

EAGE/FESM Conference on Petrophysics Meets Geoscience: Unlocking Reservoir Potential in a Dynamic Energy Landscape 2025

Kuala Lumpur, Malaysia
18-20 November 2025

ISBN: 979-8-3313-3149-8

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 the European Association of Geoscientists & Engineers (EAGE)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

For permission requests, please contact by the European Association of Geoscientists & Engineers (EAGE)
at the address below.

European Association of Geoscientists & Engineers (EAGE)
PO Box 59
3990 DB Houten
The Netherlands

Phone: +31 88 995 5055
Fax: +31 30 634 3524

eage@eage.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

Unveiling Rare Transgressive Carbonates Via Unsupervised Petrophysical Rock Typing in the Menggala Formation, Central Sumatra Basin.....	1
<i>M. Fachreza, A. Yusliandi, D. Nugroho, A. Rudyawan</i>	
Integrated Cores and Logs to Predict Rocktype and Permeability Using ML, Central Luconia Carbonate Buildup, Malaysia	4
<i>P. Panpheemachai</i>	
Regrounding Geophysical Fundamentals: Establishing Volumetric Assurance Through Seismic Petrophysics.....	7
<i>M. I. Z. Zaki, S. N. M Zaid, H.' Ahmad Munif, N. A. Wahid Ali, A. Abdul Razak, H. N. Nguyen, A. M. Ibrahim</i>	
Strengthening Petrophysical Interpretation in the Birkhead Formation Through an Integrated Petrophysics-Rock Physics Workflow	10
<i>A. Mathur, A. N. Noor Sazali, J. Ting, D. S. Cunha, J. Zhou, S. Vlasov</i>	
Carbonate Drilling Challenges, What Really Matters, and Derisking These Via Appropriate Data Acquisition Techniques	13
<i>V. Vevakanandan</i>	
Navigating Static and Dynamic Uncertainty: Ensemble Modelling for Strategic Field Integrated Redevelopment.....	17
<i>K. Nalasavagan, M. F. Azman, N. A. Che Mahmood, A. R. Harun, M. Jamaludin, W. Tan, S. Ramli</i>	
The Art and Science of Rock Physics Model in Derisking Observed Top Carbonate Seismic Responses	20
<i>S. F. Kho, C. C. Y. Chang, J. Lee, W. Y. Ham</i>	
Fluid Identification and Characterisation Through Advanced Gas Analysis for Precise Geosteering Operations in Offshore Sarawak Well	23
<i>S. Ahip, M. K. A. M Bukhari, M. R. B Mohammad Nor, M. T. Elshafei</i>	
Upscaling Nanoscale Clay Features for Improved Tight Sandstone Reservoir Characterization: Case Study from Gulf of Thailand.....	26
<i>L. Z. Danicic, A. Jacob, W. Kongsumrit, P. Lertsrisunthad, J. Satianpanich</i>	
Electrofacies and Lithofacies Fusion for Supervised Rock Typing in Highly Heterogeneous Reservoirs.....	29
<i>F. H. Kasim</i>	
Relationship Between Padé Acoustoelastic Coefficients and Crack Parameters in Fractured Rocks Under Hydrostatic Condition.....	32
<i>Y. Feng, L. Fu, T. Han, H. Yang, B. Fu</i>	
Unlocking a Carbonate Discovery: An Integrated Workflow of Petrophysics, Rock Physics, and AVO Modeling	37
<i>S. Teng, A. Amdan, R. Rahman</i>	
Petrophysics Calibrated Seismic Attribute Interpretation for Lithology and Fluid Classification - Offshore Peninsular Malaysia	40
<i>S. Ronghe, T. G. Chuan, L. Weston</i>	

