

# **SPETT Energy Conference and Exhibition 2012**

**Port of Spain, Trinidad and Tobago  
11-13 June 2012**

**ISBN: 978-1-62276-135-7**

**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© (2012) by the Society of Petroleum Engineers  
All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the Society of Petroleum Engineers  
at the address below.

Society of Petroleum Engineers  
P. O. Box 833836  
Richardson, Texas 75083-3836

Phone: (800) 456-6863  
Fax: (972) 952-9435

[books@spe.org](mailto:books@spe.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

- IPTC 14920 **Managing Base Decline in a Big Gas Business**  
*Kirk Baksh, BP Trinidad & Tobago; Pete Jackson, BP United Kingdom*
- CSUG/SPE 137717 **CCS: Opportunities and Obstacles for India**  
*P. Raj, B. Mathur, S. Kumar, S. Jhalani, Pandit Deendayal Petroleum University*
- SPE 156278 **Prediction of Skin Factor and Pseudo-steady State Horizontal Wells Productivity for Various Drainage Areas**  
*A. Bahadori, Southern Cross University*
- SPE 156513 **Effects of Pore Structure to Conventional Well Log Evaluation in Low Permeability Sandstones**  
*F. Zhang, School of Petroleum Engineering, Southwest Petroleum University; Xiao-peng Liu, Xiao-xin Hu, Geological Exploration and Development Research Institute in Sichuan-Changqing Drilling and Exploration Engineering Corporation, CNPC*
- SPE 156924 **Nitrogen Injection Application for Oil Recovery in Trinidad**  
*B. Sinanan; M. Budri, MORE Consulting*
- SPE 156967 **Risk Minimization when Perforating with Automatic Gun Release Systems**  
*Carlos Baumann, Antoine Dutertre, Kuljit Khaira, and Harvey Williams, SPE, Schlumberger, Hassan N. H. Mohamed, SPE, Petronas Carigali Sdn Bhd*
- SPE 157134 **Application of Bacterial Mat for Optimized Gas Hydrate Recovery at the Sea Surface**  
*A. Dubey, A. Saxena, University of Petroleum & Energy Studies*
- SPE 157136 **Evaluating a Depleted Oil and Gas Field in the East Coast of Trinidad for Disposal of Carbon Dioxide**  
*D.J. Jaggernauth, SPE, Petrotrin*
- SPE 157147 **Effect of Fracture Intensity and Longitudinal Dispersion on Mass Transfer in Fractured Reservoirs**  
*A. S. Haddad, SPE, H. Hassanzadeh, SPE, J. Abedi, SPE, Z. Chen, SPE, University of Calgary*
- SPE 157556 **An Innovative Integrated Asset Modeling for an Offshore-Onshore Field Development. Tomoporo Field Case**  
*Fernando Pérez, Edwin Tillerio, Ender Pérez, and Pedro Niño PDVSA; José Rojas, Juan Araujo, Milciades Marrochi, Marisabel Montero, and Maikely Piña, Schlumberger*
- SPE 157672 **Challenges of Al Zaafarana FPSO Main Class Renewal Without Moving to Dry Docking: Case Study**  
*E. Hamdy, M. Hendy, K. Hamed, A. Hussein, Gempetco*
- SPE 157680 **An Approach to Oil Production Forecasting in a WAG Process Using Natural CO<sub>2</sub>**  
*Eliana L. Ligerio, SPE, Samuel F. Mello, SPE, Eduin O. Muñoz Mazo, SPE, Denis J. Schiozer, SPE, State University of Campinas*
- SPE 157696 **Performance Analysis in Coal Seam Gas**  
*Kumar Gaurav, BG Group; Anwar Husen, BG Group; Tamer Saada, BG Group; Sunil Kumar, SPE*

