Limiting Scale Risk at Production Wells by Management of PWRI Wells.............................. 1
Eric J. Mackay, Heriot-Watt U.

Use of Silicate-Based Drilling Fluids To Mitigate Metal Corrosion........................................... 15
M. McDonald, National Silicates, and K. Barr, S.R. Dubberley, SPE, and G. Wadsworth,
Alliance Drilling Fluids

Salt Free: A Case History of a Chemical Application To Inhibit Salt Formation in a
North African Field ............................................................................................................................ 19
Steve Szymczak and Randy Perkins, BJ Chemical Services; Mark McBrady, Anadarko; and
Mohamed El-Sedawy, BJ Services

Fracture Stimulation Utilizing a Viscoelastic-Surfactant-Based System in the
Morrow Sands in Southeast New Mexico ................................................................................................. 27
Vibhas J. Pandey and Tarik Itibrout, Schlumberger; Larry S. Adams, Chevron; and Tracy L.
Cowan and Oscar A. Bustos, Schlumberger

Advanced Technology To Reduce Water Cut: Case Studies From the Pemex
Southern Region ................................................................................................................................. 35
Gustavo A. Farrera Romo, Héctor Hernández Leyva, Cinco Presidentes Asset Team,
Pemex, and Raúl Bonifacio Aguilar, Carlos Caballero Campos, Larry Eoff, and Dwyann
Dalrymple, Halliburton

Inhibition and Removal of Low-pH-Fluid-Induced Asphaltic Sludge Fouling of
Formations in Oil and Gas Wells........................................................................................................... 41
Kenneth M. Barker and Michael E. Newberry, Baker Petrolite

An Experimental Investigation of Interactions Between Supercritical CO2,
Asphaltenic Crude Oil, and Reservoir Brine in Carbonate Cores....................................................... 46
Abdulrazag Y. Zekri, SPE, Shedid A. Shedid, SPE, and Reyadh A. Almehaideb, SPE,
United Arab Emirates U.

A Case Study in the Removal of Deposited Wax From a Major Subsea Flowline
System in the Gannet Field .................................................................................................................. 55
Strachan, Shell U.K. Ltd.

The Application of Wax Dissolver in the Enhancement of Export Line Cleaning ....................... 61
H.A. Craddock, E. Campbell, and K. Sowerby, Roemex Ltd.; M. Johnson, CNR Intl. Ltd.;

Well Modeling Incorporating Nonisothermal Effects and Asphaltenic Precipitation ..................... 68
W. Thanyamanta, T.E. Johansen, and K. Hawboldt, Memorial U. of Newfoundland

Water-Based Drilling Fluid for HP/HT Applications ...................................................................... 83
M.A. Tehrani and A. Popplestone, M-I Swaco, and A. Guarneri and S. Carminati, Eni E&P
Squeeze Chemical for HT Applications—Have We Discarded Promising Products by Performing Unrepresentative Thermal Aging Tests?  .......................................................... 93
   Rex Wat, Lars-Even Hauge, Kåre Solbakken, Kjell Erik Wennberg, Linda Merete Sivertsen, and Berit Gjersvold, Statoil ASA

Thermochemical Process To Remove Sludge From Storage Tanks ........................................... 105
   Nelson O. Rocha, Carlos N. Khaili, Lúcia C.F. Leite, and Andre M. Goja, Petrobras

One Year Experience With The Injection of Nitrate To Control Souring in Bonga Deepwater Development Offshore Nigeria ................................................................. 113
   Cor Kuijvenhoven, Shell Intl. E&P B.V., and Jean Christophe Noirot, Paul Hubbard, and Lukman Oduola, Shell Nigeria E&P Co.

Anionic Surfactant Gel Treatment Fluid .................................................................................. 122
   Thomas D. Welton, Jason Bryant, and Gary P. Funkhouser, Halliburton

Formation Damages Caused by Emulsions During Drilling With Emulsified ......................... 130
   Ingebret Fjelde, IRIS

Conformance and Mobility Control: Foams vs. Polymers .......................................................... 138
   Guoyin Zhang and R.S. Seright, New Mexico Petroleum Recovery Research Center

A Study of Polyacrylamide-Based Gels Crosslinked With Polyethyleneimine ....................... 148

Oxidation as a Rheology Modifier and a Potential Cause of Explosions in Oil and Synthetic-Based Drilling Fluids ......................................................................................... 157

Application of Viscoelastic Surfactants as Mobility-Control Agents in Low-Tension Surfactant Floods ................................................................................................. 166
   Istvan Lakatos, Janos Toth, Tibor Bodi, and Julianna Lakatos-Szabo, U. of Miskolc, and Paul D. Berger and Christie Lee, Oil Chem Technologies