Revealing the Nominal Water Saturation Through Advanced Core Analysis Workflow: Case Studies from Offshore East Malaysia	43
<i>S. N. F. Zulkipli</i>	
Machine Learning Framework for Optimized CO2 Storage and EOR Applications.....	46
<i>S. Kumar, U. Soni, V. Vishal</i>	
Maximizing Value of Information: Real-Time Pulsed Neutron Logging Optimization for Reservoir Monitoring and Behind-Casing Opportunity Maturation	49
<i>H. Hassani, A. Belevich, G. Das, A. Hussain, A. Bakhtiar, D. Mandal</i>	
An Integrated Approach to Static Model Building in “Depleted Greenfield”	52
<i>M. N. Zainudin, K. L. Huang, M. A. Mustaffa Kamal, M. S. A. M Long, S. A. Ramli</i>	
Challenging of Tight Reservoir in Southern Sarawak, Offshore Malaysia, Unlocked by Geological Insights and Development Optimization	58
<i>P. Srisen, R. Arayathirananant</i>	
Seal Integrity and Mechanical Stratigraphy of Caprock in KX Field SW Luconia Province	61
<i>A. Bello, S. N. F. Jamaludin, H. S. Mohammed</i>	
Application of an Integrated Seismic Petrophysics and Rock Physics Workflow in a Complex Clastic Formation	64
<i>A. N. Noor Sazali, A. Mathur, J. Ting, M. Khor, J. Choi, S. Choi, H. B Jalil, S. J. Yap</i>	
Leveraging Image Log: Optimizing Operational Decision-Making to Unlock a Significant Discovery in Sulawesi's Carbonate Reservoirs.....	67
<i>I. Youdha Tribuana, R. Tampubolon, Y. Wahyudi, M. Fajar, K. Khadafi, F. Yugas Pustantra, T. Fidiatmoko, D. Yusmen</i>	
Evaluation of CO2 Injection Induced Fracture Using 1D Geomechanic Model for Near Wellbore Caprock Integrity Assurance	70
<i>A. Budiarto, K. Prabowo</i>	
4D Seismic Interpretation & Integration to Monitor Water Injection in Heavy Oil Reservoir in Offshore Brunei	73
<i>A. Abhishek, A. Ismail, A. Salleh, Y. K. Hwang, I. S. Riduan, A. Kirchner</i>	
Rethinking Reservoir Characterization: The Complex Reality of Rock Types and Facies - Evidence from Malaysia Basins	76
<i>N. H. Ali Mansor, F. S. Burhanuddin, J. Naar, S. N. A. Syed Khastudin, N. H. Tajul Nahar, S. M. Chin, M. F. M Akram, M. R. Radzi, N. Y. I. Che Mansor, N. E. Noor Kefli</i>	
Revolutionizing Brown Field Life: Petrophysical Modeling of an Untapped Minor Reservoir with Artificial Intelligence.....	79
<i>W. A. Tolioe, H. X. Dan, T. B Nordin, H. Ng, S. Sarah Bt A Rahim, S. N. Hassan, Z. Lubis B Mahjuddin Lubis, H. B M Nor, I. Bt Abdullah, M. I. B A Rahman, J. Marzuki, I. Suhaila Mustafa, A. K. P. Lopulisa</i>	
Integrated Approach for Rapid Reservoir Characterization Using Advanced Pickett Plot: Case Study in P-Formation, West Java.....	85
<i>I. H. Satria, D. Irawan</i>	
Unlocking Hidden Potential at Downthrown Block, Success Story from South Sumatra Basin Indonesia	88
<i>H. Safrizal, A. Warasta</i>	

Transforming Well Log Workflows: AI and Gen AI for Digitization, QC, Auto-Splicing, and Curve Prediction	91
<i>M. Yenugu</i>	
Integrating MRGC and Neural Networks for Rock Typing and Log Permeability Prediction in Fractured Carbonates.....	94
<i>N. A. Azahari, S. Marnat</i>	
Augmented Geologic Interpretation: Integrated End-To-End AI-Powered Core Image Description Analysis.....	100
<i>W. Promrak, C. Centhonglang, P. Tangtuengtin, K. Matangkapong, P. Ekkawong</i>	
Fluid Substitution in Geomechanical Modeling: Direct Experimental Validation	107
<i>R. Nath, T. Chee Phuat, O. Leak Wah, E. Siqueira Muniz, F. Karpfinger, J. Wesley Martin</i>	
A High-Precision NMR Measurement Method for Shale Based on FID and CPMG Pulse Sequence	110
<i>Y. Ma, G. Zhang</i>	
Multiscale Pore Network Modeling Anchored to Laboratory Data for SCAL Prediction in Carbonate Reservoirs.....	115
<i>V. Ravlo, A. Mock, L. Alberts</i>	
Integrated Reservoir Characterization Based Workflow for Hydraulic Fracture Simulation	118
<i>R. Banas, J. Mackintosh, L. Chaipornkaew</i>	
Open Hole Petrophysical Assessment of Formation Damage: Concept, Challenges, Possible Applications.....	121
<i>N. Orlov</i>	
From Well to Seismic: Bridging Geological and Geophysical Insights Through Integrated Petrophysics and Rock Physics Modeling.....	124
<i>D. Then, G. C. Tay, A. Amdan</i>	
Bridging Static and Dynamic Scales: An Innovative Permeability Modelling.....	127
<i>R. Bahiraie, V. S. Subrahmanyam Garimella, M. S. A. M Long, M. S. Abdullah, J. Antonio Plata Torres, M. S. Hendrawati, Y. Tan</i>	
ERMAI Carbonate PMCD: AI-Enhanced Petrophysical Interpretation for Pressurized Mud Cap Drilling in Complex Carbonate Formations	130
<i>M. A. Abu Talib, M. H. B Zakaria, M. Z. B Mohd Azkah, J. M Shah, N. A. Bt A' Akif Fadzil, L. W. Ong, D. B Johare</i>	
Unlocking Clastic & Ultradeepwater Carbonate Reservoirs Via AI Real Time Petrophysics	133
<i>M. A. Abu Talib, M. M. H. Zakaria, M. Z. B Mohd Azkah, J. M Shah, N. A. Bt A' Akif Fadzil, L. W. Ong, D. B Johare</i>	
Log-Based Estimation of Total Organic Carbon Content (TOC): An Insight from Suriname Offshore.....	136
<i>S. Zikri, L. Hanalim</i>	
Reservoir Monitoring in Complex Borehole Environment – Gas Field Case Studies in Nam Con Son Basin.....	140
<i>K. Nguyen, K. H. Son, N. T. T. Hung</i>	
Harnessing Generative AI to Enhance Reservoir Property Modeling with Uncertainty Quantification.....	143
<i>A. Sharma, N. Pant, M. Tripathi, J. Kapoor</i>	

