

SPE/ICoTA Well Intervention Conference and Exhibition 2019

The Woodlands, Texas, USA
26 - 27 March 2019

ISBN: 978-1-5108-8543-1

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© (2019) by Society of Petroleum Engineers
All rights reserved.

Printed by Curran Associates, Inc. (2019)

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

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
Web: www.proceedings.com

TABLE OF CONTENTS

DAY 1

SESSION 1: INTERVENTION SOLUTIONS

| | |
|---|----|
| AUTOMATED WIRELINE MILLING SYSTEM | 1 |
| <i>K. Wiesenborn, N. Baklanov, P.O. Gourmelon, M. Klyushev, X. Yang</i> | |
| RAREFACTION SHOCK CLEANUP AND STIMULATION WITH A WATER HAMMER TOOL | 18 |
| <i>J. Kolle</i> | |
| REAL-TIME UNDERBALANCE PERFORATING IN SUBHYDROSTATIC RESERVOIR IMPROVES LONG-TERM WELL PERFORMANCE: A CASE STUDY OF WELL INJECTOR IN MALAYSIA | 31 |
| <i>A. Keong, N. Young, P. Djanaka</i> | |
| APPLICATION OF THRU TUBING TECHNOLOGIES IN THE CASPIAN SEA UPHOLE RECOMPLETION | 41 |
| <i>F. Hadianan, S. Mollayev, N. Huseynzade, Z. Valiyev, J. Gracia, J.G. Amaya, J. Fulks, K. Rahimov, L. Pinero, S. Ruzmetova</i> | |
| PLANNING, EXECUTION, IMPROVEMENTS, AND RESULTS FROM A MULTI-WELL FISHING CAMPAIGN USING A SNUBBING UNIT ON PRESSURIZED H₂S WELLS FOR A NOC IN THE MIDDLE EAST | 50 |
| <i>A. Donaldson, H. Al-Mayyan</i> | |

SESSION 2: DATA ENHANCED INTERVENTIONS AND DIAGNOSTICS

| | |
|--|-----|
| DISPOSABLE INTERVENTION TOOL FOR PRODUCTION LOGGING | 70 |
| <i>F.X.T. Bostick, D. Purkis, C. Feherty, K. Rose, D. Hitchcock</i> | |
| VERTICAL SEISMIC PROFILING VIA COILED TUBING-CONVEYED DISTRIBUTED ACOUSTIC SENSING | 82 |
| <i>A. Ellmauthaler, W. Palacios, M. LeBlanc, M. Willis, G. Knapo</i> | |
| DIGITAL SLICKLINE: CASE STUDIES SETTING AND PULLING CROWN PLUGS | 90 |
| <i>F.M. Heaney, C. Smith</i> | |
| A NOVEL APPROACH TO WIRELINE DEBRIS REMOVAL | 103 |
| <i>P.O. Gourmelon, K. Wiesenborn, G. Chochua</i> | |
| A NEW APPROACH TO CEMENT EVALUATION USING PASSIVE ACOUSTIC METHODS DIRECTLY ANALYSES THE PERFORMANCE OF THE BARRIER BY DETECTING LEAKAGE RATHER THAN ITS PHYSICAL PRESENCE AND APPARENT CONDITION | 117 |
| <i>D. Troup</i> | |

