

SPE Offshore Europe Conference and Exhibition 2025

Aberdeen, Scotland, United Kingdom
2 - 5 September 2025

Volume 1 of 2

ISBN: 979-8-3313-2686-9

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© (2025) by Society of Petroleum Engineers
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

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

VOLUME 1

OIL & GAS: SUBSEA

Transforming Offshore Asset Integrity: The Future of Autonomous Marine Intervention Available	1
<i>A Saif Ahmed Alshhehi, Mohamed Abdul Hameed Alhammadi, Nayef Salem Alshhehi, Shammas kallinkil</i>	
Optimised Light Weight P&A Well Access Solution Available	14
<i>Gordon Sutherland</i>	
Novel Well Intervention System Enables Safe and Efficient Well Re-Entry Available	22
<i>Brent Harrald</i>	
New Technique to Cure Losses Across Caverns and Karst - Gravel Jobs Available	31
<i>Hamad Mohammad, Mauricio Corona, Murtada Ataelfadil Alhassan Ahmed, Abdullatif Abdulaziz Albarut, Ahmad Ali Al Ady, Raed Ghali, Jesus Alvidrez Levorio, Muhammad Nasrumminallah, Hamood Al-Harhi, Karim Sassi, Arwa Alyahya, Nixklafe Neil Atencio Carrillo, Maksim Antonov, Daniel Paz, Ahmad Abdulaziz Almarghani, Nooruldeen Zeyad Essmat, Hussain Alarbash</i>	

DIGITAL: DIGITAL APPLICATIONS

Application, Experiences, and Opportunities of ISO 20815 for Offshore Technology Development Supporting the Energy Transition Available	42
<i>A. Taylor, I. Stanley, J. T. Selvik, R. Østebø, S. Isaksen</i>	
Overcoming Measurement Challenges in Drilling Fluids to Support Automation Available	58
<i>C. Marshall, A. Clark</i>	
Stories Identifying Value: Justifying Technology Projects in Energy Available	73
<i>S. C. Aitken</i>	

NET ZERO: CARBON STORAGE 1

Best Practices and Lessons from the Extended Pilot CO ₂ Injection Test on Leman Ultra-Depleted Gas Field, UK Southern North Sea Available	81
<i>N. Dupouy, P. Giraud, W. Feng, M. Puig-Alenya, D. Andres Kuettel, R. Verhulst, Y. Shumakov, D. Mackinnon, A. Kohr, A. Agayev, V. Pequignot, B. Theuveny</i>	
Enforced Carbon Mineralization: Unlocking CO ₂ Storage Potential in Saline Aquifers Available	108
<i>Arshad Khan, Saad F. Alafnaan, Arshad Raza, Tatenda Raphinos Marapira, Mobeen Murtaza</i>	
Advancing Subsea Carbon Capture and Storage: IOGP's New Guidance and Initiatives Available	120
<i>D M Saul, D Khatun</i>	
Theoretical Capacity Assessments for CO ₂ Storage in Deep Saline Aquifers at Two Different Scales: An Analytical Model for Individual Complexes and a Map-Based Approach for Regional Analysis Available	129
<i>T. Ravestein, B. Davids, J. N. Breunese, J. Juez-Larré</i>	

OIL & GAS: DECOM

Robust and Efficient MAH & SECE Management in Decommissioning; Enabling a Fit-For-Purpose Transition to Post-Cessation of Production (CoP) Operations Available.....	138
<i>A. Hood, J. D. Morgan</i>	
Seepage Mechanisms Near Offshore Wells: Understanding Contributing Factors Available.....	147
<i>Elvin Mirzayev, Alireza Rabiei, Mahmoud Khalifeh</i>	
Investigation of Seepage Behavior and Spatial Distribution of Gel Systems in Micro-Porous Media Available.....	170
<i>Zhe Sun, Xiujun Wang, Kun Xie, Weijun Shen</i>	
Enhancing Offshore Asset Safety Through UAV-Based Ultrasonic Thickness Measurement Inspections Available.....	186
<i>Henderson Steven</i>	

DIGITAL: AI SUPPORTED OPERATIONS

Offshore Production Surveillance and Intervention Using Multi Agent AI Available.....	198
<i>D. Shekhawat, J. Barua, K. Bhatia, S. Saumya</i>	
Smart Maintenance: Enhancing Maintenance Effectiveness at Pace with Artificial Intelligence Available.....	206
<i>Kevin Stewart, Gordon Buchan, Sebastien Salvan, Muhammad Abdullah, Alina Radu</i>	
AI-Driven Robotics for Pipeline Integrity: Autonomous Subsea Applications in the North Sea Available.....	215
<i>D. Shekhawat, J. Barua, K. Bhatia</i>	
Petrophysical Open Hole Log Evaluation Using Artificial Intelligence in a Sandstone Gas Field Offshore UK Available	223
<i>Mathilde Jacob, Corentin Bouton</i>	
Data-Driven Characteristic Frequency Extraction and Operational Parameter Mapping in DAS Monitoring of Hydraulic Fracturing Available	243
<i>Guanghao Du, Weibo Sui, Jiayi Song, Huan Guo, Xin Zhang</i>	