Combining Machine Learning and Scratch Test Data for Enhanced Rock Strength Prediction.....	146
<i>F. Mulders, G. Melvin, A. McDonald</i>	
A Practical Solution to Derisk Reservoir Quality in Prospect Maturation Studies	149
<i>M. S. Hendrawati, T. S. Murugesu</i>	
Applications of Geostatistical Inversion to Solve Subsurface Challenges - A Case Study from NMC Area	152
<i>D. S. Cunha, S. J. Yap, J. Zhou, J. Ting, A. Mathur, M. F. Abid, R. Rahman, A. Sazali</i>	
Employing Deep Learning Technology to Perform Long-Term Microseismic Monitoring	155
<i>Z. Sun, X. Yin, Z. Li</i>	
Integrated Geomechanics and Pore Pressure Prediction in Carbonate Reservoir Drilling	159
<i>P. Seli, J. Ngu</i>	
Integrated Core Analysis Frameworks: Unlocking the Potential of Carbon Capture and Storage	162
<i>A. Dahlan, S. Nurzahira, S. M Shah</i>	
In-Situ Stress Prediction Method of HTI Medium Based on AVAZ Inversion.....	165
<i>H. Hu, L. Zhang, W. Jia, Z. Li</i>	
Bridging Log to Basin: Integrating Petrophysical Insights into Forward Stratigraphic Modeling	168
<i>L. Hanalim, M. Husni</i>	
Leveraging Machine Learning to Effectively Evaluate Petrophysical Properties in a Deep Saline Aquifer CO2 Storage Project.....	174
<i>S. N. Mohd Shuib, N. A. M Dahlan</i>	
Assessing the Potential of Unexplored Fractured Reservoirs in the Parapat Formation, Through Integration of Multi-Measurement Logs	177
<i>A. Ramadhan, N. Adani, E. Adhiansyah, A. Kamil Hadi Paguriseng, T. Octaviani, H. Ng, D. Deviandoni</i>	
Infinite Rock Typing: A Paradigm Shift in Clastic Reservoir Modelling	180
<i>T. S. Murugesu, D. J. Shield, A. N. C A Razak, R. Polo, M. S. Ahmad Kassim</i>	
Transforming Fracture Characterization with Novel Sonic Reflection Imaging	184
<i>H. Jimenez Rangel, H. Hernandez Espinosa, L. Mendoza Suarez, C. Herrera, H. Villanueva, M. Morales</i>	
Fault Sealing as the Gateway to Understand Hydrocarbon Column Variability in the Zawtika Field.....	188
<i>N. Sukkee, S. T. Kyaw, K. T. Han</i>	
Using Artificial Intelligence (AI) to Determine Grain/Particle Size for Completion Selection from Cuttings	191
<i>A. Fuerst, S. Molyneux</i>	
Integrated Reservoir Characterization: Fast-Tracking Facies Modelling in a Deepwater Turbidite Reservoir, S Field, Suriname	196
<i>S. Rahmad, C. Lowrans, M. H. Suhaimi, M. M. Mohamed Ariffin</i>	
Petro-Elastic Modelling for Demarcation of Complex Silicified Carbonate Reservoir and Diagenetic Influence on Petroleum System Elements	200
<i>M. Arafat, R. Guha, G. Jimenez Soto, L. H. Zulkafli, A. L. Bt Abdullah</i>	
Enhance Hydraulic Fracturing Performance Via Optimization, Automation, and Data Integration	204
<i>N. Dendumrongsup, S. Worapotpisan, K. Adisornsupawat, P. Boonyasatphan, A. Sangnimnuan, S. Mahamat, A. Taksinayan, N. Kovitkanit, P. Ekkawong, S. Kusolsong</i>	