## Table of Contents *continued*

- SPE 157717 Evaluation of a Smart Well System at the Saramacca Oil Fields: A Case Study <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>H</sup><sub>H</sub>  
*H. C. A. Lien, SPE, L. Simon, SPE, C. R. Griffith, SPE, Staatsolie*
- SPE 157949 Race for Liquids vs Gas: How To Redesign a Depletion Strategy to Maximise Fluids Recovery in a Mature Thin-Oil Rim Reservoir <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>€</sup>  
*R. Moosai, B. Alleyne, S. Thomas, D. Smith, BP; N. Cavaleri, M. Anthony Quinn, International Reservoir Technologies*
- SPE 157982 Modeling the Effect of Pipe Rotation on Pressure Loss through Tool Joint <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>ì</sup>  
*B. Bui, SPE, University of Tulsa*
- SPE 158012 Impact of the Future Exploration and Oil Production in the Brazilian Energy Matrix <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>H</sup>  
*J. B. Dias Marques, Petrobras; G. D. Avansi; O. V. Trevisan and D. J. Schiozer, Unicamp*
- SPE 158055 Effect of Reservoir Temperature and Pressure on Relative Permeability <sup>W</sup><sub>W</sub><sup>F</sup><sub>F<sup>F</sup>  
*G. Xiao, State Key Lab of Oil & Gas Reservoir Geology and Exploitation, M. Jingjing, Southwest Petroleum University, L. Jiudi, Shanghai Offshore Petroleum Branch, H. Yang, Southwest Petroleum University, W. Haiying, Tarim Oilfield*</sub>
- SPE 158065 Design Considerations for Oil-Based, Squeeze Cement Slurries to Prevent Unwanted Fluid Production: Methods of Slurry Performance Evaluation and Potential Formulation Improvements <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>JG</sup>  
*B. R. Reddy, SPE, and Larry Eoff, SPE, Halliburton*
- SPE 158106 Influence of Resin/Asphaltene Ration on Paraffin Wax Deposition in Crude Oils from Barrackpore Oilfield in Trinidad <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>J</sup>  
*C. Garcia-James, SPE, Petrotrin; F. Pino, T. Marín, SPE, Universidad de Oriente, U. Maharaj, SPE, Consultant*
- SPE 158116 A Simple and Reliable Approach for Estimation of Joule-Thomson Coefficient of Reservoir Gas at Bottomhole Conditions <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>€</sup>  
*M. Pinto, SPE, C. Karale, SPE, P. Das, SPE, Halliburton*
- SPE 158182 How Advances in Technology Can Help Safely Abandon Offshore Exploratory Wells in and Around the Caribbean Sea Region <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>€</sup>  
*Richard Segura, SPE, Mohammed A. Haq, SPE, Steve Durrant, Weatherford International Ltd.*
- SPE 158184 Combining Thorough Coring Calibration and Latest Wireline Logging Technologies to Unravel LRP/LCP Challenges in Peru <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>G</sup>  
*M. Vasquez, C. Pinto, J-F. Mengual, F. Rodriguez Repsol; J. Vasquez, Schlumberger*
- SPE 158190 The Chemical Treatment to Remove Liquid Block in Hydraulic Fractured Well-A Simulation Study with Leak-Off <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>U</sup>  
*C. Yuan, University of Texas at Austin, BP*
- SPE 158214 Frac-packing Shallow Unconsolidated Reservoirs – Onshore Trinidad <sup>W</sup><sub>W</sub><sup>F</sup><sub>F</sub><sup>H</sup>  
*G. Batohie, SPE, G. Maharaj, SPE, Petrotrin*

