

Petrophysics in Carbonate Reservoirs

Understanding highly varying properties of Carbonate Reservoirs

19th August 2013 - 23rd August 2013, Kuala Lumpur, Malaysia



Petrosync Distinguished Instructor

Dr. Ahmed Taha Amin

President, Godomex
International Consultant Petrophysicist

- ▶ Over 35 years of experience in Oil & Gas industry
- ▶ Specializes in formation evaluation, core analysis and reservoir modeling
- ▶ Handled technical & managerial positions in GUPCO, ADCO & ADNOC, QGPC, Apache and RPS Energy

Course Objectives

- ▶ Understand concepts of petrophysical rock properties in carbonate reservoirs
- ▶ Acquire knowledge on lithofacies in carbonates and porosity determination
- ▶ Discussion on fractures, vugs and bitumen detection in carbonates
- ▶ Determine and understand core and core analysis
- ▶ Learn and practice on interpretation concepts
- ▶ Understand saturation using Archie's equation and permeability determination from logs and cores
- ▶ Identify petrophysical parameters evaluation from core and log data
- ▶ Knowledge on log quality control on tool measurements (log readings) and data handling
- ▶ Practice application on carbonate reservoir examples
- ▶ Learn quick look interpretation using advanced methods and cross-plots

Specially Designed for

The course is designed for petrophysicists, geologists, geophysicists and reservoir, petroleum and drilling engineers whose job requires a more extensive knowledge of petrophysical engineering in carbonate reservoir.

 Supported by



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Course Overview

It is estimated that more than 60% of the world's oil and 40% of the world's gas reserved are held in carbonate reservoir. Carbonates exhibits varying properties making it difficult to characterized. A focused approach is needed to better understand the heterogeneous nature of rock containing fluids and the flow properties within the porous and often fractured formation. This involves detailed understanding of the fluid saturation, pore-size distribution, permeability, rock texture, reservoir rock type and natural fracture systems at different scales.

During this course, the concepts of petrophysical rock properties such as porosity and permeability and mineralogy in carbonate reservoirs will be covered. The relationships between these parameters and in situ fluid saturation will be discussed.

The physics of well logging tools to methods of interpretation of these parameters will be applied. The understanding of acceptable well log quality and the recognition of good well log data will be addressed.

This course is prepared to provide the interpretation, concepts and techniques for carbonate reservoirs on which to develop the petrophysical knowledge and capabilities necessary for geologists, geophysicist, engineers and petrophysicist. The understanding of acceptable well log quality on tool measurements, data handling and the recognition of good well log data will be addressed.

Practice application on carbonate reservoir examples will be used as workshop training for quick look interpretation. The case studies for lithofacies identification, bitumen detection variable parameters in heterogeneous carbonate reservoirs from log data will be studied in this course.

Testimonials

"Dr. Ahmed has an excellent experience and presentation skills."

"The course information and Dr. Ahmed's experiences has been well-delivered & shared to us."

"The examples and case studies from past experience of Dr. Ahmed are very valuable."

Petrosync Quality

Limited Attendees

The course has limited seats to ensure maximum learning and experience for all delegates.

Certificate of Attendance

You will receive a Certificate of Attendance bearing the signatures of the Trainer upon successful completion of the course. This certificate is proof of your continuing professional development.

Interactive Training

You will be attending training designed to share both the latest knowledge and practical experience through interactive sessions. This will provide you with a deeper and more long-term understanding of your current issues.

High Quality Course Materials

Printed course manual will provide you with working materials throughout the course and will be an invaluable source of reference for you and your colleagues afterward. You can follow course progress on your laptop with soft copies provided.

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Course Agenda

Day One - 19th August 2013

Course Targets & Expectations

Reservoir Rock Properties

Reservoir Parameters:

- Porosity
- Saturation
- Permeability
- Permeability and Porosity Relationships

Logging Tools Measurements:

- Planning
- Operation
- Logging Environment
- Tool Calibration

Open-Hole Logging Tools & Measurements:

Lithology Tools:

- Mud Logs
- Gamma Ray & Practical Session (GR)
- Spectral Gamma Ray & Practical Session (Spectral GR)
- Spontaneous Potential & Practical Session (SP)
- Caliper Logs

Porosity Tools:

- Sonic Logs & Practical Session (Sonic)
- Density Logs & Practical Session (Density)
- Neutron Logs & Practical Session (Neutron)

