

Kuwait International Petroleum Conference and Exhibition 2012

KIPCE 2012: People and Innovative Technologies to Unleash Challenging Hydrocarbon Resources

**Kuwait City, Kuwait
10-12 December 2012**

Volume 1 of 2

ISBN: 978-1-62276-976-6

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. (2013)

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

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
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

SPE 163272 Removal of Total Organics and Grease from Oil Production Effluents by and Adsorption Process	1
<i>Lucas R. Moore, Cynthia Cardoso, Marcelo Costa, Amir Mahmoudkhani</i>	
SPE 163273 Evaluation of the Effects of Molecular Diffusion in Recovery from Fractured Reservoirs During Gas Injection	10
<i>Z. Alkhansa, S. Zare Ghorbae</i>	
SPE 163274 Laboratory Investigation of Dynamic Growth of Asphaltene Deposition and Formation Damage on Sandstone Cores	21
<i>Mohammad A. J. Ali, S. M. Kholosy, A. A. Al-Haddad</i>	
SPE 163275 Laboratory Challenges of Sand Production in Unconsolidated Cores	29
<i>Mohammad A. J. Ali, K. Al-Hamad, A. Al-Haddad, S. Alkholosy, H. Abu Sennah, T. Sanyal, J. Aniel</i>	
SPE 163276 Lessons Learnt From Root Cause Analysis of Gulf of Mexico Oil Spill 2010	36
<i>Tanu Garg, Swetha Gokavarapu</i>	
SPE 163277 Future Oil Prices, Where to? A Systematic Modeling Tool for Decision Makers	47
<i>Hadi Belhaj, Abdulla Aljarwan, Mona Yousif Al Ali, Nader Abdulkadir</i>	
SPE 163278 Multilateral TAML Level 4 Junction Provides Maximum Flexibility for Drilling and Intelligent Completions	57
<i>Mohamed Samie, Ahmed Siham, Bruce Gavin</i>	
SPE 163279 Laboratory Evaluation of Organically Crosslinked Polymer for Water Shutoff in High-Temperature Well Applications	70
<i>Lalit Salgaonkar, Prasanta Das</i>	
SPE 163280 Optimization of Polymer Flood Performance by Preflush Injection – Numerical Investigation	78
<i>M. Abedi, M. Algharaib</i>	
SPE 163281 The Impact of Sand and Asphaltic Production Problems on Pressure Behavior and Flow Regimes	92
<i>Salam Al Rbeawi, D. Tiab</i>	
SPE 163282 Efficient Polynomial Chaos Proxy-based History Matching and Uncertainty Quantification for Complex Geological Structures	112
<i>Hamid Bazargan, Mike Christie</i>	
SPE 163283 Utilising Process Safety Management to Reduce Risks in E&P Operations - Long Term Commitment Required	127
<i>G. A. Gopaul, H. Al-Kandari, H. Al Qallaf</i>	
SPE 163284 Using the Laser Irradiation to Improve the Rate of Production of Iran South West Formation	141
<i>M. Bazargan, M. Habibpour, H. Jalalyfar, A. Geranmayehrad</i>	
SPE 163286 Using Gold-Based Indonesian Crude Price (ICP) in Economical Evaluation of Field Development Plan	148
<i>Sudirman Rasmin Nurhadi</i>	
SPE 163287 Application of Sustainable Foaming Agents to Control the Mobility of Carbon Dioxide in Enhanced Oil Recovery	164
<i>Roozbeh Rafati, Hossein Hamidi, Ahmad Kamal Idris</i>	
SPE 163288 Propagation of Emulsified Acids in Vuggy Dolomitic Rocks	180
<i>A. S. Zakaria, M. A. Sayed, H. A. Nasr-El-Din</i>	
SPE 163289 Laboratory Quality Optical Analysis in Harsh Environments	201
<i>Christopher Jones, Bob Freese, Mickey Pelletier, David Perkins, Dingding Chen, Jing Shen, Robert Atkinson</i>	
SPE 163290 Third Generation Glass Barrier Technology: Improving Well Completion Integrity and Reliability	215
<i>Rune Gimre, Shawn Le Maitre</i>	
SPE 163291 Heavy Oil and Tar Mat Characterization Within a Single Oil Column Utilizing Novel Asphaltene Science	223
<i>Douglas J. Seifert, Ahmed Qureshi, Murat Zeybek, Andrew E. Pomerantz, Julian Y. Zuo, Oliver C. Mullins</i>	
SPE 163292 Permeable Tar Mat Formation Within the Context of Novel Asphaltene Science	235
<i>Hadrien Dumont, Vinay Mishra, Julian Y. Zuo, Oliver C. Mullins</i>	
SPE 163293 Impact of Facies Modeling on Reservoir Performance Forecasting: A Comparison Between Discrete Modeling and Mixed Lithology Approaches	249
<i>Hisham Alqassab, Lee Vaughan</i>	

