

SPE International Symposium and Exhibition on Formation Damage Control 2012

**Lafayette, Louisiana, USA
15-17 February 2012**

Volume 1 of 2

ISBN: 978-1-61839-658-7

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

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 147765 Advanced Chemical Water-Shutoff Treatments in Multilayer Gas Reservoirs: A Case Study from Peciko Field, East Kalimantan, Indonesia	1
<i>Marina Samvelova, Muhammad Haekal, Tutus Kristanto, Dadik Hendra Kusuma, Antus Mahardhini</i>	
SPE 149623 Is Formation Damage an Issue in Shale Gas Development?	13
<i>Q. Wang, B. Guo, D. Gao</i>	
SPE 149651 Innovative Coiled Tubing Water Shutoff Techniques in Horizontal Wells	27
<i>A. Burov, W. Kharrat, N. Hussein</i>	
SPE 149833 Hydraulic Fracture Production Optimization with a Pseudo-3D Model in Multi-layered Lithology	42
<i>Mei Yang</i>	
SPE 149883 Innovation and Successful Application for Calcium Sulfate Scale Removal in Gemsa Oil Field: A Field Study	55
<i>E. Hamdy, M. Fahmy, A. Faramawy</i>	
SPE 149902 Transient Pressure Analysis of a Horizontal Well With Multiple Inclined Hydraulic Fractures Using Type-Curve Matching	62
<i>S. Al Rbeawi, D. Tiab</i>	
SPE 149962 Near Wellbore Streamline Modeling: Its Novelty, Application, and Potential Use	82
<i>J.H. Skinner, T.E. Johansen</i>	
SPE 149994 Expanding the Hydraulic Fracturing Options on Reservoirs with Water Zones in Western Siberia	92
<i>Alfredo Mendez, Yury Mazhirin, Vladimir Astafyev, Alekseev Glebovich, Pavel Bortey</i>	
SPE 149997 Cost-Effective Acid Stimulation of Carbonates Using Seawater-Based Systems Without Calcium Sulfate Precipitation	100
<i>S.L. Berry, J.L. Boles, K.L. Smith</i>	
SPE 150104 Simulation of Gel Filter Cake Formation, Gel Cleanup, and Post-Frac Well Performance in Hydraulically Fractured Gas Wells	113
<i>S. Charoenwongsa, H. Kazemi, P. Fakcharoenphol, J.L. Miskimins</i>	
SPE 150122 Statistical Analysis of Significant Factors Affecting Perforation Flow at Well Scale	125
<i>Baoyan Li, Datong Sun, Rajani Satti</i>	
SPE 150263 Real-Time Advanced Warning of Screenouts With the Inverse Slope Method	136
<i>Leon V. Massaras, Dimitri V. Massaras</i>	
SPE 150529 Investigation of Sand Production Onset: A New Approach Based on Petrophysical Logs	144
<i>Vahid Alipour Tabrizy, Yaser Mirzaahmadian</i>	
SPE 150669 Long-Term Proppant Performance	162
<i>N. Raysoni, J. Weaver</i>	
SPE 150899 Acidizing Sandstone Reservoirs Using HF and Formic Acids	178
<i>F. Yang, H.A. Nasr-El-Din, B. Al-Harbi</i>	
SPE 150953 Detrimental Effect of Temperature on Fines Migration in Sandstone Formations	201
<i>D.A. Musharova, I.M. Mohamed, H.A. Nasr-El-Din</i>	
SPE 150999 Improving Well Productivity/Injectivity on Deepwater Offshore Horizontal Drains	223
<i>C. Menezes, L. Benchimol, M. Mcewan, A. Ohwo, V. Poinset, G. Sutherland</i>	
SPE 151002 Foaming Aqueous-Based Curable Treatment Fluids Enhances Placement and Consolidation Performance	238
<i>P.D. Nguyen, R.D. Rickman</i>	
SPE 151061 A New Emulsified Acid To Stimulate Deep Wells in Carbonate Reservoirs	254
<i>M.A. Sayed, H.A. Nasr-El-Din, J. Zhou, S. Holt, H. Al-Malki</i>	
SPE 151070 Effective Matrix Stimulation of High-Temperature Carbonate Formations in South Sumatra Through the Combination of Emulsified and Viscoelastic Self-Diverting Acids	280
<i>M. Madyanova, R. Hezmela, P. Artola, C.R. Guimaraes, B. Iriyanto</i>	
SPE 151073 A Systematic Study of Different Delayed Systems for Mudcake Removal in High-Temperature Horizontal and Multilateral Wells	293
<i>P.P. Najeed, M.H. AlKhalidi, M.G. AlFaiji</i>	
SPE 151113 Experimental and Computational Study of Flow Characteristics in a Drilled Perforated Core	307
<i>Datong Sun, Rajani Satti, Darren Ochsner, Tim Sampson, Baoyan Li, Mikhail Gladkikh</i>	
SPE 151142 Formation Damage Due to CO₂ Sequestration in Deep Saline Carbonate Aquifers	319
<i>I.M. Mohamed, H.A. Nasr-El-Din</i>	

