# **SPE Hydrocarbon Economics and Evaluation Symposium (HEES 2012)**

**Impact of Technology and Stakeholder Challenges** 

Calgary, Alberta, Canada 24-25 September 2012

ISBN: 978-1-62276-417-4

#### 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**

SPE 156812	License to Operate: Nontechnical Risks and Shale Gas Development in Europe ANT Dirk Nuyens, SPE, Walter Heinz, SPE, and Dieter Hiller, SPE, Environmental Resources Management
SPE 157883	New Environmental Friendly Process Aids Improve Bitumen Recovery and Accelerate Tailings Settling of Low Grade Oil Sands Á Amir Mahmoudkhani, SPE, Thomas Fenderson, Philip Watson, SPE, Yongfu Wu, SPE, Mohan Nair, Kemira
SPE 158918	The Bakken: Utilizing a Petroleum System Based Analysis to Optimally Exploit One of the World's Largest Oil Deposits ÁFI L. Alcoser, SPE, Shell, W. Ketcham, SPE, Oppenheimer & Co., A. Ovalle, SPE, Schlumberger, M. Parsons, SPE, ConocoPhillips
SPE 158960	The Transformation of an E&P Company's Approach to Asset Development Á H Tim Mills, Talisman Energy and Pete Luan, Westney Consulting Group
SPE 159391	A Non-Pressure Dependent Method for Forecasting Rate and Reserves in Linear Flowing Conventional and Unconventional Wells Á F  T. Greg Easley, Cathexis Oil & Gas
SPE 159424	Reserve Growth an Examination of Infill Drilling and EOR/IOR in Canada Á € Richard Baker, RDS a Baker Hughes Company; Rous Dieva, Gaffney, Cline and Associates; and Kerry Sandhu, Gaffney, Cline and Associates
SPE 159587	Improving Exploration, Appraisal & Pilot Planning through Better Forecasting of Uncertainty Reduction via Reliability of Information Interviewing and Confidence PlotsÁl G E. M. Coopersmith, SPE, and M. K. Burkholder, SPE, J. H. Schulze, SPE, Decision Frameworks, L.P.
SPE 159683	Has the Economic Stage Count Been Reached in the Bakken Shale? Â H Jason Baihly, SPE, Raphael Altman, SPE, and Isaac Aviles, SPE, Schlumberger
SPE 159732	Efficiency of Capital Expenditure of Petroleum Producers: How Investing in Exploration and Development Would Affect Reserves and Production ÆF€Î  Lev Virine, SPE, Ziff Energy
SPE 159823	Completion Influence On Haynesville Shale Gas Well Performance AFFH Xueying Xie, John D. Mac Glashan, Shawn P. Holzhauser, Gregory M. Knott, Shell Exploration and Production Company

SPE 159838	Rapid Work Flows for Accurately Determining Optimal Horizontal Well Spacing and Fracture Cluster Spacing AWFG James L Buchwalter, Gemini Solutions Inc., Mark Craig, Devon Energy, Richard Wardlow, Devon Energy
SPE 160000	A Two-Factor Price Process for Modeling Uncertainty in the Oil PricesÁFHH Babak Jafarizadeh, Statoil ASA and Reidar B. Bratvold, University of Stavanger
SPE 161583	The Optimization of Natural Gas Transportation AFI H Michael J. Economides, University of Houston, Xiuli Wang, XGas, Francesco Colafemmina, S.A.F.E., and Vanni Neri Tomaselli, Blue Wave Co.
SPE 161792	Price Projection Model for New Explorations after the Lost Control of Majors AFT I O. Al-Farisi, K. Fan, H.A. Belhaj, and F.A. Fahmy, Petroleum Institute University and Research Center
SPE 161831	More Confidence in NCF through Comprehensive Oil Price ModelÁFÎ Î Hadi Belhaj, SPE/The Petroleum Institute, Maged M. Yaslam, SPE/ADCO, Md. Fakhurddin Patwary and Saheed O. Olayiwola/The Petroleum Institute – Abu Dhabi, UAE
SPE 162630	Creating Analogs, Fact and Fiction AFI J Randy Freeborn, SPE, Boyd Russell, SPE, and Wayne Keinick, SPE, Energy Navigator Inc.
SPE 162631	How to Apply Stretched Exponential Equations to Reserve Evaluation AFJG Randy Freeborn, SPE, and Boyd Russell, SPE, Energy Navigator Inc
SPE 162675	Perceived Value and Popularity of Decision Analysis Tools in Upstream Asset Valuations ASEJ Erkan Karakaya, Schlumberger
SPE 162708	Reporting Reserves Under Modern Fiscal Agreements AGG Elliott D. Young, ExxonMobil Production Company
SPE 162729	Identifying Arbitrage Opportunities in Today's Energy Market Utilizing Portfolio Optimization, the Efficient Frontier Method, Risk Management and Market CorrelationsÄG € L. Alcoser, SPE, Shell
SPE 162748	An Integrated Portfolio Management Approach for More Effective Business Planning AG J Michael Back, Schlumberger and Graham Kirk, 3esi