SPE 163294 Rock Typing and Characterization of Carbonate Reservoirs: A Case Study from South East Kuwait	273
<i>S. Turkey, J. Al-Kanderi, P. Kumar, G. Al-Alawi, S. Al-Hashmi, A. Al-Harthy, M. Al-Rais</i>	
SPE 163296 Using Real Time Automated Optimisation & Diagnosis to Manage an Artificially Lifted Reservoir - A Case Study	288
<i>Julian Cudmore</i>	
SPE 163297 A New Strategy of Well Pattern Design and Adjustment to Enhance Production of Oil Fields with Vertical Multiple Series of Reservoirs	298
<i>Xu Anzhu, Mu Longxin, Zhao Lun, Fan Zifei, Yang Xuanyu, He Ling, Xue Xia</i>	
SPE 163298 EOR vs. Infill Well Drilling: Field Application of New Decision Making Technique	307
<i>Gamal Alusta, Eric Mackay, Julian Fennema, Khari Armih, Ian Collins</i>	
SPE 163301 Paradigm Shift in Reducing Formation Damage: Application of Potassium Formate Water Based Mud in Deep HPHT Exploratory Well	327
<i>Yousef Zaid Al-Salali, Haifa Al-Bader, D. Vidyasagar, A. Manimaran, S. Packirisamy, Abdulla Al-Ibrahim</i>	
SPE 163302 Intelligent Real-Time Drilling Operations Classification Using Trend Analysis of Drilling Rig Sensors Data	335
<i>A. Arnaout, R. Fruhwirth, B. Esmael, G. Thonhauser</i>	
SPE 163303 Facies Based Approach to Amin Reservoir Characterization In A Heavy Oil Field In The South Of Oman	344
<i>Rinat Lukmanov</i>	
SPE 163305 Improved Crude Oil Dehydration OPEX using Advanced Electrostatic Forces	358
<i>Erik Sellman, Gary Sams, S. Pavan Kumar Mandewalkar</i>	
SPE 163308 A Unique Emulsified Acid System with Three Intensifiers for Stimulation of Very High Temperature Carbonate Reservoirs	373
<i>Nisha Pandya, Sushant Wadekar, Juanita Cassidy</i>	
SPE 163309 Where Process Safety Must Move	380
<i>Stuart Johnston</i>	
SPE 163310 Integrated Evaluation of Formation Damage/Remediation Potential of Low Permeability Reservoirs	384
<i>Tarek Ibrahim Elkewidy</i>	
SPE 163311 Improving Heavy Oil Recovery by Unconventional Thermal Methods	395
<i>O. Alomair, M. Alarouj, A. Althenayyan, A. Alsaleh, H. Mohammad, Y. Altafoo, Y. Alhaidar, S. Alansari, Y. Alshammari</i>	
SPE 163312 Use of Integrated Modeling for Production Optimization in KOC North Kuwait Jurassic Gas Field	411
<i>Satinder Malik, Noura Al-Mai, Qasem Dashti</i>	
SPE 163314 Intelligent Completion Technology Enables Selective Injection for Pressure Maintenance in Mature Field in South China	421
<i>Keith Heng Seng Wee, Douglas B. Finley</i>	
SPE 163315 Salinity Effect on the Rheological Properties of Water Based Mud Under High Pressures and High Temperatures of Deep Wells	428
<i>Khaled J. Hassiba, Mahmoud Amani</i>	
SPE 163316 Continuous Solvent Flush Approach for Asphaltene Precipitations in a Kuwaiti Reservoir: Phase I - An Experimental Solvent Screening	439
<i>Abeer M. Rashed, Ebtisam F. Ghloum, Mohammad F. Al-Matrouk, Gh. Reza Oskui, P. Mali, M. Telang, Ahmad Al-Jasmi</i>	
SPE 163317 A Study of Transversely vs Longitudinally Fractured Horizontal Wells in a Moderate-Permeability Gas Reservoir	448
<i>Tianyi Liu, Matteo Marongiu-Porcu, Christine Ehlig-Economides, Michael J. Economides</i>	
SPE 163318 Formation Damage Caused by Thread Compound from Casing and Tubing	462
<i>Esteban De Franceschi, Tomás Castiñeiras, Fabián Benedetto, Alejandro Funes, Fernando Figini, Michael J. Economides</i>	
SPE 163319 Increasing Oil Recovery with CO₂ Miscible Injection: Thani Reservoir, Abu-Dhabi Giant Off-Shore Oil Field Case Study	470
<i>Abdulla Aljarwan, Hadi Belhaj, Mohamed Haroun, Shawket G. Ghedan</i>	
SPE 163320 First Shale Gas Experience in Saudi Arabia: Lessons Learned	489
<i>A. V. Alexeyenko, I. A. Adebiji, K. M. Bartko, O. Faraj, C. Campo</i>	
SPE 163322 An Iterative Solution to Compute Critical Velocity and Rate Required to Unload Condensate-Rich Saudi Arabian Gas Fields and Maintain Field Potential and Optimal Production	498
<i>Hamza Al-Jamaan, Zillur Rahim, Bandar Al-Malki, Adnan Al-Kanan</i>	
SPE 163324 Estimating Flow Rates Based on ESP Down Hole Sensor Data	504
<i>Sergio Caicedo, Cesar Montoya</i>	