## Table of Contents *continued*

- SPE 158220    Simulation Study for Optimizing Injected Surfactant Volume in a Miscible Carbon Dioxide Flood **WAG I**  
*Gbolahan Afonja, Richard G. Hughes, Venu Nagineni, Lu Jin, Louisiana State University*
- SPE 158252    “Volumetric” Reservoir Waters Out: Enhanced Aquifer Characterization Using PTA Derived Boundary Tracking **WAG J**  
*Z. Khan, I. Roopa, K. Baksh, R Partap, S Mohammed, BP*
- SPE 158256    Operational Challenges and Lessons Learned From Drilling an Ultradeepwater Wildcat Well in a Logistically Challenging Frontier Environment Offshore French Guiana **WAG Î**  
*A. Peters, Schlumberger J. Priestley, Tullow Oil*
- SPE 158270    The Role of the Oil and Gas Industry in the Transition Toward a Sustainable World **WAG ÎEE**  
*Nicolás Strauss, Buenos Aires Technological Institute (ITBA)*
- SPE 158287    Artificial-Lift Operation Technologies of Low-Pressure Flooded Gas and Gas-Condensate Wells **WAG H**  
*A.N. Drozdov, SPE, G.G. Bulatov, A.N. Lapoukhov, E.A. Mamedov, E.A. Malyavko, SPE, and Y.L. Alekseev, SPE, Gubkin Russian State University of Oil and Gas*
- SPE 158322    Comparison of WAG and Water Over Injection for Carbon Storage and Oil Recovery in a Heavy Oil Field **WAG H I**  
*L. E. Sobers, SPE, University of the West Indies*
- SPE 158329    Memory-Based Depth Control Technique -- Practical Application for Precise Deployment of Explosives on Slickline, Coiled Tubing And Drillpipe **WAG H I**  
*J. Friedli, Tucker Energy; N. Charles, EOG Resources*
- SPE 158339    Continuous Improvement and Oversight for Deepwater Cement Programs **WAG H G**  
*M. Bogaerts, SPE, G.G. DeBruijn, SPE, P. Khalilova, SPE, F. Moretti, SPE, and E. Voon, SPE, Schlumberger*
- SPE 158345    Improving Cement Bonding and Zonal Isolation in Gas Wells Located in Southern Chile **WAG H Î**  
*S. Ficetti, SPE, Schlumberger, H. Fontana, Geopark Chile*
- SPE 158373    Re-Innovating Old Technology Improves Efficiency of Proven Coiled-Tubing Stimulation **WAG H I**  
*S. Lindsay, C. Ables, D. Holden, Halliburton*
- SPE 158374    A New Generation of Well Surveillance for Early Detection of Gains and Losses When Drilling Very High Profile Ultradeepwater Wells, Improving Safety, and Optimizing Operating Procedures **WAG H I**  
*F. Le Blay, E. Villard, Geoservices, S. Hilliard, T. Grønås, Statoil*
- SPE 158377    Unraveling the Performance Characteristics of the Most Mature Shallow Gas Reservoir in the Trinidad Acreage in the Columbus Basin **WAG H I**  
*I. Roopa, K. Benjamin, BP*

