

# **Offshore Technology Conference 2011**

**(OTC 2011)**

**Houston, Texas, USA  
2-5 May 2011**

**Volume 1 of 4**

**ISBN: 978-1-61782-866-9**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2011) by the Offshore Technology Conference  
All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact the Offshore Technology Conference  
at the address below.

Offshore Technology Conference  
222 Palisades Creek Drive  
Richardson, Texas, USA 75080-2040

Phone: (972) 952-9494  
Fax: (972) 952-9435

[service@otcnet.org](mailto:service@otcnet.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## VOLUME 1

<b>OTC 21092 “Workhorse Rigs”, Tailor-made for Production Drilling at Existing Mature Fields on the Norwegian Continental Shelf</b> .....	1
<i>Geir Ove Eikill</i>	
<b>OTC 21093 Statoil’s Experience Delivery of MODU Newbuilt Projects</b> .....	13
<i>Espen Jørgensen, Geir Ove Eikill</i>	
<b>OTC 21115 Advances in Swab-Surge Modeling for Managed Pressure Drilling</b> .....	19
<i>Wilson Chin, Xiaoying Zhuang</i>	
<b>OTC 21125 Case Study on Polymer Gel to Control Water Coning for Horizontal Well in Offshore Oilfield</b> .....	52
<i>Dai Caili, You Qing, Xie Yuhong, He Long, Cui Ya, Zhao Fulin</i>	
<b>OTC 21128 Development and Testing of a Non-interlocked Hoop Strength Layer for Unbonded Flexible Pipe</b> .....	66
<i>Mark Kalman, Liang Yu, Duane Moosberg, Donald W. Johnson</i>	
<b>OTC 21130 Saudi Arabia’s Long Term Injectivity Test in a Field Characterized by a Tar Mat Zone Strives to Unlock Higher Reservoir Potential</b> .....	77
<i>James O. Arukhe, Mubarak Al Dhufairi, Saleh Al Ghamdi, Badr Harbi, Paul R. Docherty</i>	
<b>OTC 21131 End-fire Vertical Marine Seismic Source Array</b> .....	91
<i>Bibi C. Kerekes</i>	
<b>OTC 21140 Fatigue Life Extension by Ultrasonic Peening for Offshore Structures: As-built Weld Quality and Overloads during Remaining Service Life</b> .....	107
<i>Luis Lopez Martinez, Malcolm Hedmar</i>	
<b>OTC 21141 Two Years After First Oil Paraffin and Scale Flow Assurance Management – Lessons Learned</b> .....	118
<i>Jonathan J Wylde</i>	
<b>OTC 21151 An Integrated Approach to Selecting and Optimizing Demulsifier Chemical Injection Points using Shearing Energy Analysis: A Justification for Downhole Injection in High Pressured Well</b> .....	131
<i>Adekunle Opawale, Samuel Osisanya, Appah Dulu, Solomon Otakoro</i>	
<b>OTC 21152 Optimizing Pressure Differential to Improve the Recovery of Viscous Oil</b> .....	144
<i>Chunming Zhao, Lizhen Ge, Yanchun Su, Liwen Fang, Qinghong Yang, Tingli Li</i>	
<b>OTC 21166 Continuous Energy Efficiency and Green House Gas Emission Surveillance and Control</b> .....	152
<i>Ron Cramer, K. C. Goh, Mahesh Iyer, Nnamdi Wali, Bill Spence, Guus Kessler, Roy Kantan</i>	
<b>OTC 21176 Regulatory Issues on Safety and Structural Assurance of Offshore Wind Farms on the OCS</b> .....	162
<i>Malcolm Sharples</i>	
<b>OTC 21179 Advances in Pipe-soil Interaction Methodology and Application for SCR Fatigue Design</b> .....	173
<i>P. P. Sharma, C. P. Aubeny</i>	
<b>OTC 21188 Surface and Subsurface Requirements for Successful Implementation of Offshore Chemical Enhanced Oil Recovery</b> .....	184
<i>Kirk Raney, Subhash Ayirala, Robert Chin, Paul Verbeek</i>	
<b>OTC 21189 6,000 Foot Submersible</b> .....	200
<i>C. Clifford Ness; John Ringelberg, William M. Simpson Jr.</i>	
<b>OTC 21204 Field Pilot of Subsea Equipment Installation in Deep Water using Fibre Rope in Two-fall Arrangement</b> .....	208
<i>Sverre Torben</i>	
<b>OTC 21208 Managed Pressure Drilling Applications on Offshore HPHT Wells</b> .....	218
<i>Don Hannegan</i>	
<b>OTC 21209 Technical Challenges and Success for Rigid Pipeline with PLET, Jumper and Flying Leads Installation in Conger 9 Field</b> .....	233
<i>Jun Wang, Rune Krister Hagen, Ecaterina Radan, Jack Bullock</i>	
<b>OTC 21210 Genesis Pipeline Crawlers: Piggings the Unpiggable</b> .....	244
<i>Andy Kenney</i>	
<b>OTC 21212 Engineered Nanoparticles as Harsh-Condition Emulsion and Foam Stabilizers and as Novel Sensors</b> .....	257
<i>Tiantian Zhang, David A. Espinosa, Ki Youl Yoon, Amir R. Rahmani, Haiyang Yu, Federico M. Caldelas, Seungyup Ryoo, Matthew R. Roberts, Masa Prodanovic, Keith P. Johnston, Thomas E. Milner, Steven L. Bryant, Chun Huh</i>	

<b>OTC 21215 Integrity Management: From Design to Decommissioning Through IMMR for Floating Units</b> .....	272
<i>Mireille Franco, Jean Marc Cholley</i>	
<b>OTC 21226 Roncador P-52 Hybrid Riser Review: Key Concepts, Construction and Installation Challenges</b> .....	281
<i>V. C. Mello, V. T. Lacerda, M. M. Paixão, C. V. Ferreir, M. G. G. Morais</i>	
<b>OTC 21227 Wooden Shipwrecks of the Central and Western Gulf of Mexico</b> .....	292
<i>Robert L. Gearhart II</i>	
<b>OTC 21228 Emergency Pipeline Repair Equipment: Site Integration Tests and Post SIT Engineering</b> .....	306
<i>Armando Rebello, Ray Ayers, Randy Long</i>	
<b>OTC 21230 The Safety and Environmental Management System Rule</b> .....	311
<i>I. S. Sutton</i>	
<b>OTC 21231 Influencing and Shaping HSE Policy and Practice in Joint Ventures</b> .....	320
<i>Carl A. Robertson, D. A. Tuan, Martin W. Iversen</i>	
<b>OTC 21232 Panel: Gas to LNG - Global Trends &amp; Projects</b> .....	328
<i>Neil Kavanagh, Buford Pollett</i>	
<b>OTC 21237 Flow Assurance for Deep Ocean Mining – Pressure Requirement Through S-Shape Riser and Jumper</b> .....	329
<i>Thomas Parenteau, Antoine Lemaire</i>	
<b>OTC 21239 Bottom Current Extremes in the Deep Central Gulf</b> .....	339
<i>Cortis Cooper</i>	
<b>OTC 21244 CPT for Soft Sediments and Deepwater Investigations</b> .....	349
<i>R. Boggess, P. K. Robertson</i>	
<b>OTC 21248 Robust Phenomenological Model for Simulation of Transient Wax Gelation in Submarine Pipelines</b> .....	363
<i>Guillermo G. Miche, Faruk Civan</i>	
<b>OTC 21249 SAFEBUCK JIP - Observations of Axial Pipe-soil Interaction from Testing on Soft Natural Clays</b> .....	379
<i>D. J. White, S. A. Ganesan, M. D. Bolton, D. A. S. Bruton, J-C. Ballard, T. Langford</i>	
<b>OTC 21250 Criteria for the Operation of Lowering a Structure to the Seabed Based on the Installation Vessel Motion</b> .....	408
<i>Jean-Luc Legras, Jue Wang</i>	
<b>OTC 21252 Lophelia II Wreck Component: A Preliminary Archaeological Discussion</b> .....	414
<i>Daniel J. Warren, Robert A. Church, Robert F. Westrick</i>	
<b>OTC 21253 Understanding Engineering Challenges Posed by Natural Hydrocarbon Infiltration and the Development of Authigenic Carbonate</b> .....	424
<i>Stephen Thomas, Michael Clare, James Shreeve, Stéphan Unterseh</i>	
<b>OTC 21255 A Simple Model for Hydrodynamic Slug Flow</b> .....	439
<i>Thomas J. Danielson</i>	
<b>OTC 21256 Centrifuge Modeling of Glide Block and Out-runner Block Impact on Submarine Pipelines</b> .....	450
<i>Arash Zakeri, Ken Chi, Bipul Hawlader</i>	
<b>OTC 21259 MEIDP - The Deep Sea Gas Route to India</b> .....	459
<i>I. F. J. Nash, P. Roberts</i>	
<b>OTC 21260 Full-Scale Physical Modeling of Pipeline Instability on a Sloping Seabed</b> .....	474
<i>F. P. Gao, J. Cao, X. T. Han, Y. Sha, E. Y. Zhang, Y. X. Wu, J. S. Cui</i>	
<b>OTC 21262 Evaluation of the Effects of CO<sub>2</sub> Partial Pressure on the Corrosion Fatigue Behavior of Flexible Pipe Tensile Armor Wire</b> .....	481
<i>Fabio Santos, Fabio Pires, Richard Clements, Judimar Clevelario, Terry Sheldrake, Luís Felipe Guimarães Souza, Paulo Pedro Kenedi</i>	
<b>OTC 21267 Management of Hybrid Riser Towers Integrity</b> .....	490
<i>Jean-Luc Legras, Jean-François Saint-Marcoux</i>	
<b>OTC 21271 Lessons Learned on the Design and Construction of Hybrid Riser Towers</b> .....	499
<i>Jean-François Saint-Marcoux, Jean-Luc Legras</i>	
<b>OTC 21275 Innovative KHI Polymers for Gas Hydrate Control</b> .....	506
<i>Jun Zheng, Osama M. Musa, Cuiyue Lei, Yi Zhang, Marc Alexandre, Scott Edris</i>	
<b>OTC 21277 Reinventing Deepwater Exploratory Testing</b> .....	518
<i>Micah Garrison, Morris Cox, Brad Clarkson</i>	
<b>OTC 21279 Fatigue Crack Growth Performance of Sour Deepwater Riser Welds in the Near-Threshold Regime</b> .....	529
<i>Colum M. Holtam, David P. Baxter</i>	

