PETROSYNCS PETROPHYSICS SERIES

APPLIED PETROPHYSICS FOR LOW RESISTIVITY THIN-BEDDED FORMATIONS

Overcome the Challenges in Exploring Thin Bed Reservoirs

19-21 September 2016
Kuala Lumpur, Malaysia
Course Overview

Thin bedded reservoirs are increasingly common exploration targets. However, evaluating such formations is difficult due to challenging and sometimes misleading data.

This program will cover all aspects of petrophysical analysis in thinly bedded reservoirs and will train attendees to select the best interpretation techniques based on the data available and the known characteristics of the formation.

Course Design Tackles Approaches for Various Types of Thinly Bedded Reservoirs

This course focuses on different techniques in tackling various types of thinly bedded reservoirs, including laminated sand shale sequences, thin layers of different types of clean sands and thin beds in carbonates.

Includes Hands-on Exercises

The exercises run using basic training data sets, where the theory will be covered first, then the students will get a chance to put that theory to the test. The attendees are also welcome to bring their own example data set which can be used in the practical sessions.

How Does This Course Benefits You?

IDENTIFY POSSIBLE HC POTENTIAL FOR THIN BEDDED SEQUENCES

Learn the petrophysical techniques in interpreting log data from low resistivity, thin bedded sequences in order to identify possible HC sources.

CHARACTERIZE VARIOUS TYPES OF THINLY BEDDED RESERVOIRS

Analyze various determining characteristics of thinly bedded reservoirs such as that in laminated sand shale sequences, in clean sands, and in carbonates.

UNDERSTAND THE CHALLENGES IN DETECTING PAY ZONES & THEIR ACCURATE EVALUATION

Identify the challenges and pitfalls in detecting pay zones in thin-bed reservoirs and their accurate evaluation.

APPLY THE RIGHT TECHNIQUES FOR EVALUATING THIN BED RESERVOIRS

Identify which logging techniques has been useful, what have been most successful, and the available technologies that can help better evaluate these reservoirs.

Did you know?

As exploration goes into the marginal frontiers, thin beds are becoming increasingly common. How do you detect these pay zones? How do you accurately evaluate them? Find out in our course!

Did you know? Thin bed reservoirs entail a different skill set in identifying and analyzing these systems. Do you know the latest technology and data processing involved? Do you know the subtleties required to evaluate them?
Petrophysics | Applied Petrophysics for Low Resistivity Thin-Bedded Sequences

PetroSync Distinguished Instructor

Richard “Rick” Alred
Consultant Petrophysicist

Practical & Consulting
Rick has over 35 years of experience in the Oil & Gas industry, specializing in Petrophysics. He was previously with Paradigm, Baker Atlas, Schlumberger, BHP Petroleum, Marathon Oil and Geosource UK. Rick has worked with various IOCs and NOCS while he was working with Paradigm, Baker Hughes, and Schlumberger. He continues to provide his expertise through research and consulting petrophysical services.

Training
During his time with Paradigm Rick developed training courses for both Paradigm staff and customers. Now, alongside his consulting services, he continues to provide training in basic and advanced petrophysical techniques.

Regional
Rick was based in Kuala Lumpur, Malaysia from 1996 to 2000, first working with Schlumberger and later independently, providing consulting services specialising in petrophysical data reviews for existing field developments and new acreage acquisition.

Who Needs This Program

- This program is developed for those who are working on interpreting log data from low resistivity, thin bedded sequences
- This program is also for those who will benefit from understanding the analysis of petrophysical data during exploration and development stage

Job Titles Include:
- Petrophysicists
- Log Analysts
- Exploration Geoscientists
- Development Geoscientists
- Subsurface Managers

Course Schedule

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

PetroSync Inhouse Solutions
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
Course Agenda — 3 Days

**DAY 1**

**THE THIN BED PROBLEM**
- The Geology Of Thin Beds – Laminated Shaly Sands And Other Types Of Thin Beds
- What The Petrophysicist Is Trying To Achieve When Assessing Thin Beds
- Uncertainty In Results And Reserves Estimates
- Log Measurements In Thin Beds
- Why Are The Resistivity Logs So Low?