SESSION 3: COILED TUBING AND PIPE DEVELOPMENT, APPLICATIONS AND SOLUTIONS

| | |
|--|-----|
| IMPROVING OPERATIONAL CONFIDENCE: AN ADVANCED LOCALIZED COATING FOR COILED TUBING BIAS WELDS | 131 |
| <i>K. Elliott, D. Klink, C. Williams, Y. Li, E. Arriaga</i> | |
| IN-LINE QUENCH AND TEMPER TECHNOLOGY APPLIED TO CT IMPROVES SAFETY AND RELIABILITY IN EXTENDED REACH U.S. SHALE OPERATIONS | 139 |
| <i>I.I. Galvan, G. McClelland, E. Gagen, G. Piller</i> | |
| RAPID DEPLOYMENT AND USE OF SNUBBING UNIT BRINGS WELL WITH UNDERGROUND BLOWOUT AND SURFACE BROACHING UNDER CONTROL | 154 |
| <i>A. Donaldson, V. Marrero-Reyes, W. Scott, H. Al-Mayyan</i> | |
| DEEPWATER PIPELINE PRE-COMMISSIONING OPERATION USING LARGE DIAMETER COILED TUBING INSTEAD OF STANDARD DOWNLINE: STATE OF THE ART OF THIS TECHNOLOGY | 166 |
| <i>V. Rodrigues, E. Delgado, A. Frotte</i> | |
| AN ANALYSIS OF COILED TUBING PERFORMANCE | 190 |
| <i>P. Brown, B. Gunby, C. Torres</i> | |

SESSION 4: LATEST DEVELOPMENTS IN EQUIPMENT, TOOLS, FLUIDS AND MATERIALS FOR INTERVENTIONS

A NOVEL DEPLOYMENT OF CHELANT AND MUD ACID IN A DEEPWATER FRAC PACKED WELL TO REMEDIATE SEVERE FORMATION DAMAGE 201
L. Pettitt-Schieber, F.O. Garzon, M. Aman, P. Gramin, L. Ramnath

SUCCESSFUL COILED TUBING FISHING OPERATION USES HYBRID CABLE CONNECTED TOOLS TO EVALUATE/VALIDATE DOWNHOLE DATA IN REAL-TIME: A CASE STUDY IN THE EASTERN FOOTHILLS OF COLOMBIA 218
V. Vera, C. Torres, E. Delgado, C. Pacheco, M. Torres, J. Higuera

ENABLING HIGH-TEMPERATURE HIGH-POWER 2 1/8-IN. TRACTOR AND INTERVENTION SERVICES ON LONG CABLES WITH TELEMETRY 232
W. Dai, J. Lee, X. Yang

PERFORMING CONVEYANCE TECHNOLOGY ACHIEVES A WORLD RECORD IN MAXIMIZING OPERATIONAL EFFICIENCY 242
A. Zahmuwl, C.E. Guedes, C. Bradford, K. Singh, C. Baumann, H.M. Pour, S. Sarian, S. Aboelnaga, M. Smart, G. Sinclair, C. Adoga

STUDY ON MECHANISM OF COILED TUBING SURFACE DAMAGE IN INJECTOR HEAD 266
Z. Zhou, G. Zhang, F. Yuan, T. Wang, Y. Gao, W. Wang

SESSION 7: KNOWLEDGE SHARING EPOSTERS III

DOWNHOLE DATA ANALYSIS FOR PRESSURE-PULSE-GENERATING AND AXIAL-OSCILLATION MEASUREMENT TOOL 279
A. Khan, K. Trinh, P. Thompson, G. Glaze, S. Forrester

RLWI DEPLOYED ELECTRIC LINE STROKER APPLICATION FOR SAFE AND SECURE CROWN PLUG RETRIEVAL AND SETTING IN HIGH-CURRENT DEEP-WATER OPERATIONS 286
S. Murchie, E. Jorgensen, A. Egeland, M. Saetrevik, E. Boge, K. Hals, A. Sbordone

SUCCESSFUL RETRIEVAL OF STUCK PROFILE PLUG USING ELECTRIC-LINE DEPLOYED ROBOTIC WELL INTERVENTION TECHNIQUES 302
R. Vijay, N. Panigrahi, M. Khanna, M.D. Kothiyal, P.J. Sarma, A. Bohra, S. Tiwari, T. Pinto

PRACTICAL PIPE UNDERSTANDING AND LIMITS 314
K. Newman, P. Kelleher

SESSION 8: KNOWLEDGE SHARING EPOSTERS IV

AN ADVANCED TECHNIQUE FOR SIMULTANEOUS IN SITU INSPECTION OF MULTIPLE METALLIC TUBULARS 324
Y. Yu, W. Redfield, N. Boggs, K. Qin, M. Rourke, J. Olson, M. Ejike