<b>OTC 21283 Rapid Gas Decompression Issues in Subsea Boosting Systems</b> .....	541
<i>Norman W. Ritchie, Robert J. Rivera</i>	
<b>OTC 21285 Global LNG and the Growth of Mid-Markets - A Catalyst for the Early Commercialisation of Floating Liquefaction Technologies</b> .....	550
<i>Joe T. Verghese</i>	
<b>OTC 21291 Offshore Monitoring Campaign on Installation of Suction Piles in Deep Water Fields</b> .....	561
<i>J. P. De Vries, J. Van Drunen, R. Van Dijk, R. Zoontjes</i>	
<b>OTC 21292 Methodology to Define Design Motion Criteria for Performance of Floating LNG Process Facilities</b> .....	575
<i>T. Terashima, K. Shimada, Y. Ichimaru, Y. Orimo</i>	
<b>OTC 21294 Gas Hydrate Occurrences and Seafloor Deformation: Investigation of Strain-softening of Gas-hydrate Bearing Sediments and Its Consequence in Terms of Submarine Slope Instabilities</b> .....	582
<i>N. Sultan, S. Garziglia, J.-L. Colliat</i>	
<b>OTC 21300 The 2<sup>nd</sup> Generation DC All-Electric Subsea Production Control System</b> .....	600
<i>Daniel Abicht, Jan Van Den Akker</i>	
<b>OTC 21301 Prediction of Formation Pore Pressures for Tophole Well Integrity</b> .....	608
<i>J. Peuchen, M. Klein</i>	
<b>OTC 21309 FPSO Side Shell Impact Protection</b> .....	622
<i>James Bond, Angelo Ferro, Stephen Kennedy</i>	
<b>OTC 21311 Ranking ‘White space’ Frontier Regions – An Arctic Example Illustrating the Power of Integrating Plate Tectonic Reconstructions into Regional Evaluations</b> .....	652
<i>Peter Winefield, Gary S. Steffens, Steven Bergman, Andrew Bishop, Mario Wannier, Michael Dimarco, Cees Van Oosterhout, Malcom Ross, Edith Hafkenscheid</i>	
<b>OTC 21317 Studying the Effect of Chemical Aging on the Properties of a Shape Memory Material</b> .....	657
<i>Jiaxiang Ren, David Gerrard, Jim Goodson</i>	
<b>OTC 21318 A New High-Strength, Corrosion-Resistant Alloy for Oil and Gas Applications</b> .....	666
<i>Lee M. Pike, Paul E. Manning, Edward L. Hibner</i>	
<b>OTC 21322 ROV: Improving Remotely Operated(ROV) Intervention Capabilities for Blowout Preventer Override Systems</b> .....	677
<i>John Edward Davis</i>	
<b>OTC 21324 Introduction to Remote Operated Vehicle Assisted Subsea Sampling</b> .....	681
<i>Christopher Mancini, Joshua Turnbull</i>	
<b>OTC 21336 An Evaluation of Critical Success Factors in Deepwater Oil &amp; Gas Project Portfolios in Nigeria</b> .....	685
<i>Engr Damiebi Denni-Fiberesima, Nazatul Shima Abdul Rani</i>	
<b>OTC 21338 Design of the World’s Deepest Hybrid Riser System for the Cascade &amp; Chinook Development</b> .....	700
<i>Ruxin Song, Pascal Streit</i>	
<b>OTC 21346 World First Submerged Testing of Subsea Wet Gas Compressor</b> .....	717
<i>Tor Willgohs Knudsen, Nils Arne Sølvik</i>	
<b>OTC 21359 HyReQ: High Recovery Crude and Condensate Stabilization Process</b> .....	731
<i>A. Jothy, B. L. Ooi, W. L. Hum</i>	
<b>OTC 21362 Reservoir Management Makes a Marginal Field Fruitful in Bohai</b> .....	745
<i>Lizhen Ge, Qinghong Yang, Liwen Fang, Chunming Zhao, Xinwu Liao, Wei Qin, Yuxia Xu, Tingli Li, Dayong Cheng, Kaijun Tong</i>	
<b>OTC 21368 A Fluid-pipe-soil Approach to Stability Design of Submarine Pipelines</b> .....	762
<i>Jay Ryan, Dean Campbell, David White, Eric Jas</i>	
<b>OTC 21371 New Anti H<sub>2</sub>S Layer for Flexible Pipes</b> .....	775
<i>T. Epsztein, F. Demanze, X. Lefebvre, J. Jarrin</i>	
<b>OTC 21378 Hydrostatic Collapse of Deepwater Pipelines: A Rigorous Analytical Approach</b> .....	785
<i>F. Guarracino, M. Fraldi, Richard Freeman, Simon Slater</i>	
<b>OTC 21382 Marginal Fields: Technology Enables Profitability / Marginal Fields and their Challenges</b> .....	803
<i>Samuel Husy</i>	
<b>OTC 21384 PETROBRAS Experience on Water Management for Brown Fields</b> .....	810
<i>G. C. Nunes, L. S. Figueiredo, M. V. Melo, E. B. L. Junior, R. H. Motta, R. C. B. Lage</i>	
<b>OTC 21387 Aging Impact on Thermal Performance of the Aspen Wet Insulated Flowlines</b> .....	820
<i>Weihong Meng, Daniel Shields</i>	