SPE 162821	Impact of Uncertainty in Estimation of Shale Gas Reservoir and Completion Properties on EUR Forecast and Optimal Development Planning: A Marcellus Case Study ÁG F R. Jayakumar and Rakesh Rai, Weatherford International Ltd.
SPE 162870	The Role of Stranded Gas from Central Asia, Russia, Southeast Asia, and Australia in Meeting Asia's Future Demand for Gas Imports ÁG J  Emil D. Attanasi and Philip A. Freeman, US Geological Survey
SPE 162875	Analytical Probabilistic Reserve Estimation by Volumetric Method and Aggregation of Resources AFÎ  C. Karacaer, SPE, Colorado School of Mines, and M. Onur, SPE, Universiti Teknologi Petronas
SPE 162878	The Economic Folly of Chasing Schedules in Oil Developments and the Unintended Consequences of Such Strategies ÁHH Neeraj S. Nandurdikar, SPE, Independent Project Analysis, Inc., Peter Michael Kirkham, SPE, Independent Project Analysis, Inc.
SPE 162883	Integrating the Subsurface and the Commercial: A New Look at Monte Carlo and Decision Tree Analysis AH I  J. H. Schulze, SPE, J. N. Walker, SPE, M. K. Burkholder, SPE, Decision Frameworks, L.P.
SPE 162893	Fiscal System Modeling Framework ÁHÍ Í Ginny Coddou, Robert Hammond, Marius Laaveg, Babafemi Ogunyomi, Asbjørn Raeder, Malin Svensson, Peng Xu, Caesar Systems
SPE 162900	The Economics of Gas in North America: Portfolio vs. Performance under Cyclical PricesÁHÎ F Paul Ziff, SPE, Ziff Energy Group
SPE 162901	Long-Term Economic Viability of Production from Unconventional Liquids-Rich Reservoirs: The Case of Bakken Field Ani J Sarp Ozkan, SPE, Colorado School of Mines, Basak Kurtoglu, SPE, Marathon Oil Co., and Erdal Ozkan, SPE, Colorado School of Mines
SPE 162903	Reining In the Data Junkies Having the Guts Not to Appraise AAA F Patrick O. Burdett, SPE, William J. Haskett, SPE, Decision Strategies Inc.
SPE 162907	Basic Petroleum Accounting for Petroleum Engineers Äk-UÍ Dan Olds, Ryder Scott Company, L.P.

SPE 162909	An Efficient Decision Framework for Optimizing Tight and Unconventional ResourcesÁl €H C.D. Wehunt, SPE, Chevron Corp., M.J. Hrachovy, SPE, and S.C. Walker, SPE, Chevron North America Exploration & Production Co., A.S. Padmakar, SPE, Chevron Energy Technology Co.
SPE 162910	Practical Considerations for Decline Curve Analysis in Unconventional Reservoirs — Application of Recently Developed Time-Rate Relations A FI V. Okouma, Shell Canada Energy, D. Symmons, Consultant, N. Hosseinpour-Zonoozi, D. Ilk, DeGolyer and MacNaughton, and T.A. Blasingame, Texas A&M University
SPE 162911	Exploration Assets Evaluation: A Practical Way of Conforming Deterministic to Stochastic Mindsets Á i Í Dmitry Surovtsev, Geoknowledge, Per Audun Hole, Geoknowledge, and Chresten Meulengracht, Geoknowledge
SPE 162913	Coalbed Methane Resources Evaluation Methodology: An Integrated Case Study in Former Coal Mining Basins in FranceÁÁÌÎ Ch. Lefebvre, IFP-MEC, Mariana Alvis, Beicip-Franlab, V. De Groen, Beicip-Franlab, S. Delamarre, Beicip-Franlab, and G. Roy, Beicip-Franlab
SPE 162914	Modeling Learning in Resource Play Assessment: An Integrated Approach for Decision SupportÁ €G Charles Stabell, GeoKnowledge
SPE 162915	Assessment of Probabilistic Parameters for Barnett Shale Recoverable VolumesÁÁ €J Ezisi, Ibegbuna B., Schlumberger; Hale, Brent W., SPE, William M. Cobb & Associates, Inc; Watson, Marshall C., SPE, Heinze, Lloyd, SPE, Texas Tech University
SPE 162916	Comparison of Hydraulic Fracture Fluids in Multi-stage Fracture Stimulated Horizontal Wells in the Pembina Cardium Formation Á Ó Meghan Klein, Sproule Associates Limited, Glen Kenealey, Bellatrix Exploration Ltd., Brad Makowecki, Bellatrix Exploration Ltd.
SPE 162921	Management Decision Matrix for Shale Gas Projects in EuropeÁí I Í O. Hausberger, SPE, L. A. Högn, SPE, K. Soliman, SPE, Mining University of Leoben
SPE 162923	Pressure Normalized Decline Curve Analysis for Rate-Controlled WellsÁÍÍÍ Samantha Anderson; Dave Anderson; Krystina Edwards; Kristina Epp; Katya Stalgorova, Fekete Associates

SPE 102921	Trend Portfolio Á Î J Scott L. Nelson, SPE, Jeffery W. Hudson, SPE, and Andrew Hooker, Pioneer Natural Resources
SPE 162929	Application of Real Options to Valuation and Decision-making in the Petroleum E&P Industry ÁÁÍ Ï Liying Xu, SPE, The University of Tulsa; Kamy Sepehrnoori, SPE, Jim S. Dyer, and Willem C. J. van Rensburg, The University of Texas at Austin
SPE 162932	Reserves Booking in Upstream Fiscal Systems Hampered by Inconsistency ÁÁ FÎ F. Demirmen, SPE, Independent Petroleum Consultant
SPE 162935	Improving the Annual Reserves/Audit Process Through the Use of Citrix and Web-Based Applications Á Ĝ Č Cameron Six, Sproule Associates Limited, Arthur Faucher, Canadian Natural Resources Limited, Harry Helwerda, Sproule Associates Limited
SPE 162938	Gas Transmission Market: New Trends around the World MA H Gina Vega Riveros, SPE, Reservoir Consultant