Designing Cement Slurries for Preventing Formation Fluid Influx After Placement .......... 180
   Ashok Santra, B.R. Reddy, and Mfon Antia, Halliburton

Design of a Novel Composite Agent for Improving the Toughness of Oilwell Cement Sheath ...................................................................................................................... 191
   X. Yao and S.D. Hua, Nanjing U. of Technology, China

Sensitivity Study on the Main Factors Affecting a Polymeric RPM Treatment in the Near-Wellbore Region of a Mature Oil-Producing Well ....................................................... 198
   O. Vasquez, M. Singleton, and K.S. Sorbie, Heriot-Watt U., and R. Weare, Baker Petrolite

Nanoemulsions: A New Vehicle for Chemical Additive Delivery ........................................... 212
   Lucilla Del Gaudio, Eni E&P; Rossella Bortolo, Eni R&M; and Thomas P. Lockhart, Eni E&P

Using Microgels To Shut Off Water in a Gas Storage Well ..................................................... 221
   A. Zaitoun, R. Tabary, and D. Rousseau, Inst. Français du Pétrole; T. Pichery and S. Nouyoux, Gaz de France; and P. Mallo and O. Braun, Seppic

Engineering Rhamnolipid Biosurfactants as Agents for Microbial Enhanced Oil Recovery ................................................................................................................................. 229
   Xiangdong Fang, Qinhong Wang, Baojun Bai, Xi Cai Liu, Yongchun Tang, Patrick J Shuler, and William A. Goddard III, California Inst. of Technology

Laboratory Evaluation of an Innovative System for Fracture Stimulation of High-Temperature Carbonate Reservoirs ................................................................. 238
   H.A. Nasr-El-Din and A. Al-Zahrani, Saudi Aramco, and J. Still, T. Lesko, and S. Kelkar, Schlumberger
Effect of Shear on Flow Properties During Placement and on Syneresis After Placement of a Polyacrylamide-Chromium Acetate Gelant

Stan McCool, Xianping Li, and G. Paul Wilhite, U. of Kansas

Modeling the Impact of Capillary Pressure Reduction by Surfactants

Rick Gdanski, Halliburton

Evaluation of a Renewable, Environmentally Benign Green Solvent for Wellbore and Formation Cleaning Applications

Sandra L. Berry, Joel L. Boles, and Kay E. Cawiezal, BJ Services Co.

Experimental Investigation and Modeling of Naphthenate Soap Precipitation Kinetics in Petroleum Reservoirs

S. Sarac and F. Civan, U. of Oklahoma

Biosurfactants Produced From Agriculture Process Waste Streams To Improve Oil Recovery in Fractured Carbonate Reservoirs


Effect of Temperature on Degradation of Polymer Drag Reduction and Heat Transfer in Non-Newtonian Fluid

A.A. Hamouda and Omotayo.T. Moshood, U. of Stavanger, Norway

Remediation of Proppant Flowback—Laboratory and Field Studies

Philip D. Nguyen, Jimmie D. Weaver, Richard D. Rickman, and Michael W. Sanders, Halliburton

Flexible Treatment Program for Controlling H2S in FPSO Produced-Water Tanks

E.D. Burger, EB Technologies; C.A. Andrade, Petrobras; and M. Rebelo and R. Ribeiro, Baker Petrolite

Zeta Potential Altering System for Increased Fluid Recovery, Production, and Fines Control

Sarkis Kakadjian and Frank Zamora, Weatherford Intl. Inc., and Jim Venditto, Shell E&P Europe

Experimental Investigation of Emulsions Stability in GOSPs—Part I: Analyses of Separated Phases

A.M. Al-Ghamdi, Saudi Aramco; C. Noïk and C. Dalmazzone, IFP; and S. Kokal, Saudi Aramco

The Optimisation of a Scale Management and Monitoring Program for During the Production-Decline Phase of the Life Cycle

Myles Jordan, Nalco; Ian Archibald, Chevron; Rod Farrell, Baker Petrolite; Clare Johnston, Nalco; and Alistair Strachan, Baker Petrolite

The Development of a Scale Management and Monitoring Program for a High-Temperature Oil Field During the Production-Decline Phase of the Life Cycle

Myles Jordan, Nalco; Eyvind Sørhaug, Talisman; and Morag Elrick and David Marlow, Nalco

Advanced Nitrate-Based Technology for Sulfide Control and Improved Oil Recovery

D.M. Dennis and D.O. Hitzman, The LATA Group Inc.