OIL & GAS: FIELD MANAGEMENT

Choose a Different Path. the Application of Multiple Activation Circulation Subs in Split Flow Mode to Assist with Hole Cleaning by Increasing Total Flow Rate in the Mariner Field, North Sea, United Kingdom Available	261
<i>J. J. Steele, M. Qamar, H. Tossonian</i>	
Cement Bonding Improvements Via Specialized Spacer Technology on the Norwegian Continental Shelf Available.....	271
<i>Karianne H. Christensen, Jose A. Barreiro, John S. Knowles, Carl R. Johnson, Jackson Thomas</i>	
Optimizing Methane Emission Reconciliation: Integrating Multi-Level Measurement Approaches for Enhanced Accuracy Available.....	281
<i>C. Verhoeven, M. Kuosa, F. Noris</i>	

Real-Time Horizontal Well Correlation Automation: Enhancing Well Placement Through Predictive Log Curve Analysis Available	291
<i>F. Bashir, K. Abdur Rehman, M. Elghannam, S. Muhammad, T. Ditia</i>	

NET ZERO: CARBON STORAGE 2

Tailored Cement Solution for CCUS Wells: Case Study from the Adriatic Sea Available	303
<i>G. Di Martino, G. Lende, I. A. Massie, C. Groner, F. Parrozza, F. Cracolici</i>	
Sensitivity Study on Well Tubing Selection for CO2 Injection in the Morecambe Net Zero Project Available.....	320
<i>A. Abdullayev, D. Charlton, A. Baillie</i>	
Assessing the Feasibility of Carbon Dioxide Sequestration in Abandoned Oil and Gas Wells: A Case Study of the UK Continental Shelf Available	334
<i>Y. Wagaja, R. Mahon</i>	
Optimizing Geologic Carbon Storage with Machine Learning: Impurity Effect on Trapping Mechanisms Available.....	356
<i>Mustafa Alkhowaildi</i>	
Improving Business Performance in New Value Chains Using Standardisation and Injection Efficiency Performance Measures Available	364
<i>R. Gilbert, R. Østebø, H. Hamran, S. Curley</i>	

OIL & GAS: MATURE FIELD

Accelerating Well Intervention in the UKCS - The North Sea Transition Authority Viewpoint Available.....	376
<i>R. Cygan-Taylor, K. Hogg</i>	
From Stranded Assets to Active Production: Making Mature Fields Work Harder Available	384
<i>W. L., B. Cannell</i>	
Utilizing Data Acquisition from Well Interventions to Understand Completion Performance and Water Shut-Off Results at the Ivar Aasen Field Available.....	394
<i>P. H. Mortensen, G. F. Kvilaas, K. Galbraith</i>	
Planning and Deployment of Glass-Based Chemical Consolidation Systems Available.....	415
<i>M. Rylance, A. Hoq, D. Tomczak, A. N. Martin, N. Wood</i>	
Combined Real-Time Active Resistivity and Passive Magnetic Well Ranging Applications While-Drilling Available	436
<i>Diogo Salim, Mahmoud ElGizawy, Yong-Hua Chen, Lin Liang, Frank Antonsen, Francois van Vliet</i>	

DIGITAL: AI SUPPORTED SUBSURFACE

Automated Annulus Pressure Monitoring and Analysis Tool for Sustained Casing Pressure Detection Available	446
<i>R. Salimov, M. Ojagzada, V. Bayramov, E. Bakhtiiarov</i>	

Transforming Offshore Safety: AI-Powered Predictive Risk Mitigation Through Advanced Safety Data Analytics Available	461
<i>A. Brown, A. Kissinger</i>	
The Unseen Risks of AI in the Offshore Energy Sector Available	478
<i>F. Brierton</i>	
Reshaping the Oil & Gas Industry: The Rise of the Digital Petroleum Engineer Available.....	492
<i>B. Moradi, L. Hermansson, T. Ellingsen, K. K. Ask, E. D. Boisjolly, E. J. Stein-Beldring, M. Risanger, G. A. Z. Serrano</i>	
Automated Well Status Identification in US Offshore Operations Using Machine Learning Available.....	507
<i>Ali Karimi, Ashley Taken, Brandon Highsmith, Venera Zhumagulova, Yongfeng Li, Patrick Bangert</i>	
Real-Time ESP Management Framework Using Hybrid Physics-Based and ML Models Available	521
<i>Long Peng, Long Feng, Qu Guang, Jianjun Zhu, Hui Feng Liu, Zhen Nie, Chuanhe Ma, Chaojie Di, Qingxia Wu</i>	