## VOLUME 2

<b>OTC 21394 A Novel Gas/Liquid Separator to Enhance Production of Deepwater Marginal Fields</b> .....	827
<i>Roberto Di Silvestro, Stephanie Abrand, Sadia Shaiek, Nicolas Butin, Xavier Riou, Marie Kathleen Decrin</i>	
<b>OTC 21395 Installing the World's Deepest FSHR's, for the GOM Cascade &amp; Chinook Development</b> .....	844
<i>Gordon Reitze, Richard Mandeville</i>	
<b>OTC 21396 Evaluation Qualification of Electrical Heat Trace Pipe In Pipe for a SS Flow Line and Selection for an Application on a Subsea Field in UK, ISLAY</b> .....	858
<i>Herve De Naurois, Dominique Delaporte, Marc Helingoe, Hugues Greder</i>	
<b>OTC 21400 An Evaluation of the Fatigue Performance of Subsea Wellhead Systems and Recommendations for Fatigue Enhancements</b> .....	869
<i>John T. Evans, John McGrail</i>	
<b>OTC 21402 Changes of Operating Procedures and Chemical Application of A Mature Deepwater Tie-back – Aspen Field Case Study</b> .....	881
<i>Weihong Meng, Paul Ogea, Mike King</i>	
<b>OTC 21409 The Risk Based Approach Applied To Produced Water And Its Consequences For Both PW And Offshore Chemicals</b> .....	893
<i>E. Garland</i>	
<b>OTC 21414 Understanding the Effects of Deep-Sea Conditions on Seafloor Massive Sulfide Deposits Crushing Process</b> .....	899
<i>Benoît Waquet, Donald Faulds, Ali Benbia</i>	
<b>OTC 21417 Testing and Qualification of a New Multiphase Flow Simulator</b> .....	910
<i>Thomas J. Danielson, Kris M. Bansal, Biljana Djoric, Emmanuel Duret, Stein Tore Johansen, Oyvind Hellan</i>	
<b>OTC 21423 Conceptualization, Conversion, Integration &amp; Commissioning of Gulf of Mexico First Ship Shape DP FOL</b> .....	927
<i>Majid Al-Sharif, Tony Owen</i>	
<b>OTC 21424 Phoenix Subsea Field Development: Challenges, Lessons Learned and Successes</b> .....	940
<i>Chris A. Sutherland, J. P. Macklin</i>	
<b>OTC 21425 The Development of the Regulatory Compliance Scheme for the Gulf of Mexico's First Ship-Shaped DP Floating Production Unit (FPU)</b> .....	944
<i>Steve Scanio</i>	
<b>OTC 21426 Floating Regasification Terminals - Selection &amp; Marinisation of Regasification Equipment for Offshore Use</b> .....	950
<i>H. Kelle, Y. J. Wong, J. Schlatt</i>	
<b>OTC 21428 Topsides Facilities Design and Module-to-Vessel Interface</b> .....	963
<i>Jay Chen, Chris Hartmann, Bryan Margo, Tony Owen</i>	
<b>OTC 21431 Blade Inspection Guidance for Offshore Wind Turbine Facilities</b> .....	976
<i>Robert E. Sheppard, Frank J. Puskar, Chris Waldhart</i>	
<b>OTC 21433 Analysis of Risers and Umbilicals for Disconnectable System – Challenges and Techniques</b> .....	982
<i>Mark Dixon, Majid Al-Sharif, Tim Krasin</i>	
<b>OTC 21434 Gulf of Mexico's First Ship Shape FPU: Overview of the Global Strength Analysis</b> .....	989
<i>Majid Al-Sharif, Partha Chakrabarti, Kaushik Bose</i>	
<b>OTC 21439 A Fully Integrated Solution for the Geotechnical Drilling and Sampling of Seafloor Massive Sulfide Deposits</b> .....	998
<i>Allan Spencer, Bernard Remmes, Ian Rowson</i>	
<b>OTC 21442 Low Dosage Hydrate Inhibitors (LDHI): Advances and Developments in Flow Assurance Technology for Offshore Oil and Gas Productions</b> .....	1018
<i>Jun Tian, Cheryl Bailey, Jacques F. Fontenot, Michael Nicholson</i>	
<b>OTC 21443 Seafloor Production Tools for the Resources of the Future</b> .....	1039
<i>Nick Ridley, Simon Graham, Stef Kapusniak</i>	
<b>OTC 21450 Protection and Management of Submerged Cultural Resources in Texas Waters</b> .....	1045
<i>Amy A. Borgens</i>	
<b>OTC 21452 Stochastic Optimization and Uncertainty Analysis for E&amp;P Projects: A Case in Offshore Gas Field Development</b> .....	1054
<i>Amin Etehad, Christopher J. Jablonowski, Larry W. Lake</i>	
<b>OTC 21453 Persistent Unmanned Surface Vehicles for Subsea Support</b> .....	1069
<i>J. E. Manley, G. Hine</i>	
<b>OTC 21454 A Successful Story of Integration Geological Characterization, Reservoir Simulation, Assisted History Matching and EOR in a Giant Fractured Granite Basement: A Road Map to Maximize Recovery in Unconventional Reservoirs</b> .....	1077
<i>Cuong T. Q. Dang, Zhangxing Chen, Ngoc T. B. Nguyen, Wisup Bae, Thuoc H. Phung, Chao Dong</i>	

<b>OTC 21456 Safety Case - A Perspective</b> .....	1089
<i>Jan Reier Huse</i>	
<b>OTC 21467 Pressure Tolerant Power Electronics for Deep and Ultra-Deep Water</b> .....	1093
<i>R. Pittini, M. Hernes, A. Petterteig</i>	
<b>OTC 21471 Coating Technology Improves Project Predictability and Lowers Costs for FPSO Conversion Projects</b> .....	1103
<i>Joao Azevedo</i>	
<b>OTC 21475 New Certification Procedures for Offshore Mooring Fiber Ropes</b> .....	1121
<i>I. S. Hogsæet, T. J. Paulsen</i>	
<b>OTC 21476 Successful Design and Practices Shaping Up a Robust HPHT Well Completion Concept for Subsea-Horizontal Wells</b> .....	1127
<i>Eko A. Y. Fitnawan, Stein Hovland, Berit S. Schiefloe, Katrine A. Moller</i>	
<b>OTC 21477 Development of a New, Low Plasticized, PVDF for Monolayer Dynamic Applications in Flexible Pipes</b> .....	1146
<i>S. Chicheportiche, F. Demanze</i>	
<b>OTC 21479 Offshore Gas Terminals – Guidance on Design and Construction</b> .....	1153
<i>Conn Fagan</i>	
<b>OTC 21480 Cultural and Archaeological Resource Studies on the Atlantic Outer Continental Shelf - Balancing Development with Preservation</b> .....	1169
<i>Brian Jordan</i>	
<b>OTC 21485 Three Wind Turbines on One Floating Unit, Feasibility, Design and Cost</b> .....	1173
<i>Marc Lefranc, Anders Torud</i>	
<b>OTC 21487 Reelable Cost Effective and Enabling Pipeline Technologies</b> .....	1182
<i>Sylvain Denniel, Tomasz Tkaczyk, Daniel Smith</i>	
<b>OTC 21490 Qualification Testing Of Flexible Pipes For 3000m Water Depth</b> .....	1198
<i>Fabrice Bectarte, Philippe Secher, Antoine Felix-Henry</i>	
<b>OTC 21491 GIS Development for Geophysical and Geotechnical Data Integration: Application to West Africa Geohazard Assessment</b> .....	1208
<i>G. Dan-Unterseh, J. Courtaud, A. McNeill, E. Blancart</i>	
<b>OTC 21496 Wireline Dual-Packer Formation Testing Operations in Fractured Basement: A Case Study from the West Coast Offshore India</b> .....	1214
<i>Rajesh Kr. Singh, Viraj Nangia, James Jennings Dunlap, Arnab Ghosh, Dipanka Behari Roy, Theodore Klimentos, Shyamal Bhattacharya, Pradeep Kr. Sood, Ashwini Kr. Agrawal</i>	
<b>OTC 21498 Integrated Design Based 6<sup>th</sup> Generation Deepwater Drillships – Design &amp; Engineering, Construction, Commissioning &amp; System Integration Testing and Sea Trials</b> .....	1223
<i>L. C. Claassen, Y. C. Lee, S. M. Hendriks, Rakesh Kumar</i>	
<b>OTC 21499 TTS - The Systematic and Efficient Approach to Define, Maintain and Demonstrate Safety Performance on Complex Hydrocarbon Processing Facilities</b> .....	1240
<i>Frank Firing, Erik Ostby, Johan Ingvarson, Oyvind Strom</i>	
<b>OTC 21501 The Challenges of Developing and Operating an Underwater Mine</b> .....	1250
<i>S G Searle, H D Smit</i>	
<b>OTC 21503 New Impander Technology for Improved Collapse Resistance of Large Diameter Pipe for Deepwater Applications</b> .....	1257
<i>T. Reichel, V. Pavlyk, J. Beissel, S. Kyriakides, W.-Y. Jang</i>	
<b>OTC 21504 Marine Archaeology Around the World: The Legal Aspect</b> .....	1265
<i>Kimberly L. Faulk, Laura A. Landry</i>	
<b>OTC 21505 Marine Archaeology in Alaska - An Overview</b> .....	1271
<i>Kimberly L. Faulk</i>	
<b>OTC 21506 Build-up Construction in Salt Formations</b> .....	1279
<i>Renato Amaro, Clemente José De Castro Gonçalves, Humberto De Lucena Lira, José Luiz Falcão, Rosana Fátima Teixeira Lomba, Elisa Lage Modesto Alcofra</i>	
<b>OTC 21509 CFD Modelling of Hydrate Formation in Oil-dominated Flows</b> .....	1287
<i>Simon Lo</i>	
<b>OTC 21510 SAFEBOCK JIP: Critical Aspects of the Fatigue Limit State for Pipelines Designed to Laterally Buckle</b> .....	1294
<i>D Baxter, P Tubby</i>	
<b>OTC 21515 Deep-water Archaeological AUV Surveys and Photo Capabilities</b> .....	1305
<i>Robert A. Church, Robert F. Westrick, Daniel J. Warren</i>	
<b>OTC 21516 Development and Testing of a Hybrid Boosting Pump</b> .....	1314
<i>Christian Abelsson, Haege Busland, Rune Henden, Gunder Homstvedt, Tarje Olderheim, Tommy Westberg</i>	
<b>OTC 21520 Angola LNG Nearshore Pipeline Bundle Pull Construction and Installation</b> .....	1323
<i>Lee Warren, Dominique Pelloux, Francois Semel, Regis Wallerand</i>	