**CONVENTIONAL, HIGH RESOLUTION, AND IMAGE BASED TECHNIQUES**
- Conventional Interpretation Techniques Using Shaly Sand Sw Equations
- Introduction To Petrophysical Modelling
- High Resolution Resistivity Modelling
- Image Based Petrophysics
- Results Reporting In Thin Beds

**DAY 2**

**ELECTRICAL ANISOTROPY AND HOW IT IS MEASURED**
- Why Measure Vertical Resistivity?
- How Are Vertical Resistivities Measured?
- What To Do If No Tri-Axial Resistivity Measurements Have Been Made

**TRI-AXIAL RESISTIVITY INTERPRETATION**
- Different Interpretation Techniques Available Using Horizontal And Vertical Resistivities
- Laminated Shaly Sand Analysis (LSSA) For Interpreting Horizontal And Vertical Resistivity
- Uncertainty Revisited And Why LSSA Has Low Uncertainty

**DAY 3**

**ANISTROPIC FORMATIONS AND RESERVOIR MODELING**
- Different Types Of Petrophysical Modelling
- Low Resolution 3dmodelling

**SATURATION HEIGHT FUNCTIONS FOR THIN BEDS**
- Building Saturation Height Functions
- Saturation Height Functions In Thin Beds
- Using NMR Results With Capillary Pressure Data In Thin Beds
- Applying Saturation Height Functions In Multi-Pore Systems
- Review of All Available Techniques and Selection Criteria for Their Use
COURSE DETAILS
Title: Applied Petrophysics for Low Resistivity Thin Bedded Formations
Date: 19–21 September 2016
Location: Kuala Lumpur, Malaysia

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 2,895</td>
</tr>
<tr>
<td>Early Bird Offer</td>
<td>18 March 2016</td>
<td>USD 2,695</td>
</tr>
<tr>
<td>Group Discount</td>
<td>22 April 2016</td>
<td>USD 2,605</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: 
Direct Line Number: 
Email: 
Job Title: 
Department: 
Head of Department: 
2nd Delegate Name: 
Direct Line Number: 
Email: 
Job Title: 
Department: 
Head of Department: 
3rd Delegate Name: 
Direct Line Number: 
Email: 
Job Title: 
Department: 
Head of Department: 

INVOICE DETAILS
Attention Invoice to: 
Direct Line Number: 
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Industry: 
Address: 
Country: 
Email: 
Postcode: 

Please note: 
- If you have already registered by Phone, Fax, Email or Web, please accept our apologies for mail or email that is incorrectly addressed. We will amend them accordingly.
- If you have not received an acknowledgement before the training, please call us to confirm your booking.
- Indicate if you have already registered by Phone, Fax, Email or Web.
- For credit card payment, there is additional 4% credit card processing fee.
- By Credit Card: Please quote invoice number(s) on remittance advice
- By Direct Transfer: Please quote invoice number(s) on remittance advice

PAYMENT METHOD

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: 

I certify that the information provided is true & correct.

COURSE CONSULTANT
Name: Cay Aagen
Email: registration@petrosync.com
Phone: +65 6415 4500
Fax: +65 6415 4322

TERMS AND CONDITIONS
DISCLAIMER
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 web page as soon as possible.

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 wish to share your information with other reputable companies, please tick this box

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.

Delegates who cancel less than fourteen (14) working days of the training course, or who do not attend the course, are liable to pay the full course fee and no refunds will be granted.

In the event that PetroSync cancels or postpones an event for any reason and that the delegate is unable or unwilling to attend in on the rescheduled date, you will receive a credit voucher for 100% of the contract fee paid. You may use this credit voucher for another PetroSync to be mutually agreed with PetroSync, which must occur within a year from the date of postponement.

PetroSync is not responsible for any loss or damage as a result of the cancellation policy. PetroSync will assume no liability whatsoever in the event this event is cancelled, rescheduled or postponed due to any Act of God, fire, act of government or state, war, civil commotion, insurrection, embargo, industrial action, or any other reason beyond management control.

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

DETAILS
Please accept our apologies for mail or email that is incorrectly addressed. Please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.

CHARGES & FEE(S)
- 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.

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