## Table of Contents *continued*

- SPE 158380 Understanding Trinidad Gas Reservoir Performance: Mango, Mahogany, and Immortelle Field Water Drive Reservoir Anomalies **ÁÁÁ ÁH**  
*I. Roopa, Z. Khan, K. Baksh, BP*
- SPE 158383 Success in Production Estimation in High Profile Deepwater Well Using Dynamic Formation Testers **ÁÁÁ FF**  
*L.E. Aguilera, F.J. Flamenco, J.E. Contreras, Pemex, M.R. Urbina, N.A. Fuenleal, N.Y. De Nicolais, M.A. Olivo, F. Miguel, Schlumberger*
- SPE 158390 Maximizing Reservoir Exposure with Proactive Well Placement in High Geological Complexity Field of Venezuelan Orinoco Belt **ÁÁÁ Ğ**  
*Luis Castañeda, SPE, Maryesther León, SPE, Antoine Meunier, SPE, Schlumberger; Manuel Lara, Yoanna Herrera, Miguel Granado, Petrolera Indovenzolana*
- SPE 158393 3D3C Seismic Acquisition in Petrocedeño Field, Located in the Junin Area of the Orinoco Heavy Oil Belt, Venezuela. Seismic Designed for Well Implementation and Reservoir Characterization in a Fluvial-Deltaic Environment **ÁÁÁ HÍ**  
*Monica Concepcion, Ruben Sanchez, Abelardo Perez, Petrocedeño, Jose Suniaga, Jesus Vale, PDVSA Servicios, Raul Cova, INTEVEP*
- SPE 158395 Multilateral and Geosteering Technologies as a Solution for Optimum Drainage of Heavy Oil of Thin and Heterolithic Sands in Junín Block of the Orinoco Oil Belt **ÁÁÁ I Î**  
*J.Palermo, J. Ramos, M. Jurado, C. Brazon, PDVSA; L. Rondon, P. Alfonso, A. Bonalde, W. Garcia, Halliburton*
- SPE 158406 A General Model of Estimating Permeability from Mercury Injection Capillary Pressure (MICP) in Low Permeability Sandstones **ÁÁÁ Í Ì**  
*Feng Zhang, Schol of Petroleum Engineering, Southwest Petroleum University, Chengdu, Sichuan, People's Republic of China; Xiao-peng Liu and Xiao-xin Hu, Geological Exploration and Development Research Institute in Sichuan-Changqing Drilling and Exploration Engineering Corporation, CNPC, People's Republic of China*
- SPE 158496 Predicting Water Breakthrough using Pressure Transient Analysis in a Gas Condensate Reservoir in the Columbus Basin, Trinidad **ÁÁÁ Î Î**  
*I. Roopa, K Baksh, BP*
- SPE 158542 Resource Potential of Natural Gas Hydrate Deposits Offshore Trinidad **ÁÁÁ Ĩ G**  
*Shelly-Ann Greig-Jones, J. Marcelle-De Silva, S. Thomas, UWI*
- SPE 158544 Effect of Gas Cap and Aquifer Strength on Optimal Well Location for Thin-Oil Rim Reservoirs **ÁÁÁ Ì H**  
*U. C. Iyare, J. Marcelle-De Silva, UWI*
- SPE 158545 A Greater Dolphin Area Case Study Part 1: Defining Geological Uncertainty **ÁÁÁ JÍ**  
*K. S. Taylor, N. Kalita, SPE, J. Dowlath, O. Jegede, R. Ameerli, BG*
- SPE 158546 A Greater Dolphin Area Case Study Part 2: Streamlining Subsurface Uncertainty for Business Value **ÁÁÁ Ĵ**  
*Shelley Persad, SPE, BG Trinidad and Tobago; Javier Velarde, SPE, BG Trinidad and Tobago; Alejandro Lerza, SPE, Chevron; Katy Taylor, BG Trinidad and Tobago*