<b>OTC 21522 Shallow Hazard Seismic Cube: A Decision Pathway for the Optimization of the Processing Sequence</b> .....	1334
<i>C. Saint-André, E. Cauquil, B. Paternoster</i>	
<b>OTC 21524 Outcomes from the SureFlex Joint Industry Project – An International Initiative on Flexible Pipe Integrity Assurance</b> .....	1340
<i>Patrick O’Brien, Chris Overton, John Picksley, Keith Anderson, Ian Macleod, Euan Meldrum</i>	
<b>OTC 21527 Effectiveness of Passive Heave Compensation in a Deepwater Environment</b> .....	1349
<i>Barry Presley, Sotirios Koutsoukos</i>	
<b>OTC 21531 JBF Arctic - A Mobile Offshore Drilling Unit with High Performance in Ice Covered Waters and in Open Seas</b> .....	1357
<i>Alexei Bereznitski, David Roodenburg</i>	
<b>OTC 21532 A Feature Oriented Regional Modeling System for the North Brazil Current Rings Migration after Retroflexion</b> .....	1366
<i>A. C. K. Schmidt, P. Brickley, A. Gangopadhyay, M. Cadwallader, N. Sharma, C. Nobre, P. Coholan, J. Feeney</i>	
<b>OTC 21536 Asset Integrity Management - From General Requirements to Subsea Facilities: Total Block 17 Experience</b> .....	1383
<i>A. Rocher, C. Perrollet, K. Muir</i>	
<b>OTC 21537 How Good Seismic Resolution Needs To Be For Detecting Thin Beds?</b> .....	1393
<i>B. Paternoster, E. Cauquil, C. Saint-André</i>	
<b>OTC 21538 GIS Technology Development for Sediment Characterization of Angolan Deepwater Soil Conditions</b> .....	1398
<i>M. Hamon, P. Enjaume, K. Epalanga, B. Mackenzie</i>	
<b>OTC 21541 Interventionless Packer Setting Devices and Their Roles</b> .....	1407
<i>Stephen Bisset</i>	
<b>OTC 21546 Using Tomographic Seismic Velocities to Understand Subsalt Overpressure Drilling Risks in the Gulf of Mexico</b> .....	1412
<i>L. D. Den Boer, C. M. Sayers, S. Noeth, A. Hawthorn, P. J. Hooyman, M. F. Smith</i>	
<b>OTC 21547 A Combined Multiphase and Wetgas Meter with In-Situ Sampling of Fluid Properties</b> .....	1426
<i>Arnstein Wee, Lars Farestvedt</i>	
<b>OTC 21551 Design of Deepwater Tower Riser for West of Africa Application</b> .....	1449
<i>Jing Cao</i>	
<b>OTC 21553 CFD Thermal Analysis of Subsea Equipment and Experimental Validation</b> .....	1463
<i>Yaojun Lu, Egidio Marotta, H. Brian Skeels</i>	
<b>OTC 21556 Petrotechnical Visualization</b> .....	1475
<i>Frank Love, Kevin Bradford, Paul Thow, Alison Henning, John Lyons, Katya Casey, Jamie Patrick-Maxwell</i>	
<b>OTC 21559 Dredging Technology for Deep Sea Mining Operations</b> .....	1477
<i>P. M. Vercruijsse, H. Van Muijen, S. N. Verichev</i>	
<b>OTC 21561 Standardized Test Cell Design Using Qualified Analytical Computer Modeling of Unplanned High Pressure Releases</b> .....	1487
<i>Michael L. Mann, Kairy Otero, David R. Wiczorek, H. Brian Skeels</i>	
<b>OTC 21566 High Active, Dispersion Based Paraffin Inhibitors for Subsea Applications</b> .....	1497
<i>Martijn C. Huijgen, Herman F. Grondman, Hans J. Oschmann</i>	
<b>OTC 21569 “CPT Stinger” - An Innovative Method to Obtain CPT Data for Integrated Geoscience Studies</b> .....	1509
<i>A. G Young, B. B. Bernard, B. D. Remmes, L. V. Babb, J. M. Brooks</i>	
<b>OTC 21571 Solution to Design Challenges and Selections of Wind Turbine Installation Vessels</b> .....	1519
<i>Jenny Yan Lu, Santhosh Kumar Mony, Henning Carlsen, Carl Sixtensson</i>	
<b>OTC 21572 Dredging for the Offshore Industry: Environmental Management Strategies</b> .....	1529
<i>F. Van Der Goot, K. G. Nipius, S. G. J. Aarninkhof</i>	
<b>OTC 21574 Nuclear Industry Concepts for Safety and Performance Management and Application to Offshore Operations</b> .....	1544
<i>William R. Nelson</i>	
<b>OTC 21575 Safebuck Design Guideline and DNV RP F110</b> .....	1555
<i>Leif Collberg, Malcolm Carr, Erik Levold</i>	
<b>OTC 21576 Panel: Capturing Carbon Credits From Offshore Carbon Sequestration</b> .....	1562
<i>Charles Knobloch, Elaine B. Darby, David Castillo, Ruth M. Ivory-Moore, John Cain, Gardner Hill, Alex Rau, Keith Casto</i>	
<b>OTC 21578 Subsea Water Treatment Comes of Age</b> .....	1568
<i>David Pinchin</i>	
<b>OTC 21583 Field Development Planning and Floating Platform Concept Selection for Global Deepwater Developments</b> .....	1577
<i>Richard D’Souza, Shiladitya Basu</i>	



<b>OTC 21587 Asphaltene Management in GOM DW Subsea Development</b> .....	1594
<i>Alberto Montesi, Robert Pinnick, Siva Subramanian, Jianxin Wang, Jeff Creek</i>	
<b>OTC 21588 Deployment of Subsea Equipment: Qualification of Large Diameter Fibre Rope for Deepwater Construction Applications</b> .....	1614
<i>R. Törnqvist, M. Strande, D. Cannell, P. Gledhill, P. Smeets, J. Gilmore</i>	
<b>OTC 21599 PROINT - Program for Excellence in Integrity Management for E&amp;P</b> .....	1620
<i>João Luiz M. Ribeiro, Bernardo Frydman, Paul Ricardo R. Jordan</i>	
<b>OTC 21604 Evaluation of Kinetic Hydrate Inhibitor Performance by High-Pressure Differential Scanning Calorimetry</b> .....	1629
<i>K. P. McNamee</i>	
<b>OTC 21610 Wheatstone Reef Wave Transformation Studies</b> .....	1642
<i>Markku J. Santala</i>	