OIL & GAS: REDEVELOPMENT

Impact of Partitioning on Chemical Risk Assessment Available	541
<i>C. D. B. Dawson</i>	
Enhancing Resource Management Through Advanced Geoscience and Model Calibration: Insights from the HPHT Context Available.....	558
<i>Valentina Zaccardi, Mattheus Uijttenhout, David J Wann, Angelica Tuiran, Chris Gunn, Chris Cruickshank</i>	

VOLUME 2

Impossible Made into Possible – New Technologies Enabled Effective and Economical Offshore Marginal Reserves Development Available.....	569
<i>Chunyuan Shi, Lili Zhang, Junjian Chen, Chao Wang, Xin Zhou, Shuzhong Li, Fei Wang, Kai Wu, Xiaoning Yu, Zairong Fu, Zhong Hu, Botao Chang, Nadia Ardikani</i>	
Putting an End to Fatalities: How Behaviour-Based Safety Can Eliminate Serious Injuries and Fatalities (SIFs) Available	584
<i>Daryl Wake</i>	
Enhanced Approach to 3D Fire Mapping and Development of Recommended Practice Available	589
<i>Luke Callaghan, John Morgan</i>	
Deployment and Performance Evaluation of Bismuth Alloy-Based Thermally Deformable Annular Packer (TDAP) for Mitigating Gas Migration in Casing Annuli Available.....	599
<i>P. Carragher, D. Talapatra, J. Morales</i>	

DIGITAL: DIGITAL OPERATIONS

Dynamic Well Failure Modelling and Well Integrity Quantitative Risk Analysis: Total Energies E&P Denmark Enabling Safer Wells with Increased Production Uptime Available.....	606
<i>Stuart Girling, Peter Lützen, Nigel Snow, Anders Krog, Anders Skjold Larsen, Moulshree Kumar, Will Girling</i>	

Enhanced Borehole Imaging Through Advanced Digital Real Time Solutions Available.....	619
<i>A. Binghath, O. A. Ramadan, J. Dolan, C. Shrivastava</i>	
A Deep Learning-Based Intelligent Quantification Method for Wellbore Flow Rate Available.....	630
<i>Li Yuanyuan, Huang Xin, Zhou Tong, Huang Zhiwen, Li Fengxia, Wang Haibo</i>	
Preliminary Development of an AI-Enhanced Multimodal Analysis Framework for Drilling Operations Available	640
<i>K. Machocki, A. Ammar, N. Bukhanov, R. Smith</i>	

NET ZERO: NET ZERO INFRASTRUCTURE

Pathways to Zero-Emission Operations on the Norwegian Continental Shelf Available	656
<i>L. Husdal, K. Husdal, M. Myrvang, H. G. Svendsen, D. Gonzalez</i>	
Repurposing Offshore Gas Pipeline for Hydrogen Transport – a Case Study of the North Sea Available.....	678
<i>S. Adeleye, I. Iyalla, R. Mahon</i>	
Energy Transition: Electrification with Power from Shore in the North Sea Available.....	689
<i>Jeremy Andrews</i>	
From Waste to Value: Techno-Economic Analyses of Lithium Extraction from Oilfield Brine Available.....	705
<i>Botelho Disu, Roozbeh Rafati, Amin Sharifi, Maravilha Kapaia</i>	
Comprehensive Approach to Carbon Capture Value Chain Development Challenges and Cost-Effective Solutions Available	726
<i>Lucas Pires, Satyajeet Kawathekar, Peter Dewar</i>	

OIL & GAS: HEALTH AND SAFETY

Human Factors in Emergency Situations: How to Mitigate Effects of Fatigue, Wellbeing, and the Human Brain Available	743
<i>Callum Christie</i>	
Pre-Installed Cable Protectors Improve Safety for Completions Available.....	750
<i>J Bibby, D van Loon</i>	
Fatigue Monitoring in the Offshore Sector: A Structured Assessment and Intervention Protocol Available.....	764
<i>S. R. Fernanda, R. F. F. Josenildo</i>	
Design of Everyday Control Rooms: Harnessing Fatigue, Cognitive Loading, and Next-Generation Technologies to Improve Operator Effectiveness Available.....	770
<i>Shane Booker</i>	
Risk-Based Decision Making: The Power of Quality Risk Assessment Available.....	789
<i>R. Bulgachev, P. Beaumont, G. Kelso</i>	