Kinetic Parameters for Dilute Epoxy Resins Measured by Nuclear Magnetic Resonance Spectroscopy

Richard D. Rickman, J. Michael Wilson, and Jim D. Weaver, Halliburton

Accelerating Effect of Surfactants on Gas Hydrates Formation

Marek Pakulski, BJ Chemical Services
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors Determining the Reverse Osmosis Performance of Zeolite Membranes on Produced Water Purification</td>
<td>399</td>
</tr>
<tr>
<td>Ning Liu, Jun Lu, Liangxiong Li, SPE, and Robert Lee, SPE, New Mexico Petroleum Recovery Research Center</td>
<td></td>
</tr>
<tr>
<td>Nitrate-Based Sourcing Mitigation of Produced Water—Side Effects and Challenges From the Draugen Produced-Water Re injection Pilot</td>
<td>406</td>
</tr>
<tr>
<td>A Study on Catalytic Aquathermolysis of Heavy Crude Oil During Steam Stimulation</td>
<td>417</td>
</tr>
<tr>
<td>Shoubin Wen, Yujian Zhao, Yongjian Liu, and Shaobin Hu, Daqing Petroleum Inst.</td>
<td></td>
</tr>
<tr>
<td>Understanding Formic Acid Decomposition as a Corrosion Inhibitor Intensifier in Strong Acid Environments</td>
<td>422</td>
</tr>
<tr>
<td>Juanita M. Cassidy, Halliburton; Robert I. McNeil, Shell E&amp;P Technology Co.; and Chad E. Kiser, Halliburton</td>
<td></td>
</tr>
<tr>
<td>On-Site Freshwater Production for Offshore Facilities</td>
<td>431</td>
</tr>
<tr>
<td>J.P. Osegovic, J.W. Hill, S.R. Tatro, and M.D. Max, MDS Research</td>
<td></td>
</tr>
<tr>
<td>Gas Drying Using a Pass-Through Hydrate Crystallizer</td>
<td>434</td>
</tr>
<tr>
<td>Effects of Polymers on the Structure and Deposition Behavior of Waxy Oils</td>
<td>439</td>
</tr>
<tr>
<td>Jack F. Tinsley, Robert K. Prud'homme, Xuhong Guo, Douglas H. Adamson, Susan Shao, Devang Amin, Scott Callahan, Princeton U.; Heather D. Dettman, National Centre for Upgrading Technology; and Robert Kriegel and Rajesh Saini, Halliburton Energy Service</td>
<td></td>
</tr>
<tr>
<td>Effects of Flow Conditions and Surfactant Availability on Adsorption</td>
<td>450</td>
</tr>
<tr>
<td>Reid B. Grigg and Alexander A. Mikhalin, New Mexico Petroleum Recovery Research Center</td>
<td></td>
</tr>
<tr>
<td>Design and Evaluation of an Elastomeric Sealant for Use in Primary Cementing</td>
<td>457</td>
</tr>
<tr>
<td>J.S. Phipps, H.K.J. Ladva, B. Craster, J.-P. Caritey, and B. Dargaud, Schlumberger</td>
<td></td>
</tr>
<tr>
<td>Characterization of the Chemical Properties of Crude Oils To Explain Observed Asphaltene Inhibitor Specificity</td>
<td>464</td>
</tr>
<tr>
<td>Michael Squicciarini and Andrew Yen, Baker Petrolite; Donald F. Smith, Ryan P. Rodgers, and Alan G. Marshall, Florida State U.; and Geoffrey C. Klein, Christopher Newport U.</td>
<td></td>
</tr>
<tr>
<td>Internal Breakers for Viscoelastic-Surfactant Fracturing Fluids</td>
<td>470</td>
</tr>
<tr>
<td>James B. Crews and Tianping Huang, Baker Oil Tools</td>
<td></td>
</tr>
<tr>
<td>Fluid-Loss Control Improves Performance of Viscoelastic-Surfactant Fluids</td>
<td>478</td>
</tr>
<tr>
<td>Tianping Huang, SPE, and James B. Crews, SPE, Baker Oil Tools</td>
<td></td>
</tr>
<tr>
<td>Use of Nitrate or Nitrite for the Management of the Sulfur Cycle in Oil and Gas Fields</td>
<td>485</td>
</tr>
<tr>
<td>Sandstone Matrix Stimulation Can Improve Brownfield Oil Production When the Chemistry and Procedures Are Correct</td>
<td>492</td>
</tr>
<tr>
<td>Yin-Chong Yong and Karim Saaikh, Brunei Shell Petroleum; Joao Queiros, Yan Song, and Surasak Srisa-ard, Well Services Brunei; and Keng Seng Chan and Mathew Samuel, Schlumberger MEA Technology HUB</td>
<td></td>
</tr>
<tr>
<td>Asphaltene Gravitational Gradient in a Deepwater Reservoir as Determined by Downhole Fluid Analysis</td>
<td>502</td>
</tr>
<tr>
<td>Oliver C. Mullins and Soraya S. Betancourt, Schlumberger-Doll Research; Myrt E. Cribbs and Jefferson L. Creek, Chevron Energy Technology Corp.; and Francois X. Dubost, A. Ballard Andrews, and Lalitha Venkataramanan, Schlumberger-Doll Research</td>
<td></td>
</tr>
</tbody>
</table>
Oilfield Surfactants Improve Recovery by Imbibition ................................................................. 508
W.W. Weiss and X. Xie, Correlations Co.