## Table of Contents *continued*

- SPE 158547 Evaluation of Nondarcy Skin Correlations for Gas Wells in the Trinidad East Coast Marine Area **GF**  
*D. Martínez., SPE, Universidad Central de Venezuela; A. Guerrero, SPE, Chevron; E. Azuaje, SPE, Universidad Central de Venezuela; S. Persad, SPE, C. Ramkissoon, BG*
- SPE 158548 Formation Pressure Estimation and Its Impact On Well Design: A Case Study From The Greater Dolphin Area **GH**  
*R. Ameerli, A. Saisbhan, A. Adeleke, N. Harripersad, SPE, M. Parotidis, SPE, BG*
- SPE 158647 Predicting the Performance of Gas Boosting Eductors **IE**  
*K. Codrington, N. Nouwens, BP, C. Abder, UWI*
- SPE 158654 Is it Time to Focus on Unconventional Resources? **IG**  
*J. Rajnauth, SPE, Ministry of Energy and Energy Affairs, Trinidad*
- SPE 158669 Good Practices: Energy Costs Management in Refineries **IF**  
*J.D Cabrera, SPE, R. Saray, SAP*
- SPE 158781 Leaseout/Farmout Operations in Trinidad - Past, Present and Future **IÎ**  
*A. Ramroopsingh, C. Ramgattie, University of West-Indies*
- SPE 158782 Production Optimization of a Mature Offshore Asset **IÏH**  
*G. Bates, SPE, D. Badoo, SPE, D. G. de la Calle, A. Finol, R. Nazarov, SPE, C. Rivas, SPE, M. Hernandez, SPE, C. Bunraj, SPE, Repsol*
- SPE 158789 Prospect Validation Methodology in Offshore Mature Fields: A Case Study **IÎÏ**  
*J. Grimaldi, V. Paranjpe, SPE, C. Segnini, SPE, L. Blanco Repsol*
- SPE 158805 PVT Correlations for Trinidad Oil Offshore the Southwest Coast **IEË**  
*T. Singh, The Ministry of Energy and Energy Affairs, R. Hosein, SPE, University of The West Indies*
- SPE 158824 Improve Mature Fields Management by a New Method to Evaluate the Contacted Pore Volume Evolution **IEJ**  
*G. D. Serrano, V. L. Sancho Costa, D.E. Hryb, YPF*
- SPE 158827 Use of Pressure Transient Analysis for the Detection of Gas/Water Contact Movement in a Gas Reservoir **IFÏ**  
*E. Yaich, N. Robertson, T. Whittle, SPE, A. Jamankulov, SPE, BG*
- SPE 158831 The Evolution of the NCMA Well Start-up Philosophy **IGH**  
*R. Madray, S. Manrakhana, BG*
- SPE 158845 Study of the Success Factors in Continuous Steam Injection: Field Case, Colombian Middle Magdalena Basin **IHH**  
*E. M. Trigos, Ecopetrol, S. F. Rueda, Natfrac, E. Rodriguez, Ecopetrol J. S. Espinosa, Ecopetrol*

## Table of Contents *continued*

- SPE 158856 Big Bore Expandable Liner Hangers for Offshore and Deepwater Applications Reduces Cost and Increases Reliability: Global Case History **IIH**  
*J. McCormick, M. Matice, S. Cramp, Halliburton*
- SPE 158857 Testing and Perforating in the HPHT Deep and Ultradeep Water Environment **IE**  
*C. Wendler, M. Scott, Halliburton*
- SPE 158873 Optimization of Emulsion Breaker Concentration **II**  
*B. A. Dubai, SPE, Petrotrin*
- SPE 158878 Leveraging Incumbency to Sustain a Large Gas Business, the Opportunities and Challenges **II**  
*Y. K. Bally, J. Simmons, G. Ingham, BP*
- SPE 158882 Tuning of the Peng-Robinson Equation of State for Gas Condensate Simulation Studies **II**  
*R. Hosein, SPE, R. A. Dawe, SPE, The University of The West Indies*
- SPE 158890 Largest Integrated Asset Model (IAM) Enhances Trinidad's Business Efficiency **JII**  
*S. Ryan, S. Hosein, M. Kromah, S. Bishop, P. Mihalik, BP*
- SPE 158931 Optimal Gas Utilization for Maximum Recovery in a Mature Oil Field **IEG**  
*L. Kisson, N. Persad, J. Marcelle-De Silva, C. Abder, University of West Indies*
- SPE 158934 Evaluation of Thermal/Solvent Applications with and without Cold Heavy Oil Production with Sand (CHOPS) **FG**  
*A. Rangriz Shokri, T. Babadagli, University of Alberta*
- SPE 159112 A Combined Mixer Design with Helical Blades to Probe Rheology of Complex Oilfield Slurries and Pastes **GJ**  
*P.K.S Sairam, R. Morgan, Ganesh Pangu, Halliburton*
- SPE 159133 Savonette Production Optimization While Preserving Well Integrity **IE**  
*D. Ramcharitar, A. Koylass, BP*