

# **SPE E&P Health, Safety, Security and Environmental Conference – Americas 2015**

**Denver, Colorado, USA  
16 – 18 March 2015**

**ISBN: 978-1-5108-0245-2**

**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© (2015) by the Society of Petroleum Engineers  
All rights reserved.

Printed by Curran Associates, Inc. (2015)

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

## **SPE-173487-MS**

### **Validating a Tool to Measure Safety Culture**

*W.L. Harris, Baker Hughes, Inc.*

## **SPE-173488-MS**

### **Evaluating Non-technical Risks and Opportunities in Site Selection and Routing**

*D. Tanzil, M. Dragan, B. Bourque, K. Seel, T. Taylor, Golder Associates*

## **SPE-173489-MS**

### **The Road to Updated Emission Factors to Characterize Methane Emissions for Select Emission Sources in Natural Gas Systems**

*K. Ritter, API; M. Lev-On, The LEVON Group, LLC; T.M. Shires, URS Corp.*

## **SPE-173491-MS**

### **Associated Shale Gas: From Flares to Rig Power**

*E.M. Wallace, C.A. Ehlig-Economides, Texas A&M University*

## **SPE-173492-MS**

### **Upgraded Rig Lighting Improves Night Time Visibility While Reducing Stray Light and the Threat to Dark Skies in West Texas**

*B. Wren, University of Texas McDonald Observatory; S. Locke, Pioneer Energy Services*

## **SPE-173494-MS**

### **The Implementation and Automation of Effective Key Performance Indicators to Manage Process Safety and Asset Integrity Risk: A Power Company Case Study**

*S.A. Maxwell, A. Harley, Lockheed Martin*

## **SPE-173495-MS**

### **Managing Risks at the Early Phases of Oil and Gas Major Capital Projects**

*R. Salas, Chevron USA*

## **SPE-173496-MS**

### **Atmospheric Venting of Flammable Gas to a “Safe Area”: Comparing Guidelines to Calculations**

*J. Ramirez, Exponent Failure Analysis Assocs.; D. Morrison, R. Hart, T. Hetrick, Exponent, Failure Analysis Associates*

## **SPE-173497-MS**

### **Data Drilling: Changing How the Oil and Gas Industry Manages Safety and Risk**

*B.E. Caldwell, J.J. Hinton, Baker Hughes Inc*

## **SPE-173498-MS**

### **Safety Culture Change and Learnings**

*M. Zerafa, RISKbytes Inc; K. Shallenberger, Shell E&P International Ltd; C. Hirstius, C.S. Sistrunk, Shell Exploration & Production Co; B. Huber, Shell Exploration and Production; B. Hebert, Shell Exploration & Production Co; A. Turley, Shell Exploration and Production; K. Satterlee, Shell Exploration & Production Co*

## **SPE-173499-MS**

### **Challenges in Strategic Environmental Impact Assessment for Shale Development**

*H. Boyd, Acorn International*

## **SPE-173500-MS**

### **Veterans Diversity Group Launches Mission: Camouflage to Coveralls**

*L. Duhon, A. Wright, D. Perkins, J.R. Petty, C. White, M.P. Cox, R. Crawford, Halliburton*

# Table of Contents

## **SPE-173501-MS**

### **Evaluating Evacuation Scenarios Based on a Fast Graphic-Simulation Approach Applied to an Actual Building**

*I. Lache, M. Cavalcante, Halliburton*

## **SPE-173502-MS**

### **Reducing Project Risks Through Enhanced Evaluation of Societal Risks**

*C. Wall, Environmental Resources Management*

## **SPE-173507-MS**

### **Engineering Safe Distances between Occupied Structures and Processing Equipment**

*J.E. Johnstone, M. Spangler, C. Heitzman, G. Wimberley, A.R. Flores, Contek Solutions LLC*

## **SPE-173508-MS**

### **Safety Culture in Oil and Gas Operations: A Risk Analysis Framework to Address Communication and Interoperation of Multiple Interacting Organizations**

*M. Tabibzadeh, N. Meshkati, University of Southern California*

## **SPE-173511-MS**

### **Assessing the Ecological Integrity of Wetland Functionality in Response to Energy Exploration and Production Operations on the Upper Texas Gulf Coast**

*E. Kinney, S. Glenn, B. Neish, L. Chen, R. Bare, Houston Advanced Research Center*