NET ZERO: HYDROGEN AND RENEWABLES

Multi-Objective Optimisation of Cost and Carbon of Offshore Wind Foundations Available	806
<i>C. Thompson Kent</i>	

From Natural Gas to Hydrogen Storage: Insights from the Bains Underground Gas Storage Development Available.....	826
<i>E. Zemani, S. Kawathekar, G. Carlo, I. Ventriglia</i>	
Repurposing Offshore Infrastructure for Large-Scale Hydrogen Production: Insights from HOP2 Available.....	846
<i>Michelle Hitches</i>	
Mitigating Transformer Failures in Offshore Wind Power Using Online Monitoring Available.....	854
<i>A. El-Rasheed</i>	
The Role of Metal-Organic Frameworks in Clean Energy: A Comprehensive Review of Applications, Advances, and Challenges Available.....	858
<i>Q.O. Moses</i>	
A Critical Review on Transport and Mechanical Property of Well Cement for Underground Hydrogen Storage Available.....	875
<i>H. Wang, Y. Zhou, M. Kartal, L. Ma</i>	
Subsea Substations as an Economical Enabler for Floating Offshore Wind Available.....	897
<i>Truls Normann, Leif Arne Müller</i>	

OIL & GAS: DEVELOPMENT DRILLING

Smart One-Run Drilling Approach for Maximum Reservoir Contact Wells: Cost-Effective Well Construction Using Hanging Sidetracking and Multi-Boundary Inversion Available.....	910
<i>Mingying Xie, Jiadong Wang, Zhiyong Tu, Bo Yang, Wenjian Jiang, Jianxiu Zhang, Yuanbo Wang, Clegg Nigel</i>	
Reservoir-Specific Intelligent Horizontal Well Placement: Productivity Mapping and Application in the Middle East Available.....	921
<i>Rui Deng, Xing Zhao, Lian Wang, Liang Zhang, Hehua Wang, Lingfeng Yang, Xiuwei Liu</i>	
BHA Design Optimization: Strategic Position of the Torsional and Axial Vibration Mitigation Tool in the Ixachi Field Available.....	937
<i>R. Higa, M. I. Garnica Gonzalez, A. R. Rivera, A. F. Mayren, R. Mijangos, J. Rodriguez, C. Stehlik, R. V. Che</i>	
Optimization of CO ₂ -SAG Flooding Techniques for Enhanced Oil Recovery: A CFD Simulation Approach Available.....	954
<i>Yuxuan Zhang, Kaoping Song, Daigang Wang, Jin Chen, Menghao Zhang</i>	

OIL & GAS: RESERVOIR CHARACTERISATION

Utilization of UDAR LWD Technology for Seismic Data Validation in a Complex Sand Injectite Environment Available.....	963
<i>Y. Duah, J. Borgenvik, D. Latypova, L. Chacin, N. Clegg</i>	
Integrated Well Testing, PVT and Simulation Analysis for Gas Condensate Reservoirs Available.....	984
<i>J. L. Vera-Rodriguez, H. Cinco-Ley, M. Jamiolahmady</i>	
A Case History: Different Paths, Same Destination – Two Modelling Approaches for the Corrib Gas Field Available.....	1005
<i>F. Nieuwland, P. Colleran, B. Tournemine, A. Veillerette, H. De Koningh, C. Coulombe, S. Wybar, R. Maguire</i>	

Solving Well Placement Challenges in a Multi-Fluid, Compartmented Reservoir with Proximity to a Flooded Level in a Critical Anti-Collision Area Available	1029
<i>W. Shaalan, B. Vicuna, P. R. Odeh, M. Iversen, N. Clegg, F. Antonsen, E. Fossgaard</i>	

NET ZERO: NET ZERO TO 2050

Scaling Sustainable Travel in Offshore Energy: A Roadmap to Sustainable Aviation Fuel (SAF) Adoption Available	1052
<i>P. Ganderton</i>	
A Fresh Look at Whole System Thinking Available	1059
<i>S. K. Kimpton, V. Chinien</i>	

OIL & GAS: FIELD OPTIMISATION

Maximizing Gas Production Via Compressor Optimization with Integrated Asset Modelling in Maturing Fields Available	1076
<i>B. Doldersum</i>	
Fiber Optic Strain and Temperature Sensing for Gas-Liquid Production Profiling Available	1092
<i>Huan Guo, Weibo Sui, Jiayi Song, Guanghao Du</i>	
Ship Conversion to Floating Production, Storage, and Offloading (FPSO) for Petrobras Oil and Gas Projects Offshore Brazil Available	1111
<i>T. P. Estefen, W. G. Victor</i>	

Author Index