SPE 151143 Mitigation of Calcium Sulfate Scale Formation When Seawater Is Used To Prepare HCl-Based Acids	351
<i>J. He, I.M. Mohamed, H.A. Nasr-El-Din</i>	
SPE 151220 Observation of Gel Filter Cake Recovery by Dissolution in Flowback Fluids	366
<i>R.D. Gdanski, J.E. Bryant</i>	
SPE 151346 New Sand Retention Test Setup Exhibits No Plugging Tendencies With Various Screen Types Using Nonuniform Test Sand	388
<i>O.S. Larsen, V. Fjellstad, A.M. Mathisen, J.S. Andrews, H. Joranson, B. Aas</i>	
SPE 151488 Sand Consolidation in the Mahakam Delta: 3 Years Later	404
<i>V. Chaloupka, R. Descapria, A. Mahardhini, D. Coulon, Q. Tran, M. Haekal, D.C. Santoso, A. Amar, A. Nusyirwan</i>	
SPE 151560 Wormhole Propagation in Tar During Matrix Acidizing of Carbonate Formation	420
<i>S.H. Al-Mutairi, M.A. Al-Obied, I.S. Al-Yami, A.M. Shebatalhamd, D.A. Al-Shehri</i>	
SPE 151564 First Successful Rigless Acid Tunneling Job in Mauddud Carbonate Reservoir in Raudhatain Field, North Kuwait	435
<i>F. Ashkanani, S.S. Sharma, M. Al-Ajmi, A. El-Daoushy, I. Saleh</i>	
SPE 151575 Inhibited Gas Stimulation To Mitigate Condensate Banking and Maximize Recovery in Cupiagua Field	442
<i>C. Franco, R. Zabala, J. Zapata, E. Mora, O. Botero, C. Candela, A. Castillo</i>	
SPE 151576 A New Approach in Permeability and Hydraulic Flow Unit Determination	459
<i>Mohammad Izadi, Ali Ghalambor</i>	
SPE 151604 Double-Emulsion Spacer Design for Highly Efficient Invert Emulsion Displacement	468
<i>S. Lu, W. Foxenberg</i>	
SPE 151611 Taking Advantage of Fines Migration Formation Damage for Enhanced Gas Recovery	486
<i>P.T. Nguyen, A. Zeinijahromi, P. Bedrikovetsky</i>	
SPE 151636 A New Outlook on the Ideal Packing Theory for Bridging Solids	507
<i>K. Chellappah, M. Aston</i>	
SPE 151637 Modeling of Square Mesh Screens in Slurry Test Conditions for Standalone Screen Applications	518
<i>R.A. Chanpura, S. Mondal, J.S. Andrews, A. Mathisen, J.A. Ayoub, M. Parlar, M.M. Sharma</i>	
SPE 151641 Compatibility and Phase Behavior Studies Between Corrosion Inhibitors and Surfactants-Based Acids	533
<i>L. Li, H.A. Nasr-El-Din, J. Zhou, S. Holt</i>	
SPE 151645 Low Extrusion Pressure Polymer Gel for Water Shutoff in Narrow Aperture Fractures in Tight and Shale Gas and Oil Reservoirs	553
<i>K. Gakhar, R.H. Lane</i>	
SPE 151646 Waterless Cement Slurry Controls Water Production in Southern Mexico Naturally Fractured Oil Wells	570
<i>A. Sourget, A. Milne, L. Diaz, E. Lian, H. Larios, P. Flores, M. Macip</i>	