DAY 2

SESSION 9: WIRELINE DEVELOPMENTS, APPLICATIONS AND SOLUTIONS

A PRECISION DRILLING TOOL – A NEW APPROACH TO OPEN FOR PRODUCTION BY USING A NOVEL METHOD TO DRILL HOLES THROUGH BASE PIPE IN SAND SCREEN OR THROUGH TUBING/CASING 337
E.J. Magnussen, V. Haugen, S. Sarbaz, O.E.E. Karlsen, L.B. Nordaas, T.K. Holst

LONG LATERAL RESTRICTION DIAGNOSED BY CAMERA-CALIPER COMBO ON E-LINE TRACTOR IN ONE RUN 345
A. Lay, T. Paxson, G. Murrill, B. Schwanitz, B. Strubberg

DOCKING PERFORMING SYSTEM WITH INTEGRATED REAL TIME DOWNHOLE MEASUREMENTS 357
C.E. Guedes, M. Benavides, C. Baumann, F. Garcia-Osuna, S. Aboelnaga, Z. Zaouali, S. Al Rasbi, M. Smart

INNOVATIVE, EFFICIENT AND EFFECTIVE STRADDLE PACKER ASSEMBLY DEPLOYMENT AND RETRIEVAL USING ELECTRIC LINE POWERED MECHANICAL TECHNOLOGIES 367
S. Murchie, O.E. Magnussen, S. Haaland, M. Saetrevik, M. Ostevik

| | |
|--|-----|
| SCSSV FLAPPER MILLING USING E LINE SOLUTION | 383 |
| <i>S. Heriyanto, D. Pracoyo, S.P.S. Utama</i> | |
| COMBINED PLUG SETTING AND MULTIPLE SLEEVE SHIFTING ELECTRIC LINE OPERATION TO DELIVER A PRECISE, HIGHLY EFFECTIVE AND EFFICIENT INTERVENTION SOLUTION | 395 |
| <i>S. Murchie, O.E. Magnussen, S. Haaland, M. Saetrevik</i> | |
| INSTRUMENTED AND SURFACE-CONTROLLABLE NONEXPLOSIVE MECHANICAL PUNCHING OF DOWNHOLE TUBULARS | 405 |
| <i>J. Wurtz, M. Dresel, G. Giem</i> | |
| COMPOSITE PLUG REMOVAL WITH E-LINE MILLING SOLUTION IN ARGENTINA | 419 |
| <i>G. Aguilar, D. Audelo, M. Nebiolo, F. Jimenez, R. Waigel, F. Canales, J. Martinez</i> | |

SESSION 10: IMPROVING OPERATIONAL EFFICIENCY, HSE AND WELL CONTROL

| | |
|--|-----|
| EVOLUTION OF BACCHUS SUBSEA WELL INTERVENTIONS USING RIG AND LIGHT WELL INTERVENTION VESSELS | 428 |
| <i>R. Farquhar, J. Rodriguez, R. MacPherson</i> | |
| KINETIC BLOWOUT STOPPER - THE AIRBAG FOR THE OIL AND GAS INDUSTRY | 445 |
| <i>B. Gallagher, D. Juda, B. Gallagher, S. Angstmann</i> | |
| MEXICO OPERATOR ACHIEVES HSE INCIDENT FREE WELL COMPLETION PROGRAM AHEAD OF TIME AND NINE DAYS OF EARLY PRODUCTION USING NEW GENERATION POLYMER ENCAPSULATED CASED HOLE WIRELINE CABLES | 457 |
| <i>S. Sarian, F. Arismendi, S. Camperos, F. Garza, I. De Hidrocarburos, S. Trelles, J. Varkey</i> | |
| MODULAR HYDRAULIC WORKOVER UNIT ENHANCES OPERATIONAL EFFICIENCY AND COST SAVINGS FOR ESP REPLACEMENT'S | 481 |
| <i>L. Duthie, A. Otaibi, H. Saiood, T. Toal</i> | |
| OPTIMIZING COILED TUBING EXTENDED REACH OPERATIONS WITH REAL TIME SIMULATIONS | 498 |
| <i>A. Larrondo, J.P.N. Ranieri, D.A. Marozzini</i> | |
| UNDER PRESSURE PERFORATING DEPLOYMENT SYSTEM LEADS TO A SIX-FOLD REDUCTION IN WIRELINE RUNS AND A THREE-FOLD REDUCTION OF RIG TIME | 514 |
| <i>J. Hillier, C.E. Guedes, C. Baumann, A. Torres, S. Sarian</i> | |
| CASE STUDY: OPTIMIZING MILLING OPERATIONS WITHIN THE CANADIAN MONTNEY PLAY | 524 |
| <i>B. Lukye</i> | |