Resistivity Tools:

- Laterolog & Practical Session (Laterolog)
- Induction Logs & Practical Session (Induction)
- Micro-Spherical Logs & Practical Session (MSFL)
- Invasion Profile

Day Two - 20th August 2013

Petrophysical Parameters:

- Core and Core Analysis: 'a', 'm' and 'n' Determination from SCAL
- Determination of 'Rw' from formation water samples
- Most problematic parameters

Quick Look Interpretation:

- Quick Look Methods
- Lithology Determination from logs
- Rw Determination Method
- Quick Look Interpretation for Porosity
- 'm' from core measurements
- Volume of Shale Estimation
- Basic Relations for Water Saturation Estimation
- Permeability from logs

Practical Application Examples (Workshop)

- Practice application on carbonate reservoir examples for quick look interpretation using excel files.

Day Three - 21st August 2013

Recent & Advanced Tools:

Geological Tools:

- Fullbore Formation Microlimager
- Microscanner Imager

Other Tools:

- Nuclear Magnetic Resonance
- Modular Dynamic Tester

Logging While Drilling (LWD)

- Lithology Tools
- Porosity Tools
- Resistivity Tools

IN-HOUSE SOLUTIONS

SAVE COST • IMPROVE PERFORMANCE • REDUCE RISK

PetroSync understands that in current economic climate, getting an excellent return on your training investment is critical for all our clients. This excellent training can be conducted exclusively for your organization. The training can be tailored to meet your specific needs at your preferred location and time. We will meet you anywhere around the globe.

If you like to know more about this excellent program, please contact us on +65 6415 4502 or email general@petrosync.com

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Cased-Hole Logging Tools:

- Thermal Decay Time
- Cement Bond
- Production Logging

Day Four - 22nd August 2013

Formation Evaluation:

- Porosity Types
- Fluid Saturation
- Permeability
- Permeability and Porosity Relationships
- Core Analysis and Core-Log Relationships
- Archie's Relationship

Advanced Formation Evaluation for Reservoir Petrophysical Model Evaluation Modern Approaches and Techniques in Petrophysics:

Multi-Well Bases Study using multi-well data-base, key well study, data normalization, variable petrophysical parameter values and standardization of petrophysical parameters

Lithology Determination:

Lithology Model and Lithological parameters

Petrophysical Parameters Determination:

Archie's Parameters, Most Problematic Parameters, Old Methods (Constant Value) and New Methods (Variable Values).

Computer Processed Interpretation (CPI)

Log Quality Control

Log data Quality Control and data selection, LQC on output processing parameters and digital data format.

Day Five - 23rd August 2013

Cases study:

Application of the created Data-Base by field basis after loading the digital data in different formats (LAS, DLIS, LIS, ASCII, etc.) for each well for this case studies:

Lithofacies Identification:

Lithofacies Identification in carbonate reservoirs using log measurement data and core analysis data.

Bitumen detection:

Bitumen detection in carbonate reservoirs using log measurement data and core analysis data with the application of the created Data-Base.

Variable Parameters Study:

Variable parameters study in heterogeneous carbonate reservoirs as variables "m" and "Rw" for accurate saturations estimation.

Permeability Prediction in Carbonate Reservoirs:

Permeability prediction from log data by using it's relation with core data to be applied in wells without cores.

WHY YOU SHOULD ATTEND PETROSYNC'S EVENTS

- To ensure that all objectives of the course matches yours, all PetroSync programs are developed after intensive and extensive research within the industry
- PetroSync programs focus on your immediate working issues to ensure that you are able to apply and deliver immediate results in real work situations
- Application and implementation of industry knowledge and experience are the drivers for our course design, not theoretical academic lectures
- PetroSync training focuses on practical interactive learning tools and techniques including case studies, group discussions, scenarios, simulations, practical exercises and knowledge assessments during the course. Invest a small amount of your time to prepare before attending the course to ensure maximum learning
- PetroSync follows a rigorous selection process to ensure that all expert trainers have first-hand, up-to-date and practical knowledge and are leaders of their respective industrial discipline

Petrosync Distinguished Instructor



Dr. Ahmed Taha Amin

President, Godomex
International Consultant Petrophysicist

Dr. Ahmed Taha Amin has over 35 years in industry, principally in log analysis and formation evaluation in various technical and managerial positions for GUPCO (Cairo, Egypt), ADCO & ADNOC (Cairo, Egypt), QGPC (Doha, Qatar), Apache (Cairo, Egypt) and RPS Energy (UK). He specializes in formation evaluation, core analysis and reservoir modeling. He is formerly a Senior Lecturer Petrophysics in the Department of Physics at the Alexandria University and Geological Department at Cairo University. Senior Instructor for many in house and international courses in Petrophysics with major international training companies. Dr. Ahmed had executed training courses for RPS, Cepsa, Repsol, Sasol SA, El-Furat, Sudapet and he was a Senior Advisor Petrophysicist in Apache Egypt Companies.

