PETROSYNC'S GEOSCIENCE SERIES

FRACTURED RESERVOIR MODELING

Optimize your exploration programs and reservoir modeling process of fractured reservoir

25 April — 29 April 2016
Bandung, Indonesia
Course Overview
Fractured Reservoir and Fractured Basements comprise the largest productive reservoir. Their potential are now identified as good targets for exploration. However, complexities in generating a good reservoir model exists, and has proven to be a challenging task for most explorationists.

The short course provides a unique opportunity to learn all the aspects related to the understanding and modeling of fractured basement reservoirs. Participants will gain knowledge of how fractured reservoirs differ from conventional reservoirs, and how to approach their fractured reservoir projects in a systematic manner.

Course Design Establishes the Geology first then to Modeling Workflow
The course emphasizes the geology behind fractured reservoirs and fractured basement, then proceeds to cover all the aspects of modeling fractured reservoirs in a defined workflow.

Generate Actual Models from Real Data Sets
This is the only course in the world where attendees use a real software to build fracture models that are validated with blind wells. No other fracturing modeling course offers this hands-on approach with these data sets, where students will leave the class with confidence as they have worked on it during this course.

How Does This Course Benefits You?
Generate Geologically-sound Fractured Models
Generate geologically-sound models and analysis of fractured reservoirs through understanding the general expressions of fractures and fracture effect on hydrocarbon production based on real life case studies.

Be Able to Plan Rational Exploration Programs for Fracture Reservoirs
Determine the major data requirements and modeling issues associated with various types of fractured reservoirs in general and fractured basement in particular as well as how to set up rational exploration programs for these reservoirs.

Develop a Model that Integrates Geology, Geophysics & Reservoir Engineering Data
Using actual data from Teapot Dome, (WY, USA), the geoscientist will be able to construct fracture models that integrate geology, geophysics and reservoir engineering. Emphasis will be given to the critical use of seismic attributes derived from inversion, volumetric curvature and spectral imaging.

Learn to Identify Productive Zones in Fractured Reservoirs
Using actual field data complex fractured formations and a hands-on approach, the workshop allows the geoscientist to identify fractures and to construct predictive 3D fracture models that can be used to identify productive zones, plan wells and to create fracture porosity and permeability models for reservoir simulation.

PetroSync Quality Assurance
All PetroSync courses are developed with top quality to address all your training needs and purposes. Our courses are vetted strictly to ensure that we always deliver the best courses with the best industry expert.

P PetroSync Inhouse Solutions
P PetroSync can tailor our courses to meet your specific needs at your preferred location and schedule. Contact us for more information at +65 6415 4500 or email to general@petrosync.com
PetroSync Distinguished Instructor

Dr. Ahmed Ouenes
Founder & CEO, FracGeo

Practical & Consulting
Dr. Ahmed has over 25 years of experience in interpreting and modeling complex reservoirs. He is specialized in advanced reservoir characterization and simulation of fractured reservoirs. Dr. Ahmed has developed various modern reservoir modeling technologies used in the industry. He has completed over 100 integrated reservoir studies throughout the world especially for fractured and tight reservoirs.

Training
Dr. Ahmed has been teaching to various companies in the recent years, have delivered this program to industry professionals in Kuala Lumpur, Bandung, Bali, and Ho Chi Minh with an outstanding remarks and feedback from clients.

Recognitions
Ahmed Is the Inventor of CFM Technology (the only fracture modeling technology proven with drill bit). He has also developed many commercial software (including CRYSTAL, ReFract, ResFrac, RC Squared etc).

Who Needs This Program

- This course is designed for those who deal with fractured basements and those who need to develop them using all types of available data.
- The course will be very useful to all geoscientists involved in basements, clastics, carbonates, and shale plays where fractures play a major role.

Job Titles Include:
- Exploration Geophysicists
- Reservoir Geophysicists
- Exploration Geologists
- Reservoir Geologists
- Subsurface/Exploration Managers
- Reservoir Engineers
- Petroleum Engineers

Course Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<th>Session</th>
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<tbody>
<tr>
<td>08:00—09:00</td>
<td>Registration (Day 1)</td>
<td>13:00—14:00</td>
<td>Lunch</td>
</tr>
<tr>
<td>09:00—11:00</td>
<td>Session I</td>
<td>14:00—15:30</td>
<td>Session III</td>
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<tr>
<td>11:00—11:15</td>
<td>Refreshment Session I</td>
<td>15:30—15:45</td>
<td>Refreshment Session II</td>
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<tr>
<td>11:15—13:00</td>
<td>Session II</td>
<td>15:45—17:00</td>
<td>Session IV (Last Session)</td>
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Course Agenda — 5 Days

DAY 1
FRACTURES AND THEIR EFFECTS
- Introduction: Fracture Types
- Fractures in Cores
- Fractures in Outcrops
- Geomechanics and Fractures
- Production from Fractured Reservoirs
- Fractures in Basement Reservoirs

DAY 2
Modeling Fractured Reservoirs
- Introduction to Fractured Reservoir Modeling
- Factors Affecting Fracturing
- Methodologies to Characterize Fractured Reservoirs
- The Use of Seismic to Improve the Fracture Modeling
- Modeling Basement Reservoirs