Use of Microbial DNA Probes as a Potential New Tool in Oil Exploration and Characterization .............................................................................................................................. 521
Hans Kristian Kotlar, Statoil ASA, and Odd Gunnar Brakstad and Sidsel Markussen, SINTEF Applied Chemistry

Wax Control by Biocatalytic Degradation in High-Paraffinic Crude Oils .......................... 533
Hans Kristian Kotlar, Statoil ASA; Alexander Wentzel, NTNU; Mimmi Throne-Holst, SINTEF; Sergey Zotchev, NTNU; and Trond Ellingensen, SINTEF

Enhanced Oil Recovery by COMB-Flow: Polymer Floods Revitalized ............................ 540
Hans Kristian Kotlar, and Olav Selle, Statoil ASA, and Ole Torsaeter, NTNU

Modelling of Nonaqueous and Aqueous Scale-Inhibitor Squeeze Treatments .......... 546
O. Vazquez, E.J. Mackay, and K.S. Sorbie, Heriot-Watt U.

Development and Field Application of a New Hydrogen Sulfide Scavenger for Acidizing Sour-Water Injectors .......................................................... 556
H.A. Nasr-El-Din and M. Zabihi, Saudi Aramco, and S.K. Kelkar and M. Samuel, Schlumberger

A Study of Acid Cement Reactions Using the Rotating Disk Apparatus .................. 566
H.A. Nasr-El-Din, A. Al-Yami, and A. Al-Aamri, Saudi Aramco, and Y. El-Marsafawi, Schlumberger

Chemical Diversion Techniques Used for Carbonate Matrix Acidizing: An Overview and Case Histories .......................................................... 574
Frank F. Chang and Xiangdong Qiu, Schlumberger, and Hisham A. Nasr-El-Din, Saudi Aramco

Evaluating Chemical-Injection Packages for Downhole Continual Injection in High-Rate HP/HT Gas Production Systems ................................. 580
Britt Marie Hustad and Rex Wat, Statoil ASA, and Ian Littlehales and Gordon M. Graham, Scaled Solutions Ltd.

19F NMR Study of Ovalbumin Diffusion in Guar Filter Cake ........................................ 590
Lin Fu, Brian Pethica, Robert Prud'homme, and Carlos Pacheco, Princeton U.

The Importance of Fluid Chemistry in High-Temperature Hydraulic Fracture Stimulation .......................................................... 595
Bob Shelley and Phillip C. Harris, Halliburton

Advances in Microbial Ecology Relevant to the Application of Nitrate To Control Reservoir Souring ............................................................. 603
S. Maxwell, Commercial Microbiology Ltd.

Advances in Inhibitive Water-Based Drilling Fluids—Can They Replace Oil-Based Muds? .................................................................................. 614
Arvind Patel, Emanuel Stamatakis, Steve Young, and Jim Friedheim, M-I Swaco

Assessment of Barite Scaling Potentials, Sulfate Removal Options, and Chemical Treating Strategies for the Tombua-Landana Development .... 622
Huey J. Chen and Charlie J. Hinrichsen, Chevron ETC; Christopher A. Burnside, Chevron CIEP; and Mark Widener, Chevron ETC

Alteration of Sand Wettability by Corrosion Inhibitors and Its Effect on Formation of Sand Deposits .......................................................... 635
E. Gulbrandsen and A. Pedersen, Institute for Energy Technology

Maximising Chemical Placement in Complex Wells ..................................................... 641
Robert Stalker, Kristen Butler, Gordon Michael Graham, and Fazrie Wahid, Scaled Solutions Ltd.
Understanding the Factors Influencing the Formation and Control of Calcium Naphthenate Solids and Stabilised Emulsions Using a Novel Laboratory Flow Rig............ 649  
Helen Williams, Sarah Dyer, and Gordon Graham, Scaled Solutions Ltd.

Biodegradable Surfactants Aid the Development of Environmentally Acceptable Drilling-Fluid Additives................................................................. 657  
Jeffrey Miller, Halliburton

Author Index