He has broad experience working with assets and providing properties for reservoir characterization. Dr. Ahmed is completely familiar with operational aspects of logging and log interpretation with strong experience with carbonate petrophysics after 15 years experience in the Middle East.

He had done numerous industry courses in Petrophysics Logging, Log Analysis, Geology, Geophysics, Reservoir Engineering and publication in petrophysical topics. Currently, Dr. Ahmed is working as an independent consultant petrophysicist with CEPESA, Aminex, TPS and IPR International. At the same time working as associate principle petrophysicist with RPS for international projects (Sasol Johannesburg)

HIS PROFESSIONAL MEMBERSHIP/AFFILIATIONS

- American Association of Petroleum Geologists (AAPG)
- Society of Petrophysicist & Well Log Analysis (SPWLA)
- Society of Petroleum Engineers (SPE)
- Egyptian Society of Applied Petrophysics (ESAP)
- Egyptian Petroleum Exploration Society (EPEX)

HIS CLIENT LIST

- | | |
|---------------------|--------------------------|
| ● ARAMCO (Cairo) | ● EGPC |
| ● Petronas (Sudan) | ● EGAS |
| ● ADCO (UAE) | ● Petrobel |
| ● Cairn Energy | ● Qarun |
| ● Cepsa (Madrid) | ● Repsol (Madrid) |
| ● Hess & Nalpetco | ● Al Furat Petroleum Co. |
| ● Sasol | ● Sudapet |
| ● Cuu Long Joc (UK) | ● CCED |
| ● RPS Energy (UK) | ● BGFCL |
| ● Dana Gas | ● PetroGulf |
| ● Qatar Petroleum | ● Ganoub |

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INVESTMENT PACKAGES

Investment Package	Deadline	Course Fee
Standard Price	16th Aug 2013	SGD \$ 4,495
Early Bird Offer	19th Jul 2013	SGD \$ 4,295
Group Discount (3 or more Delegates)	16th Aug 2013	10% discount for groups of 3 registering from the same organization at the same time

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 _____ Mr Mrs Ms Dr Others
 Direct Line Number: _____ Email: _____
 Job Title: _____ Department: _____
 Head of Department: _____

2nd Delegate Name _____ Mr Mrs Ms Dr Others
 Direct Line Number: _____ Email: _____
 Job Title: _____ Department: _____
 Head of Department: _____

3rd Delegate Name _____ Mr Mrs Ms Dr Others
 Direct Line Number: _____ Email: _____
 Job Title: _____ Department: _____
 Head of Department: _____

INVOICE DETAILS

Attention Invoice to: _____
 Direct Line Number: _____ Fax: _____
 Company: _____ Industry: _____
 Address: _____ Postcode: _____
 Country: _____ Email: _____

Please note:
 - Indicate if you have already registered by Phone Fax Email Web
 - If you have not received an acknowledgement before the training, please call us to confirm your booking.

PAYMENT METHODS

By Credit Card :
 Please debit my credit card: Visa MasterCard AMEX Security Code: [][][][][][]
 Card Number: [][][][]-[][][][]-[][][][]-[][][][] Expiry Date: [][][][] [][][][]
 Name printed on card: _____

By Direct Transfer : Please quote invoice number(s) on remittance advice
 PetroSync LLP Bank details:
 Account Name: PetroSync LLP
 Bank Number: 7144 • Branch Code: 013 • Account No: 13-1-005531-6
 Name of Correspondent Bank : Standard Chartered Bank, 6 Battery Road,
 Singapore 049909
 SWIFT Code of Correspondent Bank: SCBLSGSGXXX
 All bank charges to be borne by payer. Please ensure that PetroSync LLP receives the full invoiced amount.

PROGRAMME CONSULTANT

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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 programme 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 want us 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.

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.

Course Confirmation

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

Authorized Signature : _____

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