SPE 163325 Dynamic Filtration Properties of Clay Based Drilling Muds under Elevated Temperatures	511
<i>A. E. Osgouei, M. H. Ozyurtkan, G. Altun, E. A. Dilsiz</i>	
SPE 163328 A New Correlation to Calculate Oil-Water Interfacial Tension	522
<i>Kegang Ling, Jun He</i>	

VOLUME 2

SPE 163329 Key Initiatives Towards HSE Excellence	531
<i>Mastan Shaikh</i>	
SPE 163330 ROP Modeling Using Neural Network and Drill String Vibration Data	537
<i>Abdolali Esmaeili, Behzad Elahifar, Rudolf K. Fruhwirth, Gerhard Thonhauser</i>	
SPE 163331 Evaluation of the Effect of Asphaltene Deposition in the Reservoir for the Development of the Magwa Marrat Reservoir	550
<i>A. Al-Qattan, M. J. Blunt, O. Gharbi, A. Badamchizadeh, J. M. Al-Kanderi, M. Al-Jadi, H. H. Dashti, V Chimmalgi, D. J. Bond, F. Skoreyko</i>	
SPE 163332 Field Treatment to Stimulate a Deep, Sour, Tight Gas Well Using a New, Low Corrosive and Environmentally Friendly Fluid	569
<i>H. A. Nasr-El-Din, C. A. De Wolf, T. Stanitzek, A. Alex, S. Gerdes, N. R. Lummer</i>	
SPE 163335 Improved Oil Recovery by Nanofluids Flooding: An Experimental Study	585
<i>Luky Hendraningrat, Bjørnar Engeset, Suwarno Suwarno, Ole Torsaeter</i>	
SPE 163336 Reservoir Characterization Using Wellbore Storage Dominated Flow	594
<i>Salam Al Rbeawi, D. Tiab</i>	
SPE 163337 Delivering Optimal Brownfield Development Strategies: Use of Multi-Constrained Optimisation Combined with Fast Semi-Analytical and Numerical Simulators	617
<i>A. Alvi, P. Tilke, A. Bogush, A. Kolupaev, S. Z. Jilani, R. Banerjee, N. Bolanos, J. Wu</i>	
SPE 163338 Simulations of Thermal Upgrading Methods for Oil Shale Reservoirs	627
<i>M. S. K. Youtsos, R. S. Cant, E. Mastorakos</i>	
SPE 163340 A High Angle and Horizontal Well Interpretation Toolkit for Quantitative Formation Evaluation and Reservoir Characterization	659
<i>Jinjuan Zhou, Pingjun Guo, Duncan Mardon, Quinn Passey, Alberto Mendoza, Philippe Gaillot, Scott Wertanen, Hezhu Yin, Dale Fitz, Wayne Nicosia</i>	
SPE 163342 Heavy Oil Viscosity and Density Prediction at Normal and Elevated Temperatures	674
<i>Osamah Alomair, Mohammad A. J. Ali, Abulhaq Alkorieh, Mohamed Hamed</i>	
SPE 163344 Optimisation of Clean-up of Limestone Production Zones: New Observations	687
<i>Eric Davidson, Steve Blattel, D. Nelson McMillan, Alexandra Morrison</i>	
SPE 163345 Automated Real Time ESP Performance Monitoring and Optimization Case Study	697
<i>Al-Deyain Khalid, Rama Rao Rachapudi, Talal Al-Mutairi, Bader Haider, Al-Yahya Mohammed</i>	
SPE 163346 Unconventional Use of Production Logging Technology	709
<i>S. Chaudhary, M. S. Murty, S. Bora, Y. Chandra, P. P. Singh, R. K. Pandey, U. C. Bhatt, V. Verma, K. Ogra, A. Pandey, S. Gupta, R. Sinha</i>	
SPE 163347 Field Redevelopment Optimization to Unlock Reserves and Enhance Production	716
<i>Salim Al-Nabhani, Nadhal Al-Marhoon, Faisal Al-Rubaiey, Ammar Al-Kalbani, Badar Al-Mandhari, Ahmed Al-Hattali, Ahmed Al-Hashami, Hany Hassan</i>	
SPE 163348 Wettability Alteration of Carbonates by Optimizing the Brine and Surfactant Composition	727
<i>Christina Martavaltzi, Ahmad Dakik, Shubham Agrawal, Anuj Gupta</i>	
SPE 163349 Developing High H₂S Facility Design Requirements in Conceptual Stage	737
<i>M. Majeed, S. M. Al-Khaledi</i>	
SPE 163351 Elemental Chemostratigraphy Provides Improved Understanding of Reservoir Stratigraphy and Rock Properties for the Complex Najmah-Sargelu Reservoir of Umm Gudair Field, Kuwait	746
<i>Rasha Al-Muraikhi, Dipak Singharay, Waleed Al-Khamees</i>	
SPE 163352 Mathematical Modeling of Shale Swelling in Water-based Muds	756
<i>Sandeep Kulkarni, Shadaab Maghrabi, Kushabhau Teke, Dhanashree Kulkarni, Dale Jamison</i>	
SPE 163354 Consideration of Voidage Replacement Ratio in Well Placement Optimization	763
<i>Abeeb A. Awotunde, Najmudeen Sibaweih</i>	
SPE 163357 Improved Producibility after Delayed Filter Cake Breaker Treatment in the Safaniya Offshore Field in Saudi Arabia	776
<i>M. A. Zubail, A. M. S. Al-Kuait, K. S. Al-Yateem, M. El Bialy, S. Maghrabi, T. Olivares, R. G. Ezell</i>	