SESSION 11: HORIZONTAL AND MULTILATERAL SOLUTIONS

| | |
|---|-----|
| ENHANCED CONVEYANCE METHOD FOR PIPE RECOVERY SERVICES WITH WIRELINE TRACTORS | 537 |
| <i>P. Foucher, D. Damm</i> | |
| CONCENTRIC COILED TUBING TECHNOLOGY FOR WELL CLEANING AND EVALUATION IN COMPLEX HORIZONTAL WELLS: A 3 WELLS CASE STUDY FROM HEAVY OIL FIELD, KUWAIT | 544 |
| <i>N. Kothari, M. Ababou, S. Rao, J.G. Garcia</i> | |
| THE HIGH EXPANSION WEDGE; ACCESSING A NEW WORLD OF COILED TUBING DRILLING SIDETRACKS THROUGH AN INNOVATIVE CASING EXIT SYSTEM APPROACH | 560 |
| <i>J. Ohlinger, J. Milne, R. Harris, C. English, C. Diller, B. Frazier</i> | |
| LEVERAGING THE UNIQUE PROPERTIES OF A CARBON COMPOSITE ROD DEPLOYMENT SYSTEM TO PUSH THE BOUNDARIES OF PERFORATION PROCEDURES, BRINGING TIME AND COST SAVINGS TO STANDARD OPERATIONS AS WELL AS ALLOWING NEW TECHNIQUES WHEN COMPARED TO CONVENTIONAL WIRELINE | 571 |
| <i>D. Troup</i> | |
| EFFECTS OF PARTICLE DENSITY ON HOLE CLEANOUT OPERATION IN HORIZONTAL AND INCLINED WELLBORES | 585 |
| <i>S. Pandya, R. Ahmed, S. Shah</i> | |
| ADVANCEMENT IN WIRELINE TRACTOR DESIGN REDUCES OPERATING TIME AND IMPROVES RELIABILITY | 607 |
| <i>M. Lee, S.S. Roy</i> | |

SESSION 12: INTERVENTION SOLUTIONS IN CHALLENGING ENVIRONMENTS

HIGHLY ENGINEERED 2.375-IN CT PROVIDES EFFECTIVE AND RELIABLE INTERVENTIONS IN 30,000-FT MEGA REACH WELLS IN OFFSHORE ABU DHABI 613
I. Galvan, J.M. Jimenez, J. Ulloa, E.J. Wheatley, G. McClelland

INCREMENTAL GAINS IN COIL TUBING REACHABILITY FOR HIGHLY RESTRICTED EXTENDED REACH OPEN HOLE COMPLETIONS..... 628
H. Saiood, L. Duthie, U. Aybar, M. Bal

COILED TUBING AND SOUR SERVICE – ARE WE THERE YET? 639
T. Padron

PUSHING THE LIMITS OF DAMAGE IDENTIFICATION WITH COILED TUBING IN EXTREME CONDITIONS: A SUCCESS STORY FROM JAPAN 667
N. Yoshida, S. Teshima, R. Yamada, U. Aybar, P. Ramodenc

ADVANCEMENT IN SPOOLABLE DIMPLE CONNECTOR DESIGN PROVIDES RELIABLE COILED TUBING INTERVENTIONS IN EXTENDED REACH WELLS 686
A. Keong, C. Sorensen, Y. Andaloussi, A.A. Mannil, M. Oetli