### VOLUME 3

<b>OTC 21611 Field Validation and Learning of the Parque das Conchas (BC-10) Subsea Processing System and Flow Assurance Design</b> .....	1651
<i>C. Deuel, Y. D. Chin, J. Harris, J. Germanese, N. Seunson</i>	
<b>OTC 21615 Accelerated Production and Increased Recovery of Remote (Offshore) Mature Fields Through Novel Methods to Design and Operate Surface Production Facilities</b> .....	1663
<i>R. Swanborn, R. Egwin</i>	
<b>OTC 21616 Diverless Special Operations</b> .....	1676
<i>A. Vagata, B. J. Reid, R. Galletti, M. Scarpa</i>	
<b>OTC 21617 De-bottlenecking of Mature Field Production through the Use of Very Compact and Efficient Separation Equipment, Topside or Subsea</b> .....	1686
<i>R. Schook, D. Thierens</i>	
<b>OTC 21618 Developing And Using A Deepwater Predictive Soil Model To Optimize The Parque das Conchas (BC-10) FPSO Mooring Layout</b> .....	1696
<i>Kerry J. Campbell, Jason A. Newlin, Evan P. Gisler, Samy Alhayari</i>	
<b>OTC 21621 Improved Concentric Thread Connectors for SCRs and Pipelines</b> .....	1711
<i>J. Pollack, D. C. Riggs</i>	
<b>OTC 21623 Wax Deposition Correlation-Application in Multiphase Wax Deposition Models</b> .....	1727
<i>Kosta J. Leontaritis, Efstratios Geroulis</i>	
<b>OTC 21626 Touch Down Zone Curvature Measurements on Insulated Steel Catenary Risers in Ultra Deep Water (Development, Implementation and Results)</b> .....	1763
<i>R. Y. Edwards, Stéphanie Le-Douaron, B. M. Gallagher, I. Prislín, D. Duley</i>	
<b>OTC 21641 SS: Flow Assurance: Validation of Wax Deposition Models Using Field Data from a Subsea Pipeline</b> .....	1784
<i>A. Singh, H. Lee, P. Singh, C. Sarica</i>	
<b>OTC 21644 Generation of Best Practices in Flow Assurance Using a Transient Hydrate Kinetics Model</b> .....	1803
<i>L. E. Zerpa, E. D. Sloan, A. K. Sum, C. A. Koh</i>	
<b>OTC 21645 Resource Drilling of the Solwara 1 Seafloor Massive Sulfide (SMS) Deposit</b> .....	1810
<i>Matthew White, Anthony Manocchio, Tom Sant, Mike Johnston, Jonathan Lowe</i>	
<b>OTC 21646 Deepwater Seafloor Resource Production – The Bismarck Sea Development Project</b> .....	1821
<i>Glen Smith</i>	
<b>OTC 21649 Feasibility Study on Producing Heavy Oil by Gas and Electrical Heating Assisted Gravity Drainage</b> .....	1835
<i>Zhong Liguó, Yu Di, Yang Hailin, Sun Yongtao, Wang Guangshun, Zheng Jun</i>	
<b>OTC 21655 Reeled Clad SCR Weld Fatigue Qualification</b> .....	1851
<i>R. Jones, D. Karunakaran, J. Mair, H. Wang</i>	
<b>OTC 21667 Imaging of Backscattered Ionizing Radiation - A Key Enabler for through Mud Borehole Imaging</b> .....	1864
<i>Philip Neil Teague</i>	
<b>OTC 21668 SAFEPUCK JIP: Local Buckling Limit State for Seamless Linepipe</b> .....	1880
<i>Malcolm Carr, Ian Macrae, David Bruton</i>	
<b>OTC 21670 Computational Fluid Dynamics Analysis as Applied to the Prediction of Dynamic Hookload Variation in Deepwater Drilling Risers</b> .....	1892
<i>Matthew J. Stahl, Harbinder S. Pordal, Jan O. Andersen</i>	
<b>OTC 21671 Overview of the SAFEPUCK JIP</b> .....	1903
<i>D. A. S. Bruton, M. Carr</i>	

<b>OTC 21673 Heavy Wall Thermomechanically Rolled Heavy Plates For Offshore Structures In Arctic Regions</b> .....	1915
<i>H. Lengauer, G. Tischler</i>	
<b>OTC 21676 Overcoming Black Sea Ultra Deepwater Drilling Challenges</b> .....	1928
<i>Luiz A. S. Rocha, Edgard G. A. Arduino, Danilo S. Gozzi, Sandra B. Duarte, Gabriel H. Azevedo, Luis A. N. Suarez, Jose C. S. Bruno, Bruno C. M. Pereira, Patricia O. A. Pessoa</i>	
<b>OTC 21680 Lessons Learnt from Lifting Operations and Towing of Heavy Structures in North Sea</b> .....	1946
<i>Kenneth Aarset, Arunjyoti Sarkar, Daniel Karunakaran</i>	
<b>OTC 21682 How MPD with Advanced Flow Detection System was Successfully Applied on an eHPHT Well in the Norwegian North Sea</b> .....	1960
<i>S. K. Naesheim, F. Lefdal, T. O. Ofteidal, Bg Norge, H. Sveinall</i>	
<b>OTC 21688 Advances and Impact of Software-Based Deepwater Blow Out Preventer Testing</b> .....	1970
<i>C. Mark Franklin, Tim Sargent, Charles Brown, Gary W. Owen, Steven Griffith, Jerry Osmond, Tore Groonas, Rick Cully</i>	
<b>OTC 21691 Design Optimisation of Deepwater Hybrid Riser Base Jumpers</b> .....	1982
<i>J. Shanks, G. Hahn, J. Xia</i>	
<b>OTC 21694 Introduction to the Frigg Cessation Project</b> .....	1996
<i>Jean-Claude Berger</i>	
<b>OTC 21695 No-Solvent Oil-in-Water Analysis – A Robust Alternative to Conventional Solvent Extraction Methods</b> .....	2007
<i>Dale F. Brost, Amy E. Foster, Michael Holmes</i>	
<b>OTC 21696 Frigg Decommissioning – Contracting Process</b> .....	2025
<i>Kurt Arne Rugeldal</i>	
<b>OTC 21697 Geophysics, Industry, and Shipwrecks on the Gulf of Mexico OCS</b> .....	2035
<i>A. M. Evans, E. E. Voisin</i>	
<b>OTC 21702 The Development of an Instrument Measuring Pressure Behind The Casing in Subsea Production or Injection Wells</b> .....	2043
<i>T Baustad, Sa Albertsen</i>	
<b>OTC 21703 How an Innovative Method of using Field Proven Diverless Pipeline Repair Equipment Opened Up New Ways for Connecting New Deepwater Pipelines onto Existing Producing Pipelines</b> .....	2050
<i>Edgar Keijser, Bo Povloski</i>	
<b>OTC 21705 Use of a Vertical Wind Turbine in an Offshore Floating Wind Farm</b> .....	2064
<i>Marc Cahay, Eric Luquiau, Charles Smadja, Frédéric Silvert</i>	
<b>OTC 21708 Decommissioning of Frigg and MCP01 – A Contractor View</b> .....	2077
<i>T. Gram, R. Kluge, J. F. Kristensen, M. Johannessen, E. Krogh, C. Hagemann</i>	
<b>OTC 21709 The Offshore Vital Link for Tandem Transfer of LNG</b> .....	2087
<i>Renaud Le Devehat</i>	
<b>OTC 21712 Frigg Decommissioning - HSE</b> .....	2099
<i>Bjorn Oscar Tveteras</i>	
<b>OTC 21713 Archival Investigations for Potential Colonial-Era Shipwrecks in Ultra-deep Water within the Gulf of Mexico</b> .....	2106
<i>Michael C. Krivor</i>	
<b>OTC 21715 Frigg Decommissioning Offshore Work</b> .....	2122
<i>S Vivet</i>	
<b>OTC 21716 Perdido Startup: Flow Assurance and Subsea Artificial Lift Performance</b> .....	2141
<i>H. S. Littell, J. W. Jessup, W. W. Schoppa, M. R. Seay, T. D. Coulon</i>	
<b>OTC 21721 Frigg Decommissioning: Onshore Disposal</b> .....	2154
<i>Michael Oram</i>	
<b>OTC 21724 SAFEBUCK JIP: Operational Integrity of Deepwater Flowlines</b> .....	2184
<i>R. D. Watson, F. Sinclair, D. A. S. Bruton</i>	
<b>OTC 21725 Savonius Rotor for Offshore Wind Energy Conversion</b> .....	2197
<i>Roy D. Gaul, Claude Brancart, Vincent Gaul</i>	
<b>OTC 21727 An Example of Technologies and Methodology Applied to Deep-Water Geo-Hazard Assessment, Offshore Nigeria</b> .....	2207
<i>Jérôme Adamy, Stephan Unterseh, Sylvie Grimaud, Jean-Louis Colliat-Dangus, Valentine Lanfumey</i>	
<b>OTC 21728 Floating LNG: New Rule Note for the Classification of LNG FPSO</b> .....	2217
<i>Guillaume Gourdet, Catalin Toderan</i>	
<b>OTC 21733 Renewable Energy and Historic Preservation on the Pacific Outer Continental Shelf</b> .....	2227
<i>Dave Ball</i>	
<b>OTC 21734 Development of Standards for Offshore Mooring</b> .....	2233
<i>S. Vishnubhotla, V. Ahjem, I. S. Hogsæet, T. J. Paulsen</i>	