SPE 163359 History Matching Saturation and Temperature Fronts with Adjustments of Petro-Physical Properties; SAGD Case Study	786
<i>Arash Mirzabozorg, Long Nghiem, Zhangxing Chen, Chaodong Yang, Yasin Hajizadeh</i>	
SPE 163360 Results from a Pilot Water Flood of the Magwa Marrat Reservoir and Simulation Study of a Sector Model Contribute to Understanding of Injectivity and Reservoir Characterization	798
<i>I. Al-Kandari, M. Al-Jadi, C. Lefebvre, L. Vigier, M. De Medeiros, H. H. Dashti, R. Knight, A. Al-Qattan, V. S. Chimmalgi, K. Datta, K. M. Hafez, L. Turkey, D. J. Bond</i>	
SPE 163361 Enhanced Model for Bottomhole Pressure Prediction While Performing Underbalanced Drilling Operations	814
<i>Faisal A Aladwani, Kenneth E Gray</i>	
SPE 163363 An Integrated Approach to Designing an Offshore Heavy Oil Well Test – North Sea Example	823
<i>Obinna Akuanyionwu, Yakov Shumakov</i>	
SPE 163364 Thermal Recovery Potential of Shallow Sandstone Reservoir for Optimized Unconventional Development Strategy in Kuwait	833
<i>H. Ferdous; P. Choudhary, F. Ahmad, F. Abbas, K. Ahmad, J. Llerena, I. Sammak</i>	
SPE 163365 Creating a Secure IT Infrastructure for the Kuwait Intelligent Digital Field	844
<i>H. Saleem, R. Al-Shammari, A. Zolotavin, J. C. G. Bonilla, Z. Ali, H. Robert, A. Farid</i>	
SPE 163366 Regional In-Situ Stress in Northern Kuwait- Implications for the Oil Industry	852
<i>Nada Al-Ammar, Riyasat Hussain, Rinaldi Mulyono, Abdulaziz Al-Fares, Ahmad Al-Kandary, Reem Al-Naeimi, Satya Perumalla</i>	
SPE 163367 Modeling of Regional Aquifer System Allows Decision on Early Pressure Support to be Made for the Burgan Minagish Reservoir, Kuwait	860
<i>F. A. Al-Faresi, J. T. Wang, W. Clark, M. L. Belobraydic, M. Yaser, F. O. Iwere, E. Gomez, O. M. Gurpinar, K. Datta, A. Mudavakkat, L. Hayat, G. A. Al-Sahlan, R. Husain, A. Prakash, S. J. Crittenden, D. J. Bond</i>	
SPE 163368 Innovative In-house Geosteering Utilizes Gas-While-Drilling Data for Deep Jurassic High Angle Well Placement	875
<i>Adnan Al-Shamali, Naveen K. Verma, Bhawesh Chandra Jha, Javad Estarabadi, Waleed Al-Khamees</i>	
SPE 163370 Implementing Artificial Neural Networks and Support Vector Machines in Stuck Pipe Prediction	880
<i>Islam Al-Baiyat, Lloyd Heinze</i>	
SPE 163372 Dynamic Penalty Function Evolution Algorithms for History Matching of Oil and Gas Reservoir Models	893
