PETROSYNC
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Advanced Well Log Analysis and Interpretation

Improved techniques in effective petrophysics input & integration to maximize oil recovery

Course Level : Advance

11th - 15th December 2023 at Kuala Lumpur, Malaysia

A lot of Practical Things, Case Studies and Exercises !

Petrosync Distinguished Instructor

Prof. Dr. Ahmed Taha

President, Godomex

International Consultant Petrophysicist

- Prof. Dr. Ahmed Taha is an expert in formation evaluation, core analysis and reservoir modeling
- He has extensive experience over 45 years in industry, principally in log analysis and formation evaluation in various technical and management around the world
- He has broad experience working with assets and providing properties for reservoir characterisation
- Strong experience with carbonate petrophysics over 15-years experience

Who Should Attend?

- Well Logging Analysts and Petrophysicists,
- Petroleum, Production and Reservoir Engineers,
- Field Operations and supervisors,
- Geoscientists involved in field development and other E & P professionals.

PROGRAM SCHEDULE

08:00	Registration (Day1)
08:10 – 10:00	Session I
10:00 – 10:15	1st Tea Break
10:15 – 12:30	Session II
12:30 – 13:30	Lunch Break
13:30 – 15:00	Session III
15:00 – 15:15	2nd Tea Break
15:15 – 16:00	Session IV
16:00	End of Day

**Schedule may vary for each training*

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Course Overview

Well logs are detailed record of the geologic formations by a borehole. These are comprehensive and important data gathered in any phase of a well's history to identify petrophysical properties which in turn defines the economic value of a reservoir. The techniques in analysis and interpretation of well logs are therefore essential in identification of oil recovery.

In the E&P business, integrated petroleum engineering studies and field development plans are management tools which are used to maximize economic recovery of hydrocarbons. Petrophysical engineers fulfill a key role in analyzing and interpreting subsurface reservoir data, which form the basis for reservoir models. E&P technical staff and team leaders involved in integrated studies require more than general skills in petrophysical and interpretation techniques to produce quality input to development plans.

The trainer will provide understanding of practical and new techniques and tools in well logging with the support of case studies. At the end of the course, participants will be able to quantitatively identify the reservoir quality, measure the storage capacity of the reservoir through integrating the reservoir and petrophysical data and to improve oil recovery.

Course Objectives

- Drive a consistent and effective Petrophysics inputs to improve oil recovery
- Understand rock properties and pore geometry
- Capitalize on integration reservoir and petrophysical data to maximize economic recovery of hydrocarbons
- Attain the knowledge and practical use of total and effective porosity calculation
- Determine and understand new techniques and tools in well logging
- Acquire knowledge on permeability and rock quality interpretation
- Learn and practice integration of core analysis and open-hole logs

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

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Course Agenda

Day 1

Introduction to Petrophysics

The Rock Physical properties and the petrophysical parameters.

These petrophysical parameters include:

- Porosity,
- Permeability
- Volume of shale,
- Fluid saturations.

Well Logging Tools include:

- Open-Hole Logging Tools.
- Logging While Drilling (LWD) Tools.
- Cased-Hole Logging Tools.

Open-Hole Logging Tools

- Definition, measurements, application, equations of the following tools:
- Lithology Tools: Gamma Ray, Spectral Gamma Ray, Spontaneous Potential Tools
- Porosity Tools: Sonic, Density, Neutron Tools
- Resistivity Tools: Dual-Latero, Dual-Induction, Micro-Spherical Resistivity Tools

Case study: The effect of shale volume

Exercise: Determination of petrophysical parameters

Day 2

Logging Operations and Quality Control

- Logging Tools Operations
- Log Quality Control

Introduction to Logging While Drilling (LWD)

- Lithology Tools
- Resistivity Tools
- Porosity Tools

Quick Look Well Log Interpretation:

- Lithology interpretation
- Porosity calculations
- Rw determination and Petrophysical parameters (a,m,n)
- Vshale estimation
- Fluid Saturation
- Permeability
- Permeability & Porosity relationship

Formation Evaluation

- Porosity Types
- Total Porosity and Lithology Interpretation
- Rw determination methods and Petrophysical parameters (a,m,n)
- Effective Porosity and Vsh Determination
- Fluid Saturation, Archie's Relationship and other Saturation Equations.
- Permeability.

Case study: Calculation of the petrophysical parameters

Exercise: Calculation the fluid saturation

Day 3

Other Open-Hole Logging Tools:

- Definition, measurements, application:
- Electromagnetic Propagation Time Tool and Dipmeter.

Case study: EPT log example

Exercise: Calculate Variable 'm' from EPT equation

Recent and Advanced Tools:

- Geological Tools: FMS, FMI
- Magnetic Resonance Tools: NMR, CMR

Case study: FMI log example

Exercise: Differentiate between these different structural elements.