<b>OTC 21736 BOEMRE’s Environmental Studies Program: Utilizing Science to Inform Decisionmaking and Environmental Analyses Related to Production and Development of Oil and Gas and Renewable Energy Resources on the Outer Continental Shelf (OCS)</b> .....	2241
<i>Melanie Damour</i>	
<b>OTC 21740 Maximize Offshore Reservoirs Productivity with the Latest Design Techniques and Advanced Centrifugal Compression Technologies</b> .....	2253
<i>Stefano Costantini, Luciano Grifoni, Dante Tommaso Rubino, Christophe Corneloup, Bernardo Baldini</i>	
<b>OTC 21744 Morphological Signature of Fluid Flow Seepage in the Eastern Niger Submarine Delta (ENSD)</b> .....	2266
<i>V. Riboulot, A. Cattaneo, V. Lanfumeey, M. Voisset, E. Cauquil</i>	
<b>OTC 21746 Historial and Archaeological Assessment of the T2-SE-A1 Tanker S.S. Gulfstag</b> .....	2276
<i>Mark A. Melancon, Ray Blackmon</i>	
<b>OTC 21747 Development of Superior Hybrid Gas Hydrate Inhibitors</b> .....	2287
<i>Marek Pakulski</i>	
<b>OTC 21750 Late-life Field Optimization, Canyon Express – A Case Study</b> .....	2294
<i>James Wells, Neeraj Zambare</i>	
<b>OTC 21758 Efficient Perforation of High-Pressure Deepwater Wells</b> .....	2305
<i>William Sanders, Carlos Baumann, Harvey Williams, Flavio Dias De Moraes, Jonathan Shipley, Martin Bethke, Scott Ogier</i>	
<b>OTC 21759 Application of High Resolution Zero-offset and Walkaway VSP in Fine Delineation of Reservoir</b> .....	2315
<i>Guang-Ming Zhu</i>	
<b>OTC 21767 Midstream &amp; Subsea Pipeline Condition Monitoring</b> .....	2319
<i>Layla El Hares, Andrew Strong, Patrick Le Stanc</i>	
<b>OTC 21768 Advances in Flexible Riser Technology: Thermal Performance of Flexible Pipes for Deep Water Use: Full Scale Test of New Insulation Material at High External Pressure</b> .....	2333
<i>K. G. Nielsen, E. Bendiksen</i>	
<b>OTC 21775 An Economic Study of CNG Floating Processing and Storage Platform and the Supporting CNG Carriers</b> .....	2344
<i>Thomas Lamb, Regu Ramoo</i>	
<b>OTC 21776 Application of CFD to a Flare Drum Carryover Issue</b> .....	2354
<i>M. J. Lewis, D. Cooper</i>	
<b>OTC 21777 Application of a New Wire Carcass Design for Prevention of Singing Behavior in Flexible Risers</b> .....	2362
<i>K. G. Nielsen, E. Bendiksen, S. P. C. Belfroid, H. J. C. Korst</i>	
<b>OTC 21780 Application and Evolution: 17.5Te, 85Te and 250Te to 3000 meters using a Drum Winch Approach, HMPE Fiber Rope and Efficient Offshore Vessels</b> .....	2371
<i>M. Crawford, P. Crawford, D. Shand</i>	
<b>OTC 21781 High-Pressure Gas-Liquid Separation: An Experimental Study on Separator Performance of Natural Gas Streams at Elevated Pressures</b> .....	2374
<i>A. S. Bymaster, M. D. Olson, E. J. Grave, S. J. Svedeman, F. Viana, R. Mikkelsen, R. Akdim</i>	
<b>OTC 21782 Winds, Waves and Sea Ice during the 1999-2007 Open Water Seasons of the Beaufort and Chukchi Seas</b> .....	2386
<i>Robert Weinzapfel, George Harvey, Jeff Andrews, Larry Clamp, Jim Dykas</i>	
<b>OTC 21784 The Bureau of Ocean Energy Managment, Regulation and Enforcement’s Historic Preservation Program</b> .....	2400
<i>Christopher E. Horrell</i>	
<b>OTC 21786 Control System Upgrades for Tordis and Vigdis Field - A Project Case Study of Revitalising Brownfield Developments with Next Generation Subsea Controls</b> .....	2406
<i>Karl Herman Frantzen, Ian Kent, Ray Phillips</i>	
<b>OTC 21787 Subsea Liquid Sampling Using Flow-through Technique</b> .....	2417
<i>Graham Hall</i>	
<b>OTC 21788 Development and Performance of Biodegradable Antiscalants for Oilfield Applications</b> .....	2422
<i>Wayne Dickinson, Rick Griffin, Laura Sanders, Chris Lowen</i>	
<b>OTC 21790 An Integrated Solution Enabling Allocation of Heavy Oil in the Peregrino Field</b> .....	2430
<i>Rahman Q. Beall, Ketan K. Sheth, Helge Olsen</i>	
<b>OTC 21794 New Biocide Formulations for Oil and Gas Injection Waters with Improved Environmental Footprint</b> .....	2446
<i>Michael Enzien, Bei Yin</i>	
<b>OTC 21795 Spiral Wound Linepipe for Offshore Applications</b> .....	2453
<i>G. Heiberg, A. Eltaher, P. Sharma, P. Jukes, M. Viteri Det Norske</i>	

<b>OTC 21796 Deviated Well Cross-well Elastic Wave Forward Modeling And Reverse Time Migration Imaging</b> .....	2464
<i>Yuan Sun, Qihu Jin, Tingen Fan, Shaohua Hu, Dai Yu</i>	