Multi-Scale Simulation of NMR Responses of Chalk with High-Susceptibility Inclusions	208
<i>C. Arns, I. Shikhov</i>	
Digital Workflow to Integrate Deep Transient Testing (DTT) and DST and Expedite Decision Making for Green Field Development.....	211
<i>P. Y. Gopalan, D. Ling, S. Daungkaew, M. Kristensen, M. Le Franc, H. Espinosa, C. Cavalleri, A. Gisolf, N. R. Hademi, S. N. Cheng, C. L. Chua, A. N. Azwa, M. A. Abu Talib, E. Motaei</i>	
Seeing Beyond the Seismic: Integrated Facies and Reservoir Prediction in an Undrilled Prospect, Eastern Jabung, Indonesia	218
<i>I. G. A. A. S. Wibawa, M. I. Nursina, Y. Fahrudi, T. Fitrianto, H. N. Saputra, I. S. Suyatno</i>	
Predicting Modeling of Basement Fractures Using Multisource Data and Neural Networks Method	221
<i>C. Maya Resha T., T. Fitrianto, B. Syam, H. Niko Saputra, E. Erfanto, I. Suropto Suyatno</i>	
Improving Permeability Estimation in Ngimbang CD Carbonate, East Java Basin, Using Advanced Carbonate Textural Analysis Output.....	224
<i>N. Adani, P. Siburian, D. Permanasari, E. Priyanka, Z. Ernando, B. Abrar, T. Nordin, N. Z. Bt A. Rahman, F. Bt Tusimin</i>	
From Theory to Field: Applying Synthetic Logs for Data Acquisition Optimization in Gulf of Thailand Brownfields	227
<i>S. Panitpong, R. Lertkornteeranan, P. Tangtuengtin, R. Sampoonachot, J. Chootrakool</i>	
Resolving Thin Beds Using AI-Based Petrophysical Property Prediction	230
<i>A. Heir, S. Aghayev, M. Kongawoin</i>	
Advanced Workflows for H ₂ S Evaluation Using Wireline Formation Testers	233
<i>S. Daungkaew, G. Garcia, D. Ling, J. El-Khoury, N. R. Hademi, Z. Mydeen, V. Vevakanandan, T. Worawutthichanyakul, M. K. Hamdan, S. Kho, H. F. Lee, K. Chong</i>	
Wave Propagation in Thermoelastic Media with Temperature-Dependent Material Properties.....	240
<i>Y. Liu, L. Fu, Z. Wang, W. Hou</i>	
Comparison of Surface Distributed Acoustic Sensing (DAS) Fiber Optic Data: Single Mode and Multi Mode Fiber	243
<i>M. Rafi, K. A. M Noh, A. H. Abdul Lati?, R. R. Dhiaulhaq, A. M. Majdi</i>	
Refining Directional Permeability and Interwell Connectivity in a Mature Carbonate Brownfield Using Pulse-Code Testing	246
<i>V. Kalinnikov, V. Krichevsky, R. Farakhova, S. Pangereeva</i>	
Infill Drilling Justification Via Fault Localization and Reserves Confirmation Using Multiwell Retrospective Testing	249
<i>V. Krichevsky, A. Aslanyan, D. Gulyaev, R. Farakhova</i>	
Exploring Carbonate Heterogeneity in the Late Cretaceous Reservoir Using AI Driven Models.....	253
<i>R. Vaz, B. Al Muhairi, A. Franco, X. Li, N. Belayouni, L. Kaushik, N. Yadavalli, S. Soman, Y. Fan</i>	
Impact of Reservoir Depletion on the Seismic Monitoring Plan of the CCS Projects.....	258
<i>P. Tiwari, A. M. M Yusoff, S. M Sahad, Z. Z. Tuong, D. Das, U. Tiwari, S. Rajput</i>	

Author Index