VOLUME 2

SPE 151647 Experiment and Simulation Study of Proppant Pack Compression	578
<i>X. Ye, N. Tonmukayakul, J.D. Weaver, J.F. Morris</i>	
SPE 151662 The Influence of Fluid Loss Additives in High-Temperature Reservoirs	590
<i>R.B. Watson, P. Viste, J.R. Lauritzen</i>	
SPE 151678 Dynamic Filtration: Seepage Losses on Tyrihans	598
<i>C.H. van der Zwaag, T.H. Omland</i>	
SPE 151683 New and Effective Filter Cake Removal Optimizes Water Injectivity	608
<i>E. Davidson, L. Mota, N. Mosley, G. Chimara, A. Morrison, I. Archibald</i>	
SPE 151699 Delayed Crosslink Polymer Flowing Gel System for Water Shutoff in Conventional and Unconventional Oil and Gas Reservoirs	619
<i>Swathika Jayakumar, Robert H. Lane</i>	
SPE 151715 Fracturing Fluid With Low-Polymer Loading Using a New Set of Boron Crosslinkers: Laboratory and Field Studies	632
<i>N.J. Williams, P.A. Kelly, K.G. Berard, E.L. Dore', N.L. Emery, C.F. Williams, S. Mukhopadhyay</i>	
SPE 151729 Measuring Capillary Pressure Tells More Than Pretty Pictures	641
<i>Markus Pagels, Jerald J. Hinkel, Dean M. Willberg</i>	
SPE 151740 Pushing the Limits: HT Carbonate Acidizing	654
<i>O.E. Jimenez Bueno, G.R. Ramirez, M.A. Quevedo, J.T. Resendiz Torres, F. Tellez Cisneros</i>	

SPE 151749 A Sequential Polymer Injection Treatment Using RPM: Effects of Multilayer Adsorption of Cationic and Anionic Polymers	660
<i>Taemoon Chung, Wisup Bae, Hyunjin Koh, Sangmin Oh, Seungtae Kim, Huy X. Nguyen</i>	
SPE 151751 Investigation of the Mitigation of Lost Circulation in Oil-Based Drilling Fluids Using Additives	668
<i>H. Guo, J. Voncken, T. Opstal, R. Dams, P.L.J. Zitha</i>	
SPE 151754 An Automated Software Workflow To Optimize Gulf of Mexico Lower Tertiary Wilcox Sand Reservoirs	683
<i>R. Dusterhoft, M. Strobel, M. Szatny</i>	
SPE 151759 Analysis of Parameters Affecting Critical Flow Rate in a Horizontal Well: Case Study in Ahwaz Oil Field	704
<i>S. Goodarzian, A. Ghalambor, M. Izadi</i>	
SPE 151760 Coreflooding Experiments on the Combination of Water Shutoff and Acid Treatments in Carbonate Formations	712
<i>M.S. Al-Anazi, S. Caliskan, I.S. Al-Yami</i>	
SPE 151768 An Investigation of Sand Retention Testing With a View To Developing Better Guidelines for Screen Selection	722
<i>Tracey Ballard, Steve Beare</i>	
SPE 151770 Design, Installation, and Performance of Big Bore (9-5/8 in.) Completions: Mari-B Field, Offshore Israel	735
<i>John Healy, Jack Sanford, Donald Reeves, Kerby Dufrene, Peter Haskell, Mark Luyster, Victor Bariudin</i>	
SPE 151774 Productivity Impairment of Gas Wells Due to Fines Migration	755
<i>A. Zeinijahromi, A. Vaz, P. Bedrikovetsky</i>	
SPE 151779 Effect of Coreflood Test Methodology on Appropriate Simulation of Field Treatments	774
<i>G.M. Graham, S. Kidd, R. Stalker, R. Wright</i>	
SPE 151781 Aluminum and Iron Precipitation During Sandstone Acidizing Using Organic-HF Acids	791
<i>B.G. Al-Harbi, M.N. Al-Dahlan, M.H. Al-Khaldi</i>	
SPE 151797 Used Approaches for Carbonates Acidizing Offshore Brazil	806
<i>A.Z.I. Pereira, M.G.F. da Silva, L.C.A. da Paixao, T.J.L. de Oliveira, P.D. Fernandes</i>	
SPE 151800 Perforated Completion Optimization Using a New, Enhanced and Integrated Perforating Job Design Tool	815
<i>Lang Zhan, Fokko Doornbosch, Andy Martin, Jeremy Harvey, Brenden Grove</i>	
SPE 151803 On the Hydraulics of Inverted Flow Path Gravel Pack Operations	829
<i>B.N. Rao, A.M. Amin, R. Van Petegeg, J. Broussard</i>	
SPE 151805 Debris Management in High-Angle, Extended-Reach, Large-Diameter, Cased Holes During Completions Operations	843
<i>A. Ghalambor, F. Haeri, W.D. Norman</i>	
SPE 151807 The Extinction of Skin	854
<i>M.T. Byrne, C.A. McPhee</i>	
SPE 151813 Umbilical Deployed Stimulations for Asphaltene Related Damage in Offshore Oil Fields	859
<i>T. Peruzzi, T. Coulon, J. Fauria, D. Frey, H. Marechal, R. Sloan</i>	
SPE 151815 Reaction Rate of Emulsified Acids and Dolomite	866
<i>M.A. Sayed, H.A. Nasr-El-Din</i>	
SPE 151817 The Impact of Annular Flows on High Rate Completions	886
<i>R. Greene, T. Moen</i>	
SPE 151818 Assessing Formation Damage from Migratory Clays in Moderate Permeability Formations	898
<i>Paul R. Howard, Jerald J. Hinkel, Nita C. Moniaga</i>	
SPE 151823 Numerical Simulation of the Acidizing Process and PVBT Extraction Methodology Including Porosity/Permeability and Mineralogy Heterogeneity	909
<i>T.J.L. de Oliveira, A. R. Melo, J.A.A. Oliveira, A.Z.I. Pereira</i>	
SPE 151824 Customizing Drill-In Fluid for Peregrino Project in Brazil: Laboratory Development and Field Experience	918
<i>Liqun Han, Duncan Clinch, Claas van der Zwaag, Eduardo Galletti, Frank Fornasier, Fabian Estevez, Nelson McMillan, Jstin Green, Ian Patey</i>	
SPE 151827 Experimental Study of Hydraulic Fracturing in Unconsolidated Materials	931
<i>L.N. Germanovich, R.S. Hurt, J.A. Ayoub, E. Siebrits, W.D. Norman, I. Ispas</i>	
SPE 151832 Moving Beyond the Capillary Suction Time Test	946
<i>Markus Pagels, Jerald J. Hinkel, Dean Willberg</i>	
SPE 151836 A Solids-Free Permeability Modifier for Application in Producing and Injection Wells	959
<i>M. Lastre, A. Milne</i>	