Case study: CMR log

Exercise: Define free hydrocarbon and away from the bound fluid

Open and Cased-Hole Logging Tools:

Pressure Tools

- Principles and interpretation of the other open hole logging tools which can be run in cased holes:
  - Repeat Formation Tester (RFT) tool
  - Modular Formation Dynamics Tester (MDT)

For:

- Determine static reservoir pressure
- Locate formation fluid contacts
- Verify reservoir isolation.
- Indicate reservoir depletion.
- Calculate reservoir permeability.

Case study: RFT / MDT log example

Exercise: Differentiate between the different gradients of different types of fluids

Open and Cased-Hole Logging Tools:

- Principles and interpretation of cased hole logging tools which can be run in open holes:
  - Thermal Decay Time tool (TDT)
  - Reservoir Saturation tool (RST)

For:

- Monitoring Fluid Contacts
- Reservoir monitoring.

Case study: TDT / RST log example

Exercise: TDT log example using open-hole logging data

Advanced Well Log Analysis and Interpretation

10th - 14th July 2023 at Kuala Lumpur, Malaysia

Day 4

Cased-Hole Logging Tools

- Definitions, Measurements, Applications, Equations,
  - Cement Bond (CBL) & Variable Density (VDL) log:
    - Principles and interpretation of Cement Bond (CBL) & variable Density (VDL) tool for zone-to-zone isolation and reservoir monitoring.
    - Applications to field development.
- Cement Bond (CBL) & Variable Density (VDL) log details:
  - Principle of Operation
  - Basic Sonic Theory
  - Cement Bond Log (CBL)
  - Variable Density Log (VDL)
  - Quantitative Interpretation of CBL and Qualitative Interpretation of VDL using: CBL – VDL Log Example.

  For:
  - Evaluate zone-to-zone isolation:
  - Cement coverage of casing for corrosion protection, mechanical strength
  - Identify cement top
  - Evaluate cement repair jobs
- The Rig Cementing and Remedial cementing works using CBL /VDL results related to Petrophysics and Reservoir Monitoring.
- Well completion related to perforation intervals according CBL / VDL results.

  Case study: CBL / VDL log example

  Exercise: Perforation intervals and top of cement by using the CBL /VDL log example.
- Production logging (PLT) log:
  - Principles and interpretation of production logging tools (PLT):
  - Applications to field development.
- Production logging (PLT) log include:
  - Fullbore – Spinner, or continuous, or packer Flowmeters.
  - Gradiomanometer.
  - Manometer.
  - Thermometer
  - Caliper & Radioactive Tracer

  For:
  - Evaluation of completion efficiency.
  - Detailed information on which perforation are plugged and which are producing or accepting.
  - Monitoring of reservoir production.
  - Evaluation of reservoir production or injection efficiency.
  - Essential guidance for Remedial and Workover, jobs

  Case study : PLT log example

  Exercise: Determine the perforation

Day 5

Advanced Formation Evaluation

- Reservoir Petrophysical Model Evaluation:
- Reservoir Characteristics:
- Modern Approaches and Techniques in Petrophysics
- Multi-Well Bases Study Using:
  - Multi-Well Data-Base
  - Key Well Study
  - Data Normalization
  - Variable Petrophysical Parameter values
  - Standardization of Petrophysical Parameter
- Lithology Determination
  - Lithology Model
  - Lithological Parameters
- Petrophysical Parameters Determination
  - Archie's Parameters
  - Most Problematic Parameters
  - Old Methods (Constant Value)
  - New Methods (Variable Values)
- Introduction to Computer Processed Interpretation using:
- Practical Training Exercises for:
  - Hydrocarbon Quality
  - Fluid Contacts (GOC-GWC-OWC-ODT-WUT-FWL)
  - Reservoir Summations
- Applications to field Development

  Cases Studies Including:
  - Carbonate reservoir (Limestone)
  - Clastics reservoir (Sandstone)
  - Gas Sandstone reservoir

  Cases studies:

  Including: Carbonate and Clastics Reservoirs

  Case study – 1:

  Reservoir Petrophysical Modeling

  Case study – 2:

  Unconventional Reservoir Example

  Case study – 3:

  Unconventional Reservoir Examples

  Case study – 4:

  Rock Typing

  Examples with different contacts (OWC, GWC , and Gas / Oil / Water contacts)

  Exercises

  Practical Training Examples:

  Raw Log Data for Quick Look Interpretation and Formation Evaluation.

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Instructor Profile

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Prof. Dr. Ahmed Taha has extensive experience over 45 years in industry, principally in log analysis and Formation Evaluation in various technical and managerial positions for Gupco (Cairo, Egypt), Adco and Adnoc (Abu Dhabi, UAE), QGPC (Doha, Qatar), Apache (Cairo, Egypt), RPS Energy (in UK) and CEPSA in Egypt.

He is an instