theoretical, field and case studies of lost circulation and preventative and remedial actions, and descriptions of the latest cement displacement simulator tools to achieve the goal of Zonal Isolation and long-term Well Integrity.

1415 184725 Advancements in APB Mitigation for Thunder Horse Wells
A. Coy, BP America Inc; R.A. Miller, BP; A.T. Dondale, BP America Inc; G. Frank, BP America

1445 184641 CO2 Self-Healing and Resistant Cement Technology: from Laboratory to the Field
B.S. Engelke, F. Daou, Schlumberger; C.R. Miranda, Petrobras; D. Petersen, S. Aldana, F. Oliveira, L.M. Sarcos Ocando, D.J. Guillot, Schlumberger; A.F. Conceição, Petrobras

1515 184604 Logging-While-Drilling in Cased Hole to Validate Top of Cement Saving Days of Rig Time—Deepwater Gulf of Mexico Case Studies
M.O. Ehiwario, Shell Exploration & Production Co; R. Fike, Shell; J.C. Garrett, Shell Exploration & Production Co; G.A. Fuller, Shell International E&P Co; G.G. Donovan, Shell Exploration & Production Co; F. Michel, B. Robbins, S. Kizziar, N. Laroussi, Halliburton

1615 184598 Lost-Circulation Cement Solution for Ekofisk and Eldfisk Fields
G. Lende, Halliburton Co.; L. Almada, D. O’Sullivan, Halliburton

1645 184673 Understanding Lost Circulation While Cementing: Field Study and Laboratory Research
S. Taoutaou, S.G. James, P.W. Way, Schlumberger; E. Therond, BP; P. Gomes, BP Exploration Operating Co; A. Dondale, BP

1715 184702 Advanced Modeling of Cement Displacement Complexities
S. Enayatpour, E. van Oort, The University of Texas At Austin

Alternate 184677 New Generation 3D Simulator Predicts Realistic Mud Displacement in Highly Deviated and Horizontal Wells
S.P. Almagro, N.C. Flamant, C. Sutama, Schlumberger; P.M. Tardy, Schlumberger Danmark A/S

Alternate 184720 The Silver Lining to Squeezing Salts: Practical Cased Hole Logging and Interpretation Method Determines if Mobile Formations Act as Annular Barriers for Plug and Abandonment Applications
D. Lavery, A. Imrie, Halliburton

Alternate 184712 Going the Distance: Cement Wiper Plug Technology
T. Leblanc, Weatherford International; M. Budde, Weatherford Elastomers

Alternate 184595 Deployment of the World’s Longest Sandstone Production Equalizer Partially Cemented System in an Offshore Horizontal Well
Managed Pressure Technical Session

Session Chairperson(s): Crispin Chatar, Schlumberger and Howard Garig, Exxon Mobil Corporation

The industry continues to improve on pressure management technology moving from concept investigation phase to innovations of proven designs. Managed pressure is becoming more accepted with growing concerns of wellbore integrity, well control and tighter pressure windows. This session continues along this path with case studies, lessons learnt and new innovations moving toward that direction. Attendees will find a wide range of interesting pressure related topics from multiple ends of the spectrums; from using downhole pressure readings to make decisions in real time to using the data for post well analysis; from Deepwater projects to Extended reach projects or from Novel adaptive systems to demystifying existing systems.

1415 184721  Api 16 RCD: Demystifying Rotating Control Device Manufacturing Specifications For Operations
B. Dow, Schlumberger; A. Mettai, Schlumberger Dynamic Pressure Management; C. Kamps, Schlumberger; J. Cremer, Schlumberger Petrotechnical Services; J. Conn, Schlumberger

1445 184701  Mud Gas Separator Sizing and Considerations for Managed Pressure Drilling Operations

1515 184633  MPD Application on ERD Well in Offshore Project in Venezuela - Managing Bottom Hole Pressure within Narrow Window in a Faulted Limestone Formation with an Static Underbalanced Drilling Fluid

1615 184649  Fielding a Novel Adaptive Control System for Managed Pressure Drilling
J. Stakvik, C. Berg, G. Kaasa, R. Graham, Kelda Drilling Controls AS; A. Torrealba, Reform Energy Services

1645 184619  Enhanced Formation Integrity Test (FIT) Interpretation and Decision Making Through Real-time Downhole Pressure Measurements
S.O. Jebutu, Baker Hughes Inc; M. Silbernagel, Shell; B.C. Dugas, Baker Hughes; R. Lamborn, Baker Hughes Inc; O. Akimov, Baker Hughes

1715 184632  Coiled Tubing Cementing Operation Using MPD Technique in a HP/HT Well
E. Mammadoy, Weatherford Gemoco; M. Murtaza, N. Osayande, A. Yousefi Sadat, Weatherford Canada Partnership

Alternate 184627  Successful Deep Water Drilling (MPD), Early Kick Detection and Performing Managed Pressure Cementing With CML (Controlled Mud Level) System in GOM and North Sea
B. Elahifar, Enhanced Drilling

Alternate 184698  Pre and Post Operational Well Data Analysis; A Key Step to Increase Reliability in Managed Pressure and Underbalanced Drilling Projects
M.A. Chavarria, C.P. Lupo, B. Dow, J.C. Beltran, Schlumberger

Alternate 184643  Riser Gas handling in Deepwater with Controlled Mud Level Technology
B. Fossli, E. Mjaavatten, Enhanced Drilling; S. Sangesland, Norwegian University of Science & Technology; M.H. Emilsen, Well Flow Dynamics AS

Alternate 184622  Pressure Transmissibility in MPD Operations
A.L. Martins, Petrobras; A. Silva, Universidade Federal do Rio de Janeiro; P. Couto, Universidade Federal do Rio De Janeiro
Drilling Fluids and Geomechanics Technical Session

The drilling fluid technical session explores new developments in drilling fluids and geomechanics, such as wellbore strengthening, interpretation of fracture integrity tests and subsidence. A paper on the role of nano-particles, as used for shale stabilization, promises to advance the understanding of these new additives in drilling fluids. The alternate paper presentations offer great opportunities to explore more fluid-related topics in drilling, with emphasis on hole cleaning, and geomechanics.

0900 184727 How Do Nano-Particles Stabilize Shales?
B.B. Hoxha, E. van Oort, H. Daigle, The University of Texas At Austin

0930 184661 Improved Wellbore Stability on Tor/Ekofisk Wells through Shale-Fluid Compatibility Optimization
E. van Oort, The University of Texas At Austin; C. Pasturel, Maersk Oil Kazakhstan GmbH; J. Bryla, F.P. Ditlievens, Maersk Oil CTP

1000 184609 Geomechanics of Wellbore Strengthening Revisited: A Combined Theoretical and Experimental Approach
A. Mehrabian, S. Savari, D.L. Whitfill, Halliburton; Y.N. Abousleiman, University of Oklahoma

1100 184685 A Simple Method for Identifying Fracture Initiation Pressure
R.N. Naidu, M. Rylance, BP Exploration

1130 184602 Nonlinear Regression Analysis and System Stiffness Approach for Formation Integrity Test Interpretation
S. Moi, L.A. Carlsen, H. Skadsem, IRIS; M. Islam, O.A. Helstrup, Statoil Norway

1200 184603 Understanding Reservoir Compaction and Seabed Subsidence Using 4-D Coupled Reservoir Geomechanics to Assist Development Planning of Unconsolidated Reservoirs: Fortuna Project Case Study, Offshore Equatorial Guinea
S. French, Ophir Energy; R. Puspitasari, Schlumberger; A. Isherwood, P. Cox, M.N. Mbang, Ophir Energy; R. Marsden, Consultant; C. Tan, Z. Pallikatathkathil, Schlumberger