DAY 3
Seismic Attributes for Fracture Modeling
- Post-stack Attributes
- Pre-stack Seismic Attributes
- Azimuthal Anisotropy
- Seismic Attributes in Fractured Basement

DAY 4
Integrated Workflow for Modeling Fractured Reservoirs
- Integrated Workflow Applied to Fractured Reservoirs
- Hands-on Application: 2 Different Dataset from the Teapot Dome (WY)
- Fractured Basement Case Studies

DAY 5
Development and Production Preparation
- Predicting Production and Development Problems by Reservoir Types
  - Development of shale and tight sands
- Predicting and Imaging Production Sweet Spots
  - Sweet spots identification in unconventional reservoirs
- Geomechanical modeling of Hydraulic Fractures interacting with natural fractures
- Predicting microseismicity with the geomechanical modeling of hydraulic fractures interacting with natural fractures
- Determining Optimum Well Paths
- Preparation for Simulation
  - Estimation of the Stimulated Reservoir Volume (SRV)
  - Reservoir simulation of stimulated unconventional wells
- Critical Consideration in Designing Depletion Scenarios in Fractured Reservoirs

After the course, participants will be able to determine the major data requirements and modeling issues associated with various types of fractured reservoirs in general and fractured basement in particular as well as how to set up rational exploration and development programs for these reservoirs. The course will also emphasize the importance of natural fractures and their role in successful stimulation of unconventional reservoirs.
COURSE DETAILS
Title: Fractured Reservoir Modeling
Date: 25-29 April 2016
Location: Bandung, Indonesia

INVESTMENT PACKAGES (Please Circle)

<table>
<thead>
<tr>
<th>INVESTMENT PACKAGE</th>
<th>DEADLINE</th>
<th>FULL MASTERCLASS</th>
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<tbody>
<tr>
<td>Standard Price</td>
<td>22 April 2016</td>
<td>USD 4,295</td>
</tr>
<tr>
<td>Early Bird Offer</td>
<td>25 March 2016</td>
<td>USD 4,095</td>
</tr>
<tr>
<td>Group Discount (3 or more Delegates)</td>
<td>22 April 2016</td>
<td>USD 3,865</td>
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Group Discount is based on Standard Price
* To enjoy the promotion & discount offer, payment must be made before deadline
* For 7 or more delegates, please inquire for more attractive package.
* Prices include lunches, refreshments and materials. Promotion & discount cannot be combined with other promotional offers.
* Important: Please note that registration without payment will incur a SGD 200 administration fee.

DELEGATES DETAILS
1st Delegate Name: [Name]
Direct Line Number: [Number]
Job Title: [Title]
Head of Department: [Name]

2nd Delegate Name: [Name]
Direct Line Number: [Number]
Job Title: [Title]
Head of Department: [Name]

3rd Delegate Name: [Name]
Direct Line Number: [Number]
Job Title: [Title]
Head of Department: [Name]

INVOICE DETAILS
Attention Invoice to: [Name]
Direct Line Number: [Number]
Fax: [Fax]
Email: [Email]
Company: [Company]
Industry: [Industry]
Address: [Address]
Country: [Country]
Postcode: [Postcode]

Please note:
- If you have already registered by Phone Fax Email Web, please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.
- If you have not received an acknowledgement before the training, please call us to confirm your booking.

PAYMENT METHOD
- By Credit Card: Please debit my credit card: [Card Type] Security Code: [Security Code]
Card Number: [Number] Expiry Date: [Date]
Name Printed on Card: [Name]
- By Direct Transfer: Please quote invoice number(s) on remittance advice

CERTIFICATE OF ATTENDANCE
70% attendance is required for PetroSync’s Certificate of Attendance

CANCELLATION POLICY
You may substitute delegates at any time as long as reasonable advance notice is given to PetroSync. For any cancellation received in writing not less than fourteen (14) working days prior to the training course, you will receive credit voucher less a SGD 200 administration fee and any related bank or credit card charges.

DATA PROTECTION
The information you provide will be safeguarded by PetroSync that may be used to keep you informed of relevant products and services. As an international group we may transfer your data on a global basis for the purpose indicated above. If you do not want us to share your information with other reputable companies, please tick this box.

PAYMENT TERMS: Payment is due in full at the time of registration. Full payment is mandatory for event attendance.

CONFIRMATION
I agree to PetroSync’s terms & conditions, payment terms and cancellation policy.

Authorized Signature: [Signature]

TERMS AND CONDITIONS
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Please note that trainers and topics were confirmed at the time of publishing; however, PetroSync may necessitate substitutions, alterations or cancellations of the trainers or topics. As such, PetroSync reserves the right to change or cancel any part of its published course due to unforeseen circumstances. Any substitutions or alterations will be updated on our webpage as soon as possible.

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- For Payment by Direct Telegraphic Transfer, client has to bear both local and oversea bank charges.
- For credit card payment, there is additional 4% credit card processing fee.

REVIEW DETAILS
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