## **SPE-173512-MS**

### **Evaluation of the Respirable Crystalline Silica Content in Common Oilfield Minerals**

*A. Okhrimenko, A. Thuriere, P.C. Tyczynski, M-I SWACO, a Schlumberger company*

## **SPE-173513-MS**

### **Safety Observations: Improving Impact With Feedback**

*S.A. Weiss, Baker Hughes*

## **SPE-173514-MS**

### **Micromechanical Analysis of Seismic Triggered by Hydraulic Fracturing in Unconsolidated Formation**

*W. Li, Texas Tech University*

## **SPE-173515-MS**

### **Hydraulic Fracturing-Safe, Environmentally Responsible Energy Development**

*B.M. Todd, Baker Hughes Solutions; D.C. Kuykendall, Baker Hughes Inc; M. Peduzzi, Baker Hughes Solutions; J.J. Hinton, Baker Hughes Inc*

## **SPE-173518-MS**

### **Gulf of Mexico Environmental Monitoring Through Federal-Academic-Industry Partnerships**

*R. Perry, Shell Exploration & Production Co; W. McCall, NOAA National Data Buoy Center; R. Green, Bureau of Ocean Energy Management; S. Howden, R. Vandermeulen, K. Martin, University of Southern Mississippi; N.C. Slowey, Texas A&M University; S. Watson, B. Kirkpatrick, Gulf of Mexico Coastal Ocean Observing Network; P. Tao Leung, Shell Global Solutions US Inc.; L. Brzuzy, K. Satterlee, Shell Exploration & Production Co; R. Raye, Shell Global Solutions US Inc.; I. Voparil, M. Vogel, Shell Exploration and Production Company; R.J. Abadie, Shell E&P Services RF BV*

## **SPE-173519-MS**

### **Innovative Assessments for Selecting Offshore Platform Decommissioning Alternatives**

*S. Truchon, Shell Projects and Technology; L. Brzuzy, Shell Exploration & Production Co; M. Fonseca, CSA Ocean Sciences, Inc*

# Table of Contents

## **SPE-173521-MS**

### **Quantification of Hydraulic Fracturing Project Impacts Using Reporting Metrics**

*D. Ferguson, Schlumberger Technology Corporation*

## **SPE-173522-MS**

### **Managing HSE Performance Through Sustainability Reporting**

*H. Murphy, IPIECA; B. Janus, Total*

## **SPE-173523-MS**

### **The Work of One Association's Safety, Environment Legislation (SEL) Committee: A Trade Association's Approach to SEL Issues Affecting its Members**

*N. Hough, J. Bugler, International Marine Contractors Association*

## **SPE-173525-MS**

### **Emergency Response Planning in the Arctic**

*A.M. Osman, Statoil*

## **SPE-173526-MS**

### **One Company's Green Logistics**

*P. Prakthong, A. Sila, T. Preeyanurak, C. Manonda, L. Pornsakulsak, PTT Exploration & Production*

## **SPE-173528-MS**

### **The Organizational Ombuds Office and Corporate Social Responsibility: Driving Values in an Organization**

*B.M. Bonnivier, M.C. Brooke-Lander, M. Lewis, Baker Hughes*

## **SPE-173529-MS**

### **A Critical Review of Emerging Challenges for the Oil Field Waters in the United States**

*M. Ali, B. Hascakir, Texas A&M University*

## **SPE-173531-MS**

### **The Integral Role of Waste Management into Successful Capital Project Design and Implementation**

*F.V. Jones, S. Rankin, ERM*

## **SPE-173532-MS**

### **Emergency Preparedness for Oil and Gas Exploration and Production**

*P. McNally, Golder Associates (UK) Ltd.; E. Minyard, Response Force 1*

## **SPE-173534-MS**

### **Engineering the Mud-Spacer-Cement Rheological Hierarchy Improves Wellbore Integrity**

*A. Shadravan, Baker Hughes; G.G. Narvaez, Baker Hughes RRTC; A. Alegria, P. Carman, C. Perez, Baker Hughes; R. Erger, Baker Hughes Inc*

## **SPE-173535-MS**

### **Measurement of Environmental Costs for Shale Gas Development in China**

*R. Guo, D. Luo, S. Jiang, China University of Petroleum Beijing*

## **SPE-173536-MS**

### **Mapping Local Economic Benefits of Oil and Gas Development in Colorado**

*J. Dell, ConocoPhillips; K. Fennessey, A.D. Roberts, ConocoPhillips Co*

# Table of Contents

## **SPE-173537-MS**

### **Factoring in Ecosystem Services and Values in Decision Making, Risk Management, Loss and Environmental Damage: Over the Lifecycle of Energy Development**