SPE 151837 A Specially Designed Organophilic Chloride-Free Reservoir Drill-In Fluid Meets the Challenges of the First Horizontal Well in Mozambique	969
<i>E. Ezeigbo, M. Luyster, R. Ravitz, A. Pereira, C. Nguyen</i>	
SPE 151838 Vitality of Formation Damage Causing Microorganisms in Brines	985
<i>F. De Benedictis, K. Schultz, C.D. Armstrong, P. Javora, Q. Qu</i>	
SPE 151840 Prediction of Injection Induced Formation Shear	990
<i>H. Han, S. Khan, S. Ansari, N. Khosravi</i>	
SPE 151841 Effective Kaolinite Damage Control under Unfavorable Chemical Environment: Field Case	1000
<i>A. Restrepo, M. Laestre, A. Milne, S.J. Peñaloza, E. Castro</i>	
SPE 151845 The Impact of Complex Nanofluid Composition on Enhancing Regained Permeability and Fluid Flowback from Tight Gas Formations and Propped Fractures	1013
<i>Lakia M. Champagne, Hui Zhou, Andrei S. Zelenev, Nathan Lett</i>	
SPE 151846 Stressed Rock Penetration Depth Correlation	1025
<i>J. Harvey, B. Grove, L. Zhan</i>	
SPE 151848 The Application of Nanoparticle Dispersions To Remove Paraffin and Polymer Filter Cake Damage	1035
<i>P. Mcelfresh, C. Olguin, D. Ector</i>	
SPE 151852 Development of More Environmentally Friendly Demulsifiers	1042
<i>Hui Zhou, Keith I. Dismuke, Nathan L. Lett, Glenn S. Penny</i>	
SPE 151856 A CT Scan Aided Core-flood Study of the Leak-off Process in Oil-based Drilling Fluids	1053
<i>Andrea S. van Overveldt, Hua Guo, Gerard de Blok, Pavel Bedrikovetsky, L.J. Zitha</i>	
SPE 151861 Novel Interconnected Bonded Structure Enhances Proppant Flowback Control	1075
<i>A. Burukhin, S. Kalinin, J. Abbott, M. Bulova, Y. Wu, M. Crandall, I. Kadoma, M. Begich, S. Papp</i>	
SPE 151863 “Squimulation”: Simultaneous Well Stimulation and Scale Squeeze Treatments in Deep Water, West Africa	1092
<i>D. Patterson, M. Kendrick, W. Williams, M. Jordan</i>	
SPE 151865 Fundamentals of Gravel Pack Performance With Mesh Screens	1112
<i>E. Martch, A. Hudson, W. Bode, C. Fischer, V. Constien</i>	
SPE 151870 Systematic Approach Used to Optimize Frac-Pack Completions in Multilayer and Low Stress Contrast Environment Encountered in the Usan Field	1128
<i>M. Prada, J. Hernandez, R. Bouget, S. Green</i>	
SPE 151889 Novel Method To Characterize Formation Damage Caused by Polymers	1142
<i>J. Maxey, R. van Zanten</i>	
SPE 152179 Acid Fracturing: New Insights on Acid Etching Patterns from Experimental Investigation	1151
<i>L.F. Neumann, J.L.A. de Oliveira e Sousa, E.M. Brandão</i>	
Author Index	