

BAHRAIN

FRACTURE CHARACTERIZATION FOR RESERVOIR MANAGEMENT

15–16 FEBRUARY 2023

SEG/SPE WORKSHOP

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Wednesday, 15 February 2023

Day 1 (Venue: Al Rifaa Ballroom)

7:30 - 8:30 Registration
8:30 - 8:35 HSE
8:35 - 8:40 Welcome by Committee Co-Chairs
8:40 - 9:00 Opening Address - Saleh Al-Saleh, Saudi Aramco

Session 1 **FRACTURE CHARACTERIZATION FROM BOREHOLE DATA**
Session Chairs: Tariq Mahmood, Saudi Aramco and Ardiansyah Koeshidayatullah, KFUPM

09:00 – 10:05 **KEYNOTE: Reservoir Fracture Detection and Characterization using Sonic Imaging**
Erik Wielemaker, (SLB)
Fracture Carbonate Reservoir Characterization using an Integrated Approach between Borehole Shallow Resistivity Image, Acoustic Deep Shear Wave Image (DSWI) and Seismic Data
Nami Al-Mutairi, (Kuwait Oil Company)
Novel Approach for Natural Fracture Characterization using Borehole Images and 3D Sonic Imaging for Fracture Modeling and Engineering Applications
Redha Al-Lawatia, (SLB)

10:05 – 10:45 **Moderated Discussion - 40 min**

10:45 – 11:05 **Committee and Sponsor Recognition**

11:05 – 11:25 **Group Photo**

11:25 – 12:50 **Lunch - 1hr 25min**

Session 2 **ADVANCED SEISMIC INTERPRETATION AND ATTRIBUTE ANALYSIS**
Session Chairs: Abdelraouf Badawi, ARGAS and Santan Kumar, GeoSoftware

12:50 – 13:55 **KEYNOTE: Innovative Disorder Seismic Attribute for Fracture Characterization**
Saleh Al-Dossary, (Saudi Aramco)
Fractured Reservoir Analysis using a Continuous Sequence Stratigraphic Framework, and Attributes Derived from Seismic Data and RGT Model: Method and Examples
Nicolas Daynac, (Eliis)
Fracture Reservoir Driven Seismic Reprocessing to Enhance Seismic Reprocessing and Fracture Detection
Ahmed Abouzaid, (Baker Hughes)

13:55 – 14:25 **Moderated Discussion - 30 min**

14:25 – 14:45 **Coffee Break - 20 min**

Session 3 **RESERVOIR SURVEILLANCE AND MONITORING**
Session Chairs: TBC

14:45 – 15:45 **Characterization of Complex Fracture Networks Using Tracer Tests in a Hydrocarbon Reservoir**
Daoyong Tony Yang, (University of Regina)
Unlock the Potential of using FO Technology to Monitor Fracture Initiation and Growth in Waterflood Projects in Clastic Reservoir in Petroleum Development Oman
Mohammed Al-Hashmi, (Petroleum Development Oman)
Application of Horizontal Well Tractor Microseismic Monitoring in Stereoscopic Development of Tight Oil Platform
Feng Heng, (BGP)

15:45 – 16:15 **Moderated Discussion - 30 min**

17:00 – 19:00 **Ice Breaker Reception**

Thursday, 16 February 2023

Day 2 (Venue: Al Rifaa Ballroom)

8:30 – 8:40 **Recap of day 1 by Ahmed Mahmoud, Tatweer Petroleum**

8:40 – 9:00 **Opening Address - Ahmed AlJanahi, Tatweer Petroleum**

Session 4 **ML AND AI IN FRACTURE CHARACTERIZATION**
Session Chairs: Farah Abdulwahed, Saudi Aramco and Aiman Bakhorji, Saudi Aramco

09:00 – 10:05 **KEYNOTE: Application of Post-Stack Seismic Attributes and Artificial Intelligence based Fault Detection in Fractured Reservoirs**
Peter Szafian (Geoteric)
Practical Application of the Seismic Fault Detection Methods Using Machine Learning
Bingbing Sun (Saudi Aramco)
Machine Learning and Geomechanical Restoration Approaches for Fracture Characterization of Tight Sandstone Reservoir
Muhammed Kamran Gureshi (Saudi Aramco)

10:05 – 10:35 **Moderated Discussion - 30 min**

10:35 – 10:55 **Coffee Break - 20 min**

Session 5 **FRACTURED RESERVOIR MANAGEMENT**
Session Chairs: Ahmed Mahmoud, Tatweer and Ahmed Abouzaid, Baker Hughes

10:55 – 12:15 **Field- Scale Simulation of Proppant Transport and Placement in 3D Hydraulic Fractures by Integrating the Perkins-Kern-Nordgren-Carter (PKN-C) Model and Particle Tracking Algorithm**
Daoyong Tony Yang, (University of Regina)
Optimising the Transition from Waterflood to GOGD in a Fractured Carbonate Reservoir
Manish Kumar Choudhary, (Petroleum Development Oman)
Hydraulic Fracturing Treatment in Naturally Fractured Reservoirs
Kaiming Xia, (Saudi Aramco)
Fractured Reservoir Uncertainties: Auscultation, Diagnosis and Remedies
Mohamed Bouaouaja, (Saudi Aramco)

12:15 – 12:45 **Moderated Discussion - 30 min**

12:45 – 14:00 **Lunch - 1hr 15min**

Session 6 **INTEGRATED WORKFLOWS FOR FRACTURE CHARACTERIZATION AND MODELING**
Session Chairs: Mukarram Ahmed, Saudi Aramco and Mark Cowgill, CGG

14:00 – 15:00 **A Review of Data and Workflows for Advanced Fracture Modeling with Examples from Case Studies Worldwide with Special Focus of Seismic Driven Attributes**
Anubrat Mukherjee, (SLB)
Integrated Structural Geology and Geomechanics Workflow for Analysis of Faulted and Fractured Reservoirs
Seth Buseti, (Saudi Aramco)
Seismic Guided Fracture Characterization Workflows for Conventional and Unconventional Jurassic Reservoirs in Kuwait
Rajesh Rajagopal, (Kuwait Oil Company)

15:00 – 15:30 **Moderated Discussion - 30 min**

15:30 – 15:50 **Wrap Up - 20 min**