## VOLUME 4

<b>OTC 21799 Application of Land Reclamation and Artificial Island Technology in the Arabian Gulf Petroleum Industry</b> .....	2471
<i>Sherif El-Gharbawy, Sameh Seddik, Mootaz Khaled, Hazem Sarhan</i>	
<b>OTC 21802 Upheaval Buckling Assessment Based on Pipeline Features</b> .....	2483
<i>N. I. Thusyanthan, S. Mesmar, D. J. Robert, J. Wang, S. K. Haigh</i>	
<b>OTC 21803 Lateral Buckling and Pipeline Walking Mitigation in Deep Water</b> .....	2492
<i>Dominique Perinet, Julien Simon</i>	
<b>OTC 21806 A Global Perspective on Biocides Regulatory Issues</b> .....	2508
<i>Greg J. Bradley, Heather R. McGinley, Nanette L. Hermsen</i>	
<b>OTC 21816 Use of Electrical Submersible Pumping Systems in Offshore and Subsea Environments</b> .....	2513
<i>Ben D. Gould</i>	
<b>OTC 21819 Steel Tube Umbilical Design Life Verification by Full-Scale Fatigue Test</b> .....	2520
<i>E. Brown</i>	
<b>OTC 21821 Versatility in Answering the Challenge of Deepwater Field Developments</b> .....	2532
<i>Jackson D. Bullock II, Eduard M. Geertse, Marcel M. Landwehr</i>	
<b>OTC 21826 Review of Cabled Observatory Systems and Their Applications to Deep Water Oil and Gas</b> .....	2541
<i>Adrian Woodroffe, Andreas Huster, Derek White</i>	
<b>OTC 21832 Cascade and Chinook Project: Pipes and Bends: Material Design and Production</b> .....	2548
<i>Paolo Novelli, Mariano Armengol, Philippe Darcis, Lorenzo Motta, Ettore Anelli, Bill Fazackerley, Dj Blockhus</i>	
<b>OTC 21836 Continuous Application of Anti-Agglomerant LDHI for Gas-Condensate Subsea Tieback Wells in Deepwater Gulf of Mexico</b> .....	2560
<i>Z. Patel, M. Dibello, K. Fontentot, A. Guillory, R. M. Hesketh-Prichard</i>	
<b>OTC 21837 Hybrid Riser Base Jumper Design Methods, Challenges and Solutions</b> .....	2569
<i>Thomas Versavel, Eoin Burke</i>	
<b>OTC 21842 Safety Case for Gulf of Mexico - What Would It Mean? A Global Case Study of the Application of a Safety Case Regime</b> .....	2580
<i>Inge A. Alme, Kyle Wingate, Cameron Dunn</i>	
<b>OTC 21844 Developments in Managing Flexible Risers and Pipelines, A Suppliers Perspective</b> .....	2588
<i>C. S. Dahl, B. Andersen, M. Groenne</i>	
<b>OTC 21845 On the Eddy Structure in the Northern Gulf of Mexico - Implications of VMADCP Observations from 2005 to 2007</b> .....	2600
<i>Xiaorui Amy Guan, Shejun Fan, Andy Brown</i>	
<b>OTC 21848 Coupled Dynamic Analysis of Stinger and Pipeline</b> .....	2616
<i>Luca Suschitz, Lee H Taylor</i>	
<b>OTC 21851 When Mother Nature Smiles – Multi-year Analysis of Currents at the Macondo Well Site</b> .....	2623
<i>Peter Brickley, Patrice Coholan, Neha Sharma, Matthew Cadwallader</i>	
<b>OTC 21852 The United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources- 2009</b> .....	2637
<i>D. G. Macdonald, J. G. Ross, S. Heiberg, M. D. Lynch-Bell, C. Griffiths</i>	
<b>OTC 21857 Cascade &amp; Chinook Subsea Development: The World’s Deepest Production Risers</b> .....	2641
<i>C. Masson, R. H. Carter, P. Streit, Y. Delepine</i>	
<b>OTC 21858 Oil Industry Megaprojects: Our Recent Track Record</b> .....	2662
<i>Edward W. Merrow</i>	
<b>OTC 21866 Bidirectional Subsurface Mechanically Actuated Barrier Valve and Shifting Tool (s) Provide Superior Control and Reliability for Multistage Completions</b> .....	2670
<i>Thad Andrews, Tom Myerley</i>	
<b>OTC 21869 Towards Understanding Reliability Levels for Offshore Wind Turbines</b> .....	2676
<i>Puneet Agarwal, Lance Manuel</i>	
<b>OTC 21870 Design Considerations for Offshore Wind Turbines in US Waters - The American Way</b> .....	2687
<i>Qing Yu, Lars Samuelsson, Pao-Lin Tan</i>	
<b>OTC 21873 Risk-Based Case Study of Floating Facility Drilling Riser Design Concepts in Deepwater Gulf of Mexico</b> .....	2698
<i>M. E. Hull, J. C. Rees, A. Botto, F. J. Deegan, Alan Whooley</i>	

<b>OTC 21874 Shoulder Yielding Detection During Pipe Makeup .....</b>	<b>2709</b>
<i>Rainer Rühmann, Graham Ruark</i>	
<b>OTC 21878 The Economics, Execution and Management of Complex Offshore Projects .....</b>	<b>2720</b>
<i>Patricia M. Doherty</i>	
<b>OTC 21893 Diminishing Environmental Footprint &amp; Costs in Offshore Produced Water Treatment.....</b>	<b>2731</b>
<i>Hari Parthasarathy</i>	
<b>OTC 21907 Qualification and Use of a Self-Equalizing Subsurface Safety Valve in Large-Bore, High-Rate, Gas-Well Applications in the Middle East.....</b>	<b>2737</b>
<i>Tom Swan, Scott Cooper</i>	
<b>OTC 21909 Reducing the Financial Impact of E&amp;P Shutdowns .....</b>	<b>2743</b>
<i>L. Dickey, C. Flesch, J. Jordan, F. Inacio</i>	
<b>OTC 21910 Selection Methodology for Passive, Active, and Hybrid Inflow Control Completions .....</b>	<b>2752</b>
<i>J. Eric Lauritzen, Noman Shahreyar, Suresh Jacob</i>	
<b>OTC 21912 SCR Integrity Management Program using Field Data from a Monitoring System .....</b>	<b>2768</b>
<i>P. Enuganti, P. Shakkari, Y. Constantinides, J. Chen, J. Garaudy</i>	
<b>OTC 21915 Planning and Conducting Well Tests in Deep and Ultra-Deep Water to Mitigate Potential Risks and Justify Expense for the Operator.....</b>	<b>2777</b>
<i>Curtis Wendler, Claudio Tigre Maia</i>	
<b>OTC 21919 New Debris-Tolerant Tools Improve Downhole Testing in Deep-Water Hostile Environments .....</b>	<b>2792</b>
<i>Thiago Pontes, Fernando Marcançola, Gustavo Nascimento, João Paulo Manhães, Priscilla Miletto</i>	
<b>OTC 21922 The Evolving Regulatory Scheme Applicable to Offshore Renewable Energy Facilities in the United States .....</b>	<b>2801</b>
<i>William H. Daughdrill, Megan E. Higgins</i>	
<b>OTC 21925 Large-Bore Expandable Liner Hangers Significantly Improve Operational Cost in a Deepwater Gulf-of-Mexico Well.....</b>	<b>2808</b>
<i>Michael Johnson, Kevin Ardoin, Bill Bullard</i>	
<b>OTC 21934 Advanced Seismic Imaging Impacting Brazilian Offshore Fields Development.....</b>	<b>2815</b>
<i>Paulo Johann, Carlos Eduardo Abreu, Marcos Grochau, Edgar Thedy</i>	
<b>OTC 21937 Application of Geophysical Technologies and the Impact on Shell’s GOM Field Development.....</b>	<b>2829</b>
<i>Jan Douma, Ben Hewett, Madhu Kohli</i>	
<b>OTC 21938 The Geophysics and Geology of Emerging Techniques in Subsalt Imaging.....</b>	<b>2836</b>
<i>Jennifer L. Lewis, Errol Blumenthal</i>	
<b>OTC 21940 New 3D Acoustic Scanning Tools and Techniques for Underwater Metrology and Inspection .....</b>	<b>2838</b>
<i>R. Lee Thompson</i>	
<b>OTC 21942 Refining the Roles of ROVs and AUVs in the Next Decade.....</b>	<b>2846</b>
<i>Mark A. Johnson</i>	
<b>OTC 21945 Deepwater Gulf of Mexico Development in a Post-Macondo World .....</b>	<b>2854</b>
<i>Linda Brewer, Ryan McKeeman</i>	
<b>OTC 21949 Computational Analysis of Oil Spill in Shallow Water due to Wave and Tidal Motion.....</b>	<b>2861</b>
<i>M. Agrawal, D. Dakshinamoorthy</i>	
<b>OTC 21958 Development of Innovative LNG Production, Transportation and Regasification System.....</b>	<b>2874</b>
<i>Junghan Lee, Jaeyeol Lee, Seongjin Yoo</i>	
<b>OTC 21964 Corrosion and Flame Retardant Polymer Coatings for Oilfield Applications .....</b>	<b>2888</b>
<i>Nandika Anne D’Souza, Seifollah Nasrazadani, Parag Ganpule</i>	
<b>OTC 21967 Total Depth Solution Technologies Provide Effective, Efficient and Safe Well Construction Method to Mitigate Borehole Problems .....</b>	<b>2891</b>
<i>Richard Reading, David Whitby, I Made Gde Budi Utama</i>	
<b>OTC 21969 Performing Detailed Level 1 Pipeline Inspection in Deep Water with a Remotely Operated Vehicle (ROV).....</b>	<b>2900</b>
<i>Hans Kros</i>	
<b>OTC 21972 Challenges in Welding High Strength Steels and High Strength Corrosion Resistant Alloys .....</b>	<b>2911</b>
<i>R. P. Badrak, W. R. Howie, J. L. Scott</i>	
<b>OTC 21973 Corrosion-Resistant Alloy Cladding of Subsea Components.....</b>	<b>2922</b>
<i>David R. Berridge</i>	
<b>OTC 21974 Advanced Quantitative Hydrogen Sensors for Characterization of Wrought Metal and Weldments for Offshore Structures .....</b>	<b>2929</b>
<i>Angelique Lasseigne, K. M. Koenig, J. E. Jackson, J. Scott, K. Moline</i>	