Alternate 184719 Simultaneous Effect of Salt Creep and Dissolution in Caliper Prediction During Drilling Operations

Alternate 184707 Degassing Rate of Drilling Fluid Base Oils as Exposed to Depressurisation and Drill String Rotation
A. Grimstad, H. Linga, SINTEF Petroleum Research; A. Saasen, Det Norske Oljeselskap ASA; O. Haave, SINTEF Petroleum Research

Alternate 184660 CFD Modelling of Observed Cuttings Transport in Oil-based and Water-based Drilling Fluids
S. Sayindla, Norwegian university of science and technology; B. Lund, SINTEF Petroleum Research; P. Skalle, Norwegian University of Science & Technology; J. Ytrehus, SINTEF Petroleum Research

Alternate 184699 Examining Three Novel Methods to Validate Re-fracture Models in Unconventional Reservoirs
H. Shaikh, E-Tech Consulting Services; N. Malik, O. Ogunrewo, Statoil

Well Control Technical Session

This session will discuss well control procedures and technology and blowout control. Papers presented in this section will cover blowout control challenges of pad drilling and production, kick tolerance and frictional pressure losses, gas absorption by drilling fluids, well control barriers management and integration of human factors into well control operations, documentation and training. An additional paper will present an improved thixotropic barrier fluid.

0900 184656 Blowout Control Challenges of Pad Drilling and Production: A Case History with Lessons Learned
A. Haghshenas, Halliburton Production Solutions; A.J. Cuthbert, Halliburton Consulting & Project Management; L. Portillo, Halliburton Production Solutions
Technical Programme

0930 184648 Integrating Human Factors Into Well Control
T. Morton, J. Odgaard, Maersk Drilling

1000 184668 A Systems Approach to Well Control Barrier Management During Drilling Operations
J.L. Thorogood, Drilling Global Consultant LLP

1100 184686 Gas Influx into Drilling Fluids during Flow Check Operations as Affected by Gas Absorption Characteristics of the Drilling Fluid
H. Linga, K. Bjørkevoll, J. Skogestad, SINTEF Petroleum Research; H. Mortensen, Lundin Norway AS; A. Saasen, Det Norske Oljeselskap ASA

1130 184655 Kick Tolerance and Frictional Pressure Losses. Added Safety Factor or Added Risk?
I. Mosti, D.R. Morrell, W. Zeman, B. Anfinsen, Schlumberger Information Solutions

1200 184625 Improved Thixotropic Barrier Fluid
J.K. Turner, W. Shumway, R. Lovorn, J. Ramirez Angulo, Halliburton

Thursday, 17 March 2017 | 0900–1230

Downhole Tools Technical Session

A generic session title to highlight some innovative, as well as a new look at some existing technologies, in all aspects of downhole tools.

Session Chairperson(s): Martyn Greensmith, Merlin ERD and Dan Scott, Baker Hughes

0900 184683 Horizontal Drilling with Dual Channel Drill Pipe
O.M. Vestavik, Reelwell AS; J. Thorogood, Reelwell; E. Bourdelet, Total; J.L. Falcao, Petrobras; B. Schmalhorst, T. Theloy, DEA Deutsche Erdool AG

0930 184665 Revolutionary Drilling Technology for Hard Rock Formations
M. Wiercigroch, S. Vaziri Hamaneh, M. Kapitaniak, University of Aberdeen

1000 184718 Real-Time Downhole Condition Monitoring Using Novel 3D Cuttings Sensing Technology
R. Han, University of Texas At Austin/Cmssm; P. Ashok, E. van Oort, The University of Texas at Austin G.A. Mullen, ConocoPhillips Co

1100 184717 New Optical Sensor System for Improved Fluid Identification and Fluid Typing During LWD Sampling Operations
A. Cartellieri, T. Kischkat, S. Sroka, M. Meister, Baker Hughes

1130 184688 Predicting Rotor-Stator Fit in Positive Displacement Motors (PDMs)
A. Alvarez, J. Boscan, Weatherford

1200 184662 New Gas-Tight (VO) Packoff Stage-Cementing Equipment Provides Reliable Solution for Wellbore Integrity and Significant Reduction in Rig Time
D.B. Farley, L. Urdaneta Nava, J. Jacob, S. Shaker, Weatherford; A.M. Khalilaf, Weatherford International Ltd.

Alternate 184722 Establishing the Optimal Placement of Friction Reduction Tools Using Torque and Drag Modelling in Conjunction with Downhole Recorded Measurements
S. Jones, Scout Downhole/Sanvean Technologies; J. Sugiura, Scout Downhole Inc

Alternate 184624 Integrated and Longest Directional Casing While Drilling Mitigates Hole Problems and Improves Drilling Performance While Saving Drilling Time
V. Radhakrishnan, Schlumberger; G. Hevia Garcia, D. Barrero Borge, N. Teratanatorn, CEC International Limited, Thailand Branch; F. Dwi Anggraini, D. Ian Pickup, C. Kongoun, C. Kongoun, Schlumberger

Alternate 184709 RFID Circulating Toe Sleeve (CTS)
K. Vazquez, Weatherford; E. Murdoch, Weatherford Completion Systems; A. Shuja, Weatherford

Alternate 184711 Characterization and Mitigation of Mud Motor Vibrations
A. Hohl, C. Herbig, Baker Hughes Solutions; H. Oueslati, Baker Hughes; H. Reckmann, Baker Hughes Inc; C. Hohl, Baker Hughes Inc.
# Technical Programme

## Directional Drilling Technical Session

**Session Chairperson(s):** Mohammad Al-Hattab, Saudi Aramco D&WO and John Clegg, APS Technology Inc.

Directional drilling in all its forms is continually evolving as new reservoir challenges and remote surface locations face us. In addition, wellbore profiles are playing a more important role, not only in the ability to drill further with more complex designs, but also in reducing costs over the life of the well. In this session, we have a selection of papers which encompass many aspects of this complex art form.

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<th>Time</th>
<th>Paper Id</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>1330</td>
<td>184654</td>
<td>Transformation of Mindset—Cost-Effective Collaborative Well Engineering &amp; Operation Delivers Record Horizontal Appraisal Well in the Barents</td>
<td>D.H. Breivik, G.H. Hollinger, P.A. Flytli, OMV (Norge) AS; C. Dupuis, Schlumberger; N. Lahlah, Y. Froeyland, OMV (Norge) AS; C.F. Hals, R. Rosales, I. Kartveit, Schlumberger</td>
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<tr>
<td>1430</td>
<td>184666</td>
<td>Reliable Mud-Pulse Telemetry System for High-Resolution Real-Time Logs</td>
<td>I. Ben Brahim, W. Emmerich, O. Akimov, Baker Hughes; A. Greten, Baker Hughes Solutions</td>
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<tr>
<td>1500</td>
<td>184647</td>
<td>Successful Application of a new Inertial Steering Mode of Point-the-Bit RSS in Middle East Field</td>
<td>A.A. Al-ghazzawi, Schlumberger Saudi Arabia; F. Li, M. Balka, Schlumberger</td>
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<tr>
<td>1530</td>
<td>184644</td>
<td>Quantification of Wellbore Collision Risk by Novel Analytic Methods</td>
<td>J. Bang, Gyrodata Inc.</td>
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<tr>
<td>1600</td>
<td>184651</td>
<td>Maximizing Extended Reach Drilling Efficiency With Unconventional Thinking</td>
<td>G. Hooff, Cenovus Energy Inc.; S.R. Hinke, Halliburton Energy Services Group</td>
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<td>Alternate</td>
<td>184639</td>
<td>Introduction of New Drilling Technology Provides Continuous High Build Rate Capability on a Complex ‘Corkscrew’ Well Trajectory, Accessing Unswept Reserves in the North Sea</td>
<td>S. Krueger, Baker Hughes; W. Attridge, Baker Hughes Solutions; R. Sharpe, Baker Hughes Ltd</td>
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<td>Alternate</td>
<td>184678</td>
<td>MWD Surveying Enhancement Techniques and Survey Management Workflows Applied at the Barents Sea Fields for Accurate Wellbore Positioning</td>
<td>L.C. Monterrosa, M.F. Rego, Schlumberger</td>
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<tr>
<td>Alternate</td>
<td>184617</td>
<td>The Effect of Survey Station Frequency on Wellbore Position Accuracy</td>
<td>J.M. Codling, G. Urdaneta, Halliburton</td>
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<td>Alternate</td>
<td>184620</td>
<td>The Value of High Definition Wellbore Surveys in an Arctic Land Environment</td>
<td>V. Bevzenko, C. Chatar, Schlumberger; M. Gorichka, A. Kuznetsov, Schlumberger D&amp;M; Z. Abzalov, Schlumberger</td>
</tr>
</tbody>
</table>
### Technical Programme

**Thursday, 17 March 2017 | 1330–1630**

**Advancements In Completion and Intervention Technology Lowers Well Costs Technical Session**

**Session Chairperson(s):** Thomas Gee, Weatherford and Jim McNicol, Archer

This session offers a broad range of Completion and Intervention Technologies that provide both greater safety in operations as well overall lower well costs. The presentations range from case studies, modeling/simulation and various breakthroughs in technology.

<table>
<thead>
<tr>
<th>Time</th>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400</td>
<td>184618</td>
<td>Modeling and Simulation of Annular Pressure Buildup (APB) in a Deepwater Wellbore with Vacuum-Insulated Tubing</td>
<td>Y. Kang, A.C. Gonzales, Z. Liu, R. Samuel, Halliburton</td>
</tr>
<tr>
<td>1430</td>
<td>184608</td>
<td>Reducing Well Costs and Extending Field Life With Intelligently Controlled Trilateral and Quadrilateral TAML Level-5 Multilaterals</td>
<td>M.C. Glaser, B. Butler, G. Liland, Halliburton</td>
</tr>
<tr>
<td>1500</td>
<td>184704</td>
<td>Subsea Installation of an Intervention-less Annular Safety Valve Reduces Operational time—A Case Study</td>
<td>E. Sirevag, Weatherford, Completion &amp; Production Systems; R. Torsteinb, Weatherford Completion &amp; Production Systems; E. Murdoch, Weatherford Completion Systems</td>
</tr>
<tr>
<td>1530</td>
<td>184636</td>
<td>Innovative Testing of Mills and Wellhead Freeze is Implemented on Offshore High Rate 10,000 psi Gas Well</td>
<td>R. Haymes Jr., ARAMCO; K. Imtiaz, Weatherford Oil Tool ME Ltd</td>
</tr>
<tr>
<td>1600</td>
<td>184642</td>
<td>A Breakthrough in Unconventional Completion Design: Geo-engineering Optimization</td>
<td>R.W. Fulks, S. Hughes, I. Geldmacher, Weatherford</td>
</tr>
</tbody>
</table>
## Technical Programme

