

SPE Offshore Europe Conference and Exhibition 2021

Online
7 - 10 September 2021

ISBN: 978-1-7138-3626-1

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© (2021) by Society of Petroleum Engineers
All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

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

SMARTER AND MORE EFFICIENT FIELD DEVELOPMENT I

A REAL-TIME FIBER OPTICAL SYSTEM FOR WELLBORE MONITORING: A JOHAN SVERDRUP CASE STUDY	1
<i>Maximilian Georg Schuberth, Håkon Sunde Bakka, Claire Emma Birnie, Stefan Dümmling, Kjetil Eik Haavik, Qin Li, Johan-Fredrik Synnevåg, Yanis Saadallah, Lars Vinje, Kevin Constable</i>	
A ROAD MAP FOR RENEWABLE ENERGY INTEGRATION WITH SUBSEA PROCESSING SYSTEMS	13
<i>Juliano Pimentel, Robin Slater, Andrew Grant, Rune Vesterkjær, Truls Normann, Rajeev Kothari, Johan Sandberg</i>	
OPTIMIZING WELLBORE TRAJECTORIES FOR CLOSED LOOP GEOTHERMAL OPERATIONS	33
<i>Andrew McGregor, Marc Willerth, Nishant Agarwal</i>	

RESERVOIR CHARACTERISATION AND FLOW MODELLING

COMPLETE EOS THERMAL FORMULATION FOR SIMULATION OF CO2 STORAGE	54
<i>Arthur Moncorgé, Martin Petitfrère, Sylvain Thibeau</i>	
FLOW DIAGNOSTICS IN HIGH RATE GAS CONDENSATE WELL USING DISTRIBUTED FIBER-OPTIC SENSING AND ITS VALIDATION WITH CONVENTIONAL PRODUCTION LOG	73
<i>Fuad Aziz Atakishiyev, Alessandro Delfino, Cagri Cerrahoglu, Zahid Hasanov, Ilkin Yusifov, Alex Wallace, Alberto Mendoza</i>	
DOWNHOLE MONITORING OF FRACTURES IN A WATERFLOOD DEVELOPMENT – PART 1	86
<i>Abhinandan Kohli, Oscar Kelder, Maxim Volkov, Rita-Michel Greiss, Natalia Kudriavaya, Albert Galyautdinov</i>	

KNOWLEDGE SHARING EPOSTER SESSION - TUESDAY

DATA ANALYTICS SOFTWARE FOR AUTOMATIC DETECTION OF ANOMALIES IN WELL TESTING	103
<i>Stefano Capponi, Chiazor Nwachukwu</i>	
REAL TIME CLOUD-BASED AUTOMATION FOR FORMATION EVALUATION OPTIMIZATION, RISK MITIGATION AND DECARBONIZATION	118
<i>Rebecca Nye, Camilo Mejia, Evgeniya Dontsova</i>	

FUTURE OPERATIONS

FAST, ENVIRONMENTALLY SOUND AND EFFICIENT WELL CLEAN-UP OPERATIONS: LESSONS LEARNED AND BEST PRACTICES FROM OPERATIONS AROUND THE WORLD	127
<i>Yakov Shumakov, Florian Hollaender, Alexander Zhandin</i>	

NATURAL LANGUAGE PROCESSING AND TEXT MINING APPROACHES IN PRODUCTION SHORTFALLS ANALYTICS: METHODOLOGY, CASE-STUDY AND VALUE IN THE NORTH SEA	147
<i>Edgar Bernier, Sebastien Perrier</i>	

APPLICATION OF LONG ENDURANCE UAS FOR TOP-DOWN METHANE EMISSION MEASUREMENTS OF OIL AND GAS FACILITIES IN AN OFFSHORE ENVIRONMENT	158
<i>Charles Alexander Tavner, Daniel Francis Touzel, Brendan James Smith</i>	

