

# **SPE/ICoTA Coiled Tubing and Well Intervention Conference and Exhibition 2018**

The Woodlands, Texas, USA  
27-28 March 2018

ISBN: 978-1-5108-6093-3

**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© (2018) by Society of Petroleum Engineers  
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact 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: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## **SESSION 1: INTERVENTION IN CHALLENGING WELLS**

<b>Utilizing Ultrasonic Imaging Technology to Evaluate a Lateral Entry Module</b> .....	1
<i>Marianne Solberg, Michael Sullivan, Steve G. Drake, Tarjei Rommetveit, Duncan Troup, Joel Johns</i>	
<b>Swellable Packer Evaluation Using Multi-Detector Pulsed Neutron Logging and Borax</b> .....	22
<i>Gerardo Cedillo, Adrian Zett, Xiaogang Han, Rana Elghonimy, Behrooz Raeesi, David Iiter, Dodie Hecker, Nancy Landi</i>	
<b>Latest Tractor Technology Provides Performance Improvements in Unconventional Shales</b> .....	34
<i>Wade Mccutcheon, Jarrod Long, Mauro Zambrano, Andrew Sorg</i>	
<b>Wireline Tractor Advanced Restriction Navigation</b> .....	45
<i>Pierre-Arnaud Foucher, Ryan Vander Poorten</i>	
<b>Depleted Well Intervention in Extended Laterals Using Coiled Tubing and Commingled Fluid Systems</b> .....	51
<i>Troy A. Williams</i>	

## **SESSION 2: IMPROVING OPERATIONAL EFFICIENCY**

<b>Laboratory Evaluation of a Novel Metal Surface Treatment for Coiled Tubing Friction Reduction in Extended-Reach Wells</b> .....	61
<i>K. J. Elliott, S. Livescu, K. Yekta Ganjeh, Y. Li</i>	
<b>Next-Generation Release Device: Strong, Safer, Efficient, and Rigorously Qualified</b> .....	72
<i>Greg Au, Todor Sheiretov, Stephanie Elstrop, Caroline Stephan Rivas, Claire Bellicard, Yoann Couble</i>	
<b>Unlocking the Potential of Your Coiled Tubing Post Job Data</b> .....	87
<i>Chris Murphy, Andrew Sams</i>	
<b>30 Years of Continuous Coiled Tubing Modeling Software Development and Field Applications Creating New Capabilities</b> .....	100
<i>W. A. H. Aitken, S. Livescu, S. Craig</i>	
<b>Redefining Battery Operation for High-Power Downhole Tools</b> .....	118
<i>J. Segura, Z. Erkol</i>	

## **SESSION 3: ELECTRIC WIRELINE, SLICK AND BRAIDED LINE APPLICATIONS**

<b>Digital Slickline Using a Novel RF Transceiver: Case Studies in Kuparuk River: North Slope, Alaska</b> .....	132
<i>F. M. Heaney, C. Taylor, T. Wiese</i>	
<b>Case Study of a Complex, Heavy-Duty, High-Pressure Fishing Job Using Wireline, Slick Line and Coiled Tubing Intervention</b> .....	142
<i>Anthony Harris, Ron Zbitowsky, Abdullah Dughaiter, Lionel Webber, Neeraj Sethi</i>	
<b>Electric Line Deployed In-Well Rectification of Damaged Completion Components Re-Enables Well Access and Subsequent Intervention, Reinstating Production of Shut-In Wells</b> .....	160
<i>S. W. Murchie, A. Grønnerød, R. Hansen, O. E. Magnussen, M. Tungesvik, L. Hårsaker</i>	
<b>Wireline Operations - All-Inclusive Risk Management</b> .....	180
<i>H. C. Castillo, A. G. Haigood</i>	
<b>Wireline Tractor for Through-Tubing Intervention in Wells with Barefoot Openhole Completions</b> .....	199
<i>Greg Giem, Todor Sheiretov, Yoann Couble</i>	

## **SESSION 4: COILED TUBING APPLICATIONS**

<b>Comprehensive Review of Well Tractor Technology in Highly Extended Reach Wells</b> .....	210
<i>Wael Badeghaish, Mohamed N. Noui-Mehidi, Abdulrahman A. Al-Mulhem</i>	
<b>Coiled Tubing Drilling: Case Study, New Zealand</b> .....	231
<i>Soheil Kariminejad, Henrik Lundin, Lucas Horvath, Steven Sweet</i>	
<b>The Coiled Tubing Drilling Rig for Mineral Exploration</b> .....	248
<i>S. Soe, C. Lagat, B. Evans, M. Mostofi, S. Fox</i>	

<b>Real-Time Fiber Optic Integrated System Provides Precision and Confidence in a Coiled-Tubing-Conveyed Perforating Operation: A Case Study from the Eastern Foothills in Colombia</b> .....	258
<i>Vanessa Vera, Carlos A. Torres, Eduardo Delgado, Carlos Pacheco, David Sampayo, Josue Higuera, Monica Torres</i>	
<b>Operational Improvements Using a Coiled Tubing Telemetry System for a Complex Milling Operation in Shut-In Conditions</b> .....	269
<i>P. Correa, D. Parra, S. Craig, S. Livescu, A. Yeginbayev, Z. Nadirov</i>	