<i>Ossama Abdelkhalik, Ahmed Daoud, Shu Ting Goh</i>	
SPE 163375 Well Integrity Management In KOC’s North Kuwait Jurassic Gas Asset	909
<i>Francis Clayton, Mansour Al-Awadhi</i>	
SPE 163376 HPHT 101 - What Every Engineer or Geoscientist Should Know about High Pressure High Temperature Wells	917
<i>Arash Shadravan, Mahmood Amani</i>	
SPE 163377 Evaluation of Micronized Ilmenite as Weighting Material in Water-Based Drilling Fluids for HPHT Applications	944
<i>S. M. Elkatatny, H. A. Nasr-El-Din, M. Al-Bagoury</i>	
SPE 163378 An Integrated and Effective Method for Well Placement Using a Numerical Simulation Model: A North Kuwait Field Case Study	960
<i>Yaser Abdy, Mustafa Amari, Ahmad Sharifzadeh, Ealian Al-Anzi, Muaath Al-Ansari</i>	
SPE 163379 A New Approach Optimizing Mature Waterfloods with Electrokinetics-Assisted Surfactant Flooding in Abu Dhabi Carbonate Reservoirs	978
<i>Arsalan Ansari, Mohammed Haroun, Nada Abou Sayed, Nabeela Al Kindy, Basma Ali, Reena Amatya Shrestha, Hemanta Sarma</i>	
SPE 163380 Integrated Workflow for Small Scale Reservoir Characterization Using Borehole Image, NMR and Core Data	998
<i>Asmaa Faisal Al Bloushi, Deepak Joshi, Haifa Rashed Al Murakhi</i>	
SPE 163382 A New Approach in Modeling of Fracture Ballooning in Naturally Fractured Reservoirs	1007
<i>Mojtaba Pordel Shahri, Mehran Mehrabi</i>	
SPE 163384 Unique Process and Tool Provides Better Acid Stimulation and Better Production Results	1027
<i>Mishari Al-Saqabi, Naz Gazi, Chimmalgi Vishwanath, Hasan Al Bahrani, Naweem Turkey, Eman Abdul-Razaq, Omran Al-Zankawi, Ali Bouland, Jim B. Surjaatmadja, Abdulla M. Al Hamad, Shannon Brand</i>	
SPE 163385 The Mystery of Vanishing MWD/LWD Tools in Downhole: Interaction of Heavy WBM, Complex Petrophysical Formation Properties and Tool Metallurgy in Deep Kerogen-Rich Carbonates	1037
<i>Mihira N. Acharya, Mir R. Kabir, Saad A. Al-Ajmi, Arif A. Al-Doheim, Qasem Dashti, Ealian H. Al-Anzi</i>	
SPE 163386 Real-Time Estimation of Well Drainage Parameters	1048
<i>Mohammad S. Al-Kadem, Faisal T. Al-Khelaiwi, Meshal A. Al-Amri</i>	

SPE 163389 Formation Factor for Heterogeneous Carbonate Rocks Using Multi-scale Xray-CT images	1054
<i>A. Dehghan Khalili, S. Yanici, Y. Cinar, C. H. Arns</i>	
Author Index	