INTEGRATED NORTH SEA

ACCELERATING TECHNOLOGY ADOPTION: A BENCHMARKING STUDY OF ORGANISATIONAL INNOVATION ADOPTION CULTURE IN UPSTREAM OIL AND GAS	171
<i>Ruby Roberts, Rhona Flin, Luca Corradi</i>	

RESERVOIR SIMULATION STUDIES FOR PLANNING MONITORING SCHEMES FOR CO2 STORAGE	181
<i>Georgios Nikolakopoulos-Skelly, Marie Ann Giddins, Rong Xu, Chioma Ezeogu, Matthew Jackson</i>	

IMPACT OF CO2 SPECIFICATIONS ON DESIGN AND OPERATION CHALLENGES OF CO2 TRANSPORT AND STORAGE SYSTEMS IN CCUS	199
<i>Mahmoud Nazeri, Hooman Haghighi, Craig Mckay, Dale Erickson, Suling Zhai</i>	

SMARTER AND MORE EFFICIENT FIELD DEVELOPMENT II

NORTH SEA HORIZONTAL WELL WITH MULTI-ZONE COMPLETION SETS WORLD RECORD USING ACID JETTING TECHNOLOGY	217
<i>Barry Ritchie, Eyad Mohamed Elhassan, Thomas Jørgensen, Kristian Solhaug</i>	

FIRST SUCCESSFUL CONTROLLED DUMPFLOOD IN DEEPWATER GULF OF MEXICO RESULTS IN PROMISING INCREMENTAL RATE AND RECOVERY	230
<i>Bilal A, Hakim, Brandon Thibodeaux, Chris Brinkman, Joe Gomes, Kevin Smith, Ryan Cone, Tom Messonnier</i>	

DEVELOPMENT OF API 11D1 AND API 19AC VALIDATION GRADE V0 BARRIER-QUALIFIED GRAVEL PACK SYSTEM FOR TROLL PHASE 3 BIG-BORE, HIGH-RATE GAS COMPLETIONS ON THE NORWEGIAN CONTINENTAL SHELF	247
<i>Aaron C Hammer, Tom D Gonzalez, Herb P Dhuet, Hege Andresen, Siv Merete M Sunde, Elshan Jabrayilov, Iris Sok Yee Kam, Torstein Tviet</i>	

DECOMMISSIONING

OPTIMIZING CASING CUT AND PULL OPERATIONS EFFICIENCY USING ULTRASONIC LOGGING DATA	260
<i>Tonje Winther, Guillermo Andres Obando Palacio, Amit Govil</i>	

THE ENVIRONMENTAL BENEFITS OF REPURPOSING TUBULAR STEEL FROM NORTH SEA OIL AND GAS FIELDS	274
<i>Rob William John Holdway, Mark Patrick Dowling, Iain Bell, Iain Laing</i>	

FEASIBILITY OF REPURPOSING OFFSHORE DECOMMISSIONED GAS RIGS INTO FISH FARMS	289
<i>Saptarshi Pal, Chengyi Kuo</i>	

KNOWLEDGE SHARING EPOSTER SESSION - WEDNESDAY

APPLICATION OF LASER AND PLASMA FOR THERMAL ASSISTED DRILLING IN CARBONATED FORMATIONS	308
<i>Mohsen Bazargan</i>	
ANNULAR PHASE SEPARATION WITH AICD COMPLETIONS – THE IMPACT ON WELL FLOW PERFORMANCE AND CONTROL OF UNWANTED EFFLUENTS	322
<i>Michael R Konopczynski, Mojtaba Moradi</i>	
INITIATIVES IN UK OFFSHORE DECOMMISSIONING FOLLOWING THE WOOD REVIEW: APPLICABILITY FOR DECOMMISSIONING IN NORWAY	339
<i>Rune Vikane, Jon Tømmerås Selvik, Eirik Bjorheim Abrahamsen</i>	