*N.H. Wright, ERM*

## **SPE-173538-MS**

### **Marine Mammals and Ocean Sound: Sources, Impacts, Uncertainties, Controls, and Future Decision Making**

*N.H. Wright, ERM*

## **SPE-173541-MS**

### **Fatigue and the Use of Wearable Technology**

*P. Butler, EdanSafe; W. Fee, MiX Telematics*

## **SPE-173543-MS**

### **HSE Golden Rules: An Application Case on a Floating Production Storage and Offloading Vessel**

*M. Cortina, M. Lanzo, Floaters spa - Eni Upstream*

## **SPE-173544-MS**

### **Risk Assessment in HAZOPs**

*H.J. Duhon, GATE Inc; J. Cronin, Hess Corporation*

## **SPE-173546-MS**

### **Integration of HSE Into Project Planning: Maximizing HSE in Facility Design**

*R.A. Rowbottom, M. Jones, J. Cobb, Baker Hughes*

## **SPE-173547-MS**

### **Water Resource Management and Conservation in the Americas**

*R.A. Rowbottom, M. Letlow, D.C. Kuykendall, Baker Hughes*

## **SPE-173548-MS**

### **A Practical Assessment of Dermal Exposure of Drilling Rig Workers to Mixed Hydrocarbons**

*J.E. Crittall, J. Baker, Bureau Veritas North America, Inc.*

## **SPE-173550-MS**

### **Social Performance in the Gulf of Mexico: Crisis-Ready Stakeholder Engagement**

*S. Jain, D. Slocum, Acorn International*

## **SPE-173551-MS**

### **Monitoring and Conservation Program for Umbrella Species: The Northern Screamer as a Strategic Element for Floodplain Biodiversity in the Middle Magdalena Region, Colombia**

*L.G. Carmona, J. Cardenas, M. Navarrete, L. Cardenas, P. Montenegro, Mansarovar Energy Colombia Ltd*

## **SPE-173552-MS**

### **Water Footprint for Heavy Oil Extraction in Colombia: Relationship Between Oil and Water**

*L.G. Carmona, Mansarovar Energy Colombia Ltd*

## **SPE-173553-MS**

### **One Company's Approach for Shale Water Management**

*B. Karnik, N. MacLeod, J.P. Lilien, Chevron*

# Table of Contents

## **SPE-173555-MS**

### **Batata 2 Well Pad: Successful Life Cycle Management in a Remote Sensitive Area of the Amazon Basin**

*S. Valdivieso, F.L. Benalcazar, APD Proyectos Cía. Ltda.*

## **SPE-173557-MS**

### **Case Study: Maintaining Preparedness During Transition of an Organization's Emergency Response Model**

*C. Dulisse, Marine Well Containment Company*

## **SPE-173558-MS**

### **Implementing New State and Federal Air Regulatory Programs - A Systematic Approach To Compliance**

*J. Christopher, Trihydro Corporation*

## **SPE-173559-MS**

### **Managing Psychological Wellbeing While Away From Home Through a Five-Phase Model**

*S. Seaton, Sodexo Remote Sites; T. Jelley, Sodexo Quality of Life Institute*

## **SPE-173560-MS**

### **An Integrated Approach to Noise Exposure Management in an Oil and Gas Processing Facility Offshore Trinidad**

*P. Dukharan, BHP Billiton*

## **SPE-173561-MS**

### **A Barrier Based Methodology to Assess Site Security Risk**

*M. Van Staaldouin, F. Khan, Memorial University of Newfoundland*

## **SPE-173562-MS**

### **Strategies for Managing Greenhouse Gas Issues in an Ever-Growing Oil and Gas Industry**

*A. Woerner, L. Campbell, ERM*

## **SPE-173564-MS**

### **Reasonable Assurance of Accuracy of GHG Data Under Mandatory Reporting for the Upstream and Midstream Oil and Gas Industry: Fuel Samples**

*Y. Sultana, K. Madry, ERM*

## **SPE-173565-MS**

### **Practical Barrier Strength Assessment for Bowtie Diagrams**

*R. Rowe, M. Taylor, ERM Global Risk*

## **SPE-173567-MS**

### **Integrating Security into Site Design**

*N. Slezak, Marathon Oil Co*

## **SPE-173569-MS**

### **Barrier Verification - A Pillar of Industry Well Control**

*A.I. Ahluwalia, M.D. Novia, M.D. Fernandes, Baker Hughes*

## **SPE-173571-MS**

### **A Holistic Approach to Environment and Safety in ESIAs**

*G. Pettitt, S. Westfall, Environmental Resources Management*

# Table of Contents

## **SPE-173572-MS**

### **Environmentally Friendly Drilling Systems Scorecard**

*A.L. Wilcox, R.C. Haut, Houston Advanced Research Center; T.E. Williams, LEID, LLC.*

## **SPE-173574-MS**

### **Balanced Materiality: A Practical Approach to Determining Sustainability Priorities**

*M. Krembs, Newfield Exploration Company; T. Cort, Yale University*

## **SPE-173575-MS**

### **One Company's Oil Sands Wildlife Mitigation and Monitoring Program: An Industry-Leading Approach**

*A. Saxena, Devon Energy Corp.*