<b>OTC 21975 Discussion of the Modified RP-2Z Pre-Qualification Test for Deepwater Pipeline and Riser Applications.....</b>	2934
<i>Mark R. Devall, Robert C. Huddleston, Michael D. Hayes</i>	
<b>OTC 21976 Development of Floating LNG Production Units with Modular/Scalable SMR Processes .....</b>	2940
<i>Javid H. Talib, Brian C. Price</i>	
<b>OTC 21978 Evaluation of Worn Tubulars from DEA-42 and Small-Scale Casing Wear Testers.....</b>	2954
<i>A. R. Doering, D. R. Danks, S. E. Mahmoud, J. L. Scott</i>	
<b>OTC 21979 Advances in Casing Centralization Using Spray Metal Technology.....</b>	2971
<i>John Gammage</i>	
<b>OTC 21984 Outlook and Technologies for Offshore CO<sub>2</sub> EOR/CCS Projects.....</b>	2981
<i>R. Sweatman, S. Crookshank, S. Edman</i>	
<b>OTC 21985 Optimization of the Net Present Value of Carbon Dioxide Sequestration and Enhanced Oil Recovery.....</b>	2994
<i>Hamid Reza Jahangiri, Dongxiao Zhang</i>	
<b>OTC 21986 Linking CO<sub>2</sub>-EOR and CO<sub>2</sub> Storage in the Offshore Gulf of Mexico.....</b>	3010
<i>George J. Koperma Jr., Robert Ferguson</i>	
<b>OTC 21987 Carbon Capture and Sequestration: The U.S. Department of Energy's R&amp;D Efforts to Characterize Opportunities for Deep Geologic Storage of Carbon Dioxide in Offshore Resources.....</b>	3019
<i>J. T. Litynski, B. M. Brown, D. M. Vikara, R. D. Srivastava</i>	
<b>OTC 21990 The Costs and Benefits of Carbon Capture and Storage .....</b>	3029
<i>Khosrow Biglarbigi, Hitesh Mohan, Marshall Carolus</i>	
<b>OTC 21994 SS Sch -- Do's and Don'ts of Labeling: The Changing World of Labeling and How it Will Affect Your Business .....</b>	3036
<i>Mary Rudolph</i>	
<b>OTC 21995 Carbon Capture and Sequestration: Ascertaining CO<sub>2</sub> Storage Potential, Offshore New Jersey, USA .....</b>	3039
<i>Alan Lee Brown, Eric H. Berlin, Robert J. Butsch, Ozgur Senel, Joseph Mills, James Wang, Arutchelvi Harichandran</i>	
<b>OTC 21997 Produced Water – Impact and Analysis Challenges in Cold Regions.....</b>	3063
<i>K. A. Hawboldt, C. Bottaro, W. Thanyamanta</i>	
<b>OTC 21998 Continuum Modelling Framework for Local Buckling Response of Plain and Girth Welded Pipes.....</b>	3080
<i>A. Fatemi, S. Kenny</i>	
<b>OTC 22001 Atlantic Canada Offshore R&amp;D: Nova Scotia Play Fairway Analysis.....</b>	3090
<i>M. N. Luheshi, D. G. Roberts, H. A. M. Wilson, J. F. Weston, K. R. Nunn</i>	
<b>OTC 22002 Offshore Nova Scotia Play Fairway Analysis: 2D Basin Modeling Results.....</b>	3106
<i>B. Colletta, F. Monnier, G. Rabary, S. Doublet, P. Letouzey</i>	
<b>OTC 22003 Atlantic Canada Offshore R&amp;D: Treatment of Oilfield Produced Water by Chemical Coagulation and Electrocoagulation .....</b>	3122
<i>J. Younker, S. Y. Lee, G. A. Gagnon, M. E. Walsh</i>	
<b>OTC 22004 Advancement of CEL Procedures to Analyze Large Deformation Pipeline/Soil Interaction Events .....</b>	3127
<i>K. Pike, S. Kenny</i>	
<b>OTC 22005 Global Trade Restrictions and Related Compliance Issues Pertaining to Oil and Gas Production Chemicals .....</b>	3137
<i>David Jacoby</i>	
<b>OTC 22006 Development of New Generation Collar for J-Lay Heavy Pipeline Installation .....</b>	3148
<i>P. Salomé, E. Karjadi, E. Kleijne</i>	
<b>OTC 22009 Satellite-Based Ice and Iceberg Monitoring for Offshore Engineering Design and Tactical Operations.....</b>	3157
<i>C. Randell, D. Power, P. Bobby, C. Howell, F. Ralph</i>	
<b>OTC 22010 Axial Pipe-Soil Interaction: A Suggested Framework.....</b>	3166
<i>R. A. Jewell, J.-C. Ballard</i>	
<b>OTC 22015 A Super-Giant Offshore Field Development Plan Change from Steel Structures to Artificial Islands .....</b>	3185
<i>A. Modavi, Abdul Hakeem Al Muflehi, Ihaab O. Tarmoom, Bakheet Saeed Al Khatheeri, Adil M. Noman</i>	
<b>OTC 22017 New Method for Managing Hydrates in Deepwater Tiebacks.....</b>	3196
<i>J. L. Creek, S. Subramanian, D. Estanga</i>	
<b>OTC 22018 Third Party Hil Testing of Safety Critical Control System Software on Ships and Rigs .....</b>	3211
<i>Ø. Smogeli, J. E. Skogdalen</i>	
<b>OTC 22025 Operator Training Simulator for KG-D6 Field.....</b>	3220
<i>Ankur Rastogi, Amit Sharma</i>	

<b>OTC 22026 Geomorphology and Processes in the Upper Congo Canyon and its Tributary Canyon .....</b>	<b>3231</b>
<i>Venkatarathnan Kolla, Daniel R. McConnell, Hunter S. Danque, James M. Brooks</i>	
<b>OTC 22028 Sable Sub Basin Near Field Exploration Prospectivity .....</b>	<b>3242</b>
<i>D. R. Steele, J. Mulders, M. Crisp</i>	
<b>OTC 22171 DP Vessel Side Shell Mounted Disconnectable System for Deep Water Development .....</b>	<b>3251</b>
<i>Ian Latimer, Brian Robbie, Majid Al-Sharif</i>	
<b>OTC 22176 Comparison of Installation Scenarios for Offshore Wind Farms Using Operations Simulator with Markov Wind &amp; Wave Weather Model .....</b>	<b>3265</b>
<i>James O'Sullivan, Juan F. Arjona, Michael Aghili</i>	
<b>OTC 22177 Panel: Building a New Energy Future and What is the Next Surprise for World Energy? .....</b>	<b>3270</b>
<i>Gamal Hassan, Henyo Trindade Barretto, Stephen Greenlee, Ali Moshiri, Farouk Al Zanki, Muhammad Saggaf, Evita H. Legowo, Christopher Smith</i>	
<b>OTC 22187 Freeman/Hasling Hurricane Damage Potential Scale .....</b>	<b>3275</b>
<i>J. F. Hasling</i>	
<b>OTC 22190 Effects of Climate Variability and Change on Gulf of Mexico Tropical Cyclone Activity .....</b>	<b>3284</b>
<i>James Done, Greg J. Holland, Cindy Bruyère, Asuka Suzuki-Parker</i>	
<b>OTC 22214 Panel: Offshore Energy Development Through a Post-Spill Reality .....</b>	<b>3294</b>
<i>David Holt, Sandeep Khurana</i>	

**Author Index**