MATURE FIELDS

THE USE OF CONTROLLED DISSOLUTION GLASSES TO CONSOLIDATE AND CREATE PERMEABLE OR IMPERMEABLE MINERALS IN FORMATION	359
<i>Max Olsen, Ragni Hatlebakk, Chris Holcroft, Arne Stavland, Nils Harald Giske, Marlin Magallanes</i>	
DISPOSABLE FIBRE OPTIC INTERVENTION SYSTEM: CASE STUDY OF SUCCESSFUL LEAK DETECTION OFFSHORE NORTH SEA	384
<i>Craig Feherty, Andrew Garioch, Annabel Green</i>	
APPLICATION OF MONTE CARLO ANALYSIS AND SELF-ORGANIZING MAPS TO DE-RISK COMPRESSOR RE-WHEELING	397
<i>Greg Michael Nelson, Robert Barrie</i>	

FLOATING WIND

FLOATING SUBSTATIONS FOR COMMERCIAL-SCALE FLOATING WINDFARMS	409
<i>Justin Jones, Ian Childs</i>	
MOORING INTEGRITY IN ELECTRIFICATION PROJECTS - LEARNING FROM THE FLOATING PRODUCTION SECTOR IN EARLY YEARS OF HARSH ENVIRONMENT OPERATIONS	420
<i>Nigel J, Robinson, Scott M, Rosie</i>	
VALIDATION OF A NOVEL FLOATING WIND TURBINE SIMULATION TOOL VIA BENCHMARKING: CASE STUDY OF A SEMI-SUBMERSIBLE PLATFORM	433
<i>Aengus John Connolly, Gerard O'Mahony</i>	

SUBSEA

PUMP UP THE VOLUME - MASSIVE WATER INJECTION INCREASE THROUGH OPEN WATER STIMULATIONS	450
<i>Alistair Roy, Anastasia Bird, Samuel Bremner, Lara Winstone, Rustam Hashimov, Doug Weir, Judith Espinoza Perez</i>	
IN-SITU SENSING OF UNDERWATER GAS RELEASES	493
<i>Chetan Laddha, Lorna Ortiz-Soto, Leslie Baksmaty, Juan Dominguez-Olivo</i>	

A VALIDATED METHODOLOGY TO ESTABLISH STRUCTURAL CAPACITIES FOR SUBSEA CONNECTOR FAMILIES	509
<i>Michael John Stephens, Simon John Roberts, Derek James Bennet</i>	

HYDROGEN

ORION: SHAPING SHETLAND AS THE UK'S FIRST GREEN ENERGY ISLAND	522
<i>Gunther A Newcombe</i>	
THE COMMERCIAL CASE FOR HYDROGEN AS A ROUTE TO MARKET FOR OFFSHORE WIND IN THE NORTH SEA	537
<i>Molly Iliffe</i>	
THE UK - THE GLOBAL HYDROGEN CENTRE	542
<i>Kent Martin Paul Massey, Jakub Vrba, Scott Hamilton, James Patrick McAreavey, Caragh Jane McWhirr, Daniel Richard Kenneth Paterson</i>	

KNOWLEDGE SHARING EPOSTER SESSION - THURSDAY

RELIABLE DETECTION OF WATER CUT IN INLET PIPING UNDER STRATIFIED FLOW CONDITIONS FOR MATURE FIELDS AND W/O AND O/W EMULSION LAYERS IN CRUDE OIL SETTLING TANKS WITH NOVEL SENSOR TECHNOLOGY	558
<i>Pasi Laakkonen, Antti Nissinen, Ossi Lehtikangas, Jouni Hartikainen, Pekka Kaunisto, Mika Tienhaara</i>	
EM-BASED 2D CORROSION AZIMUTHAL IMAGING USING PHYSICS INFORMED MACHINE LEARNING PIML	568
<i>Guang An Ooi, Mehmet Burak Ozakin, Tarek Mahmoud Mostafa, Hakan Bagci, Shehab Ahmed, Mohamed Larbi Zeglache</i>	