**Thursday, 17 March 2017 | 1330–1630**

### Drilling Automation Technical Session

**Session Chairperson(s):** John de Wardt, DE WARDT & CO. and Robin Macmillan, National Oilwell Varco

Drilling automation is fast becoming one of the top technology advances in current times. DNV Technology Outlook 2025 stated “Automated drilling technology is expected to reduce drilling time and cost by 30–50% compared with a conventional rig making more wells economically feasible, enabling drilling of smaller targets and adding a higher number of infill production wells”. Companies are investing in specific applications as well as complete systems involving specifically designed rigs and fully integrated control systems. This session provides significant insight into these advances including an operator’s perspective on the necessary collaboration and a closed loop system using downhole data to drive surface machinery. The session adds further insight with transitioning the directional driller from the rig site, alarm management, improving bottom hole pressure control and an advanced system for displaying torque and drag for the driller to improve performance.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>1330</td>
<td>Development to Delivery—A Collaborative Approach to Implementing Drilling Automation</td>
<td>R.R. Israel, H. Walker, J. Farthing, BP; C. Vahle, KCA Deutag Drilling GmbH; R. Gallo, J. Bryant, Schlumberger</td>
</tr>
<tr>
<td>1400</td>
<td>World First: “Closed-loop Down-hole Automation” Combined With Surface “Process Controller” Provides Integrated Drilling Automation In The Permian Basin</td>
<td>A.P. Pink, National Oilwell Varco; B. Facker, NOV; R.J. Hanford, National Oilwell Varco</td>
</tr>
<tr>
<td>1430</td>
<td>Transitioning the Directional Driller Off the Rig</td>
<td>G. Hildebrand, Schlumberger Limited; A.M. Torre, J.C. Hopewell, Precision Drilling Corporation; L. Olesen, Pason Systems</td>
</tr>
<tr>
<td>1500</td>
<td>Pragmatic Analytics of Control System Alarms for Improved Drilling Performance and Equipment Maintenance</td>
<td>C.A. Goetz, J. Keeble, Kingston Systems LLC</td>
</tr>
<tr>
<td>1530</td>
<td>Improved Bottomhole Pressure Control with Wired Drillpipe and Physics-Based Models</td>
<td>J. Park, T.R. Webber, Brigham Young University; R. Asgharzadeh Shishavan, National Oilwell Varco; J. Hedengren, Brigham Young University</td>
</tr>
<tr>
<td>1600</td>
<td>A Synchronized Rigsite-to-Office Approach to the Management of Automated Torque and Drag Data</td>
<td>R.J. Borjas, A.A. Perdomo, A. Creegan, National Oilwell Varco</td>
</tr>
<tr>
<td>Alternate</td>
<td>Experimentally Validated First-Principles Multivariate Modelling for Rheological Study and Design of Complex Drilling Nanofluid Systems</td>
<td>S. Reilly, University of Edinburgh; Z. Vryzas, V.C. Kelessidis, Texas A&amp;M University At Qatar; D. Gerogiorgis, University of Edinburgh</td>
</tr>
<tr>
<td>Alternate</td>
<td>Saving a Hole Section Through Real-Time Wellbore Stability Analysis</td>
<td>O. Odunlami, WEATHERFORD INTERNATIONAL; C.M. Amoroch, Weatherford International Ltd.</td>
</tr>
</tbody>
</table>
General Information

**Badge Collection**
Your name badge and registration materials (including the conference proceedings) should be collected from the SPE or IADC exhibition stands. Conference badges and materials will not be mailed in advance. Please be prepared to show photo ID (Passport or drivers licence) to collect your conference badge.

**Registration Times**
- Monday, 13 March 1400–1900
- Tuesday, 14 March 0700–1900
- Wednesday, 15 March 0700–1800
- Thursday, 16 March 0700–1630

**Proceedings**
One copy of the conference proceedings is included in the full conference registration fee. Additional copies of the Proceedings can be ordered online.

**Welcome Reception**
A welcome reception will take place on Tuesday, 14 March from 1715–1830 in the exhibition hall.

**Luncheons**
Exhibitor and delegate luncheons will be served in the exhibition hall during the conference. Lunch is included in the full conference registration fee. Additional lunch tickets can be purchased onsite.

**Coffee Breaks**
All coffee breaks will take place in the exhibition hall. On Thursday afternoon coffee will be available outside the session rooms as there is no scheduled break.

**Joining Instructions**
Joining Instructions will be sent to all registered attendees approximately four weeks prior to the event. These contain general local and event information which you may find useful. If you have not heard from us one week before the event, please contact SPE London office by emailing formslondon@spe.org.