COILED TUBING HAS SET NEW BENCHMARKS FOR MSF IN NOVOPORTOVSKOE OIL RIM FIELD..... 711
A. Belov, S. Simakov, A. Kichigin, K. Burdin, A. Charushin, M. Demkovich

FORMATION DAMAGE AND COMPATIBILITY ISSUES ASSOCIATED WITH USE OF CORROSION INHIBITORS IN WELL ACIDIZING - A REVIEW 720
V.Y. Kudrashou, H.A. Nasr-El-Din

SESSION 13: KNOWLEDGE SHARING EPOSTERS V

PREVENT FOULING AND CORROSION DURING MILL-OUT OPERATIONS: PERMIAN CASE STUDIES 731
T. Galindo

REDEFINING PERFORATION IN SUB-HORIZONTAL GAS WELLS IN UNDERBALANCED CONDITIONS WITH SLICKLINE DEPLOYMENT AND SMART COILED TUBING 741
W. Tapia, R. Comley, M. Houdaidon, N. Livingstone, Z. Erkol

REAL-TIME FIBER-OPTIC INTEGRATED SYSTEM ALLOWS PRECISION IN A SURGICAL SAND PLUG SETTLEMENT OF A TEMPORARY WELL ISOLATION OPERATION..... 755
V. Vera, C. Torres, E. Delgado, C. Pacheco, M. Torres, J. Higuera

CRITICAL CEMENTING APPLICATION ON A SNUBBING UNIT TO ISOLATE WELL IN KUWAIT..... 765
M. Al-Mohailan, K. Nellayappan, D. Patil, F. Al-Qadhi, M. Sounderajjan, B. Kunchur, K. Hussain

SESSION 14: KNOWLEDGE SHARING EPOSTERS VI

REMOTE MONITORING AND MODELING OF COILED TUBING OPERATIONS IN REAL TIME 771
P. Brown, B. Gunby, C. Torres, B. Rao

DOWNHOLE LEAK DETECTION: INTRODUCING A NEW WIRELINE ARRAY NOISE TOOL 783
Q. Yang, J. Zhao, M. Rourke

COIL TUBING DRILLOUT EFFICIENCY GAINS UTILIZING DISSOLVABLE PLUG TECHNOLOGY 799
D. Hutabarat, J. Ray, C. Frazier, A. Haines

SUCCESSFUL CAMPAIGN TO INSTALL MULTI-SECTIONAL LARGE DIAMETER CHROME CT VELOCITY STRINGS IN HIGH CO2 WELLS IN BOLIVIA 807
J.A. Hernandez, J.R. Ortiz, L.F. Antelo

SESSION 15: KNOWLEDGE SHARING EPOSTERS VII

PILOT CASE STUDY OF WELLBORE LEAKAGE MITIGATION USING PH-TRIGGERED POLYMER GELANT 826
S. Tavassoli, M. Shafiei, C. Minning, J. Gisiger, U. Rosli, J. Patterson, T. Theurillat, L. Mejia, H. Goodman, T. Espie, M. Balhoff

| | |
|--|------------|
| A NOVEL APPROACH: WILLISTON BASIN COIL TUBING FLUID SHOWS SIGNIFICANT PROCESS IMPROVEMENT..... | 850 |
| <i>M. Redburn, C. Cernosek, G. Norton</i> | |
| PHASED ARRAY ULTRASONIC TOOLS PROVIDE PRECISE MEASUREMENT OF GEOMETRICALLY COMPLEX COMPONENTS SUCH AS NIPPLE PROFILES DOWNHOLE, CONFIRMING SAFETY CRITICAL DIMENSIONS | 858 |
| <i>D. Troup</i> | |
| WIRELINE ELECTROMECHANICAL SHIFTING TOOL WITH LARGE EXPANSION RATIO AND FULLY CONTROLLABLE HIGH-FORCE CAPABILITY | 872 |
| <i>T. Mauchien, B. Christa, A. Olivio, R.V. Poorten, T. Sheiretov</i> | |
| Author Index | |