DECARBONISATION

THE JOURNEY TO NET ZERO: DRIVING DOWN EMISSIONS FROM BP'S NORTH SEA OPERATIONS	583
<i>Sam Peter Coupland</i>	
NET ZERO FACILITIES - GREEN POWER GENERATION OFFSHORE	589
<i>James Varney, Richard Dyson</i>	
FINANCING NET ZERO: ADDRESSING TECHNOLOGY RISK FOR FINANCIAL INVESTMENTS IN THE ENERGY TRANSITION	603
<i>John Young, Myrtle Dawes, Andrew Smith, Keiren Lake, Keith Lawton</i>	

DIGITAL DRILLING

FIRST USE OF MACHINE LEARNING FOR PENETRATION RATE OPTIMISATION ON ELGIN FRANKLIN	612
<i>Daniel O'Leary, Deirdree Polak, Roman Popat, Oliver Eatough, Tom Brian</i>	
OFFSHORE IMPLEMENTATION OF TEMPERATURE MICROCHIP UNDER CRITICAL WELL CONDITIONS	621
<i>Bodong Li, Vahid Dokhani, Chinthaka Gooneratne, Guodong Zhan, Zhaorui Shi</i>	

IMPLEMENTATION OF A DIGITAL ROADMAP WITH BEST-IN-CLASS APPLICATIONS	631
<i>John McIntosh, Renata Martin, Pedro Alcala, Stian Skjævesland, John Rigg</i>	

HEALTH AND SAFETY

ARE THERE POTENTIALLY SIGNIFICANT LONG-TERM HEALTH CONSEQUENCES OF EXPOSURE TO FINE AIRBORNE PARTICULATE MATTER PM10 TO PERSONNEL ON THE UNITED KINGDOM'S OFFSHORE DRILLING RIGS?	644
<i>Samuel Thomas Grainger</i>	

ENSURING THAT FATIGUE IS MANAGED IN OIL AND GAS OPERATIONS	665
<i>Alexandra Holmes, Cristina Ruscitto, Sarah Booth</i>	

INDUSTRY FIRST AI-POWERED FULLY AUTOMATED SAFETY OBSERVATION SYSTEM DEPLOYED TO GLOBAL OFFSHORE FLEET	675
<i>Nassima Brown, Adrian Brown, Abhijeet Degupta, Barry Quinn, Dustin Stringer, Bozhidar Yankov</i>	

REMOTE OPERATIONS AND UNMANNED INSTALLATIONS

SUSTAINING REMOTE OPERATIONS ADOPTION POST PANDEMIC: A MAJOR KEY TO A NET ZERO FUTURE	685
<i>Martin Richard Yates, Imed Ben Brahim, Shady Mohamed AlNofaily, Klaus-Dieter Ernesti</i>	

UNMANNED PLATFORM DESIGN METHODOLOGY	695
<i>Graham Nicholson, Graham Brown, Ben Seymour</i>	

KNOWLEDGE SHARING EPOSTER SESSION - FRIDAY

DECARBONISATION - ACT NOW: AN ACCESSIBLE PATHWAY FOR ALL UPSTREAM OPERATORS TO REDUCE DIRECT EMISSIONS	715
<i>Sam Jones, Adam Joyce, Nikhil Balasubramanian</i>	

UTILIZING HIGH-FREQUENCY IN-BIT SENSOR DATA IMPROVES DRILLBIT DESIGN AND MODELLING	739
<i>Bradley Krough, Paul Corbitt, Lucia Cazares, James Masdea, David Scadden</i>	

ROBOTICS, DIGITAL TWINS AND AI: CONNECTING THE DOT MATRIX	753
<i>Kris Kydd, Dervla Brennan, Neil Kirkpatrick, Matthew Wright</i>	

BUILDING A LOW-MANNED PRODUCTION INSTALLATION: CONSIDERATIONS FOR ROTATING EQUIPMENT, ELECTRICAL & AUTOMATION SYSTEMS, AND DIGITALIZATION	764
<i>Elgonda LaGrange</i>	

Author Index