**Knowledge Sharing ePoster Sessions**
The programme committee are continuing an SPE initiative for ePoster presentations to promote discussion and interaction among the author and participants. The intent is to share best practices and encourage networking. The knowledge sharing ePoster session will be open during coffee breaks and lunches on each day of the event.

**Audio Visual Copyright**
Technical sessions are protected by copyright laws. Attendees are not permitted to record (via phone, camera, or any other recording device) the presentations made during this conference.

**Conference Venue**
World Forum, the Hague
Churchillplein 10
2517 JW The Hague
The Netherlands

For Directions on how to access the conference website please visit:
http://www.worldforum.nl/the-hague/accessibility

**Accommodation**
SPE/IADC has secured preferential rates at the onsite 
Novotel Den Haag World Forum Hotel
Johan de Wittlaan 42-44 2517 JW Den Haag,
The Netherlands
(+31)70/2039004

**Superior room:** Double bed and a sofa bed, single occupancy.
**Rate:** EUR 139
Rooms include breakfast, free Wi-Fi, 24 hours service. Please note rates do not include city tax.

**Sustainability Statement**
SPE 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 cores values in keeping with those of the oil and gas industry.
Sponsorship

This prestigious event provides an excellent platform to maximise your exposure and showcase new technologies, products and services.

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- Establish itself as a leading player within the E&P sector
- Align itself with the key issues facing the upstream oil and gas industry
- Associate itself with a leading speaker programme
- Raise its profile through a targeted marketing campaign directed at thousands of oil and gas professionals

Exhibiting

Gain more exposure for your company and brand by exhibiting at this leading industry event. The exhibition will run concurrently with the technical conference and will be the location for all refreshment breaks, delegate lunches and the conference drinks reception.

Being part of this renowned event allows you to:

- Showcase your advanced technologies, key services and expertise
- Personally interact with potential and current customers
- Acquire valuable sales leads and customer feedback

Space Only Rate: EUR 460 per square metre (minimum booking is 36 sq metre)

Stand Package Rate: EUR 575 per square metre (minimum booking is 9 sq metres)

Contact Information

For further information about sponsorship or advertising opportunities at the SPE/IADC Drilling Conference and Exhibition 2017, contact:

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Tel: +44 (0)207 299 3300
Fax: +44 (0) 207 299 3309
Email: dguest@spe.org
Registration

Registration Prices

The registration fee includes: attendance at the conference sessions and technical and poster displays, a copy of the conference proceedings, coffee break refreshments and lunches and attendance at the welcome reception on Tuesday, 14 March 2017.

<table>
<thead>
<tr>
<th>Full Registration</th>
<th>Fee Per Person</th>
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<tbody>
<tr>
<td></td>
<td>By 17 January (excluding 21% VAT)</td>
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<tr>
<td>SPE or IADC Member</td>
<td>EUR 834</td>
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<tr>
<td>Non-Member</td>
<td>EUR 930</td>
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<tr>
<td>Author/Speaker/Committee/Session Chair</td>
<td>EUR 738</td>
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<tr>
<td>Student (with valid college ID only, does not include luncheons or proceedings)</td>
<td>EUR 152.46</td>
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<td>Exhibition Only (does not include technical sessions, luncheons or proceedings)</td>
<td>EUR 120</td>
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<td>Exhibition Only Non-Members (does not include technical sessions, luncheons or proceedings)</td>
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<th>DSATS – Monday, 13 March</th>
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<td>EUR 40.40</td>
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<td>EUR 30.25</td>
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Refunds

Cancellations must be submitted in writing to the London SPE office before 17 January 2017 in order for you to receive a refund. Cancellations prior to 17 January will receive a refund less a EUR 50 handling fee. Cancellations received on or between 17 January and 13 February, inclusive, will receive a 50% refund. For cancellations after 13 February, no refunds will be paid although substitutions can be made.