## **SESSION 5: KNOWLEDGE SHARING EPOSTER I**

<b>A Comparison of Instrumented and Surface-Controllable Rotary Honing and Brushing for Well Intervention</b> .....	286
<i>M. Dresel, J. Schulz, R. C. Mennem</i>	
<b>Methods and Processes to Help Improve the Operational Efficiency and Reliability of Wireline-Run Cement Plugs</b> .....	303
<i>Q. Wu, P. Chamarthy, A. Lindsey, J. G. Thompson</i>	

## **SESSION 6: KNOWLEDGE SHARING EPOSTER II**

<b>Underbalanced Drilling with Coiled Tubing: A Case Study in Marginal Shallow Wells</b> .....	312
<i>Adam Miszewski, Toni Miszewski, Peter Hatgelakas</i>	
<b>Back to Life by a Coiled Tubing Gas Lift Pilot Project in Colombian Foothill Wells</b> .....	323
<i>Oscar Almeyda, Claudio Castañeda, Josue Higuera, Monica Torres, Fernando Portela</i>	

## **SESSION 7: MATERIALS AND INTEGRITY**

<b>Past and Present Coiled Tubing String Failures - History and Recent New Failures Mechanisms</b> .....	341
<i>T. Padron, S. H. Craig</i>	
<b>Long Term Storage of Coiled Tubing: Industry Best Practices and Conclusions Based on Evaluation of Stock Strings</b> .....	367
<i>K. J. Elliott, C. D. Williams, Y. Li, E. Arriaga</i>	
<b>Laboratory and Field Performance of Mechanically Damaged New Technology Coiled Tubing</b> .....	377
<i>R. Rolovic, B. A. Reichert, S. Cravero, M. Valdez</i>	
<b>The Fatigue Behavior of Concentric Coiled Tubing</b> .....	389
<i>Garrett Luebke, Steven M. Tipton</i>	
<b>Rotation and Diameter Growth of Coiled Tubing</b> .....	400
<i>P. E. Ken Newman, Patrick Kelleher, David Rain, Charlie Cai</i>	

## **SESSION 8: WELL INTERVENTION SOLUTIONS**

<b>Electric Line Deployed Orientated Suction Cleanout Device Enables Gas Lift Valve Retrieval from Debris Blocked Side Pocket Mandrel in a Highly Deviated Well</b> .....	413
<i>Stuart Murchie, John Gjertsen, Magne Grødem, Martin Severin Sætrevik, Espen Osaland, Peter Lykke Sørensen, Steen Korsgaard Hansen</i>	
<b>New Initiation System Delivers Improved Perforating Safety and Reliability While Maximizing Efficiency</b> .....	427
<i>S. Aboelnaga, D. Austin, F. Garcia-Osuna, K. Goodman, A. J. Fayard, S. Bouloudene, Yasser Mohamed</i>	
<b>Innovation in Conveyance with Carbon Composite Rod</b> .....	436
<i>Duncan Troup</i>	
<b>Unique High Pressure Fishing Operation Leads Way to Increased Completions Efficiency</b> .....	452
<i>Jason Skufca, Christopher Stabler</i>	
<b>Redefining Pressure Deployment</b> .....	462
<i>Rod Shampine, Liam Zsolt, Stephen Higgins, Saif Aftab, Mattias Flander, Jaime Bronga, Rob Mielke</i>	
<b>First Time Coiled Tubing Milling in 7-in. Monobore Gas Well Using Downhole Real-Time Measurements</b> .....	475
<i>W. R. Tapia, Z. Erkol, P. Ramondenc, M. Houdaidon, A. Shaaban, S. Trummer</i>	

## **SESSION 9: OFFSHORE AND SUBSEA WELL INTERVENTION OPERATIONS**

<b>Successful Coiled-Tubing Cleanout of Heavy Post-Fracturing Proppant in Deepwater Gulf of Mexico: Case History</b> .....	485
<i>J. K. Webb, B. Sonnier</i>	
<b>Cement Milling Using Incurable Corrosive Brine in an HPHT Environment: A Unique Case Study</b> .....	504
<i>Irfan B. Abdullah, Mayank D. Kumar, Aman Saraf, Nakul Khandelwal, Karan Kaul, Himanshu Pathak</i>	
<b>Successful Creation of Permanent Reservoir Isolation Barriers Using Coiled Tubing on the Norwegian Continental Shelf NCS</b> .....	518
<i>Iain Thomson</i>	

## **SESSION 10: STIMULATION AND CONFORMANCE OPERATIONS**

<b>Dendritic Acidizing Update: The Light at the End of the Tunnel</b> .....	531
<i>C. Dean Wehunt, Stefan K. K. Lattimer, Darren R. Mcduff</i>	
<b>An Innovative Tool for Stage Isolation and Effective Restimulation: A Case History of a 26-Stage Lateral Recompletion in the Permian Basin</b> .....	551
<i>Tasos Boulis, Travis Vulgamore, Luis Castro</i>	
<b>Application of Refracturing Using Coiled Tubing Opens a New Door of Opportunities for Unconventional Reservoir Stimulation</b> .....	561
<i>Piyush Pankaj, Priyavrat Shukla</i>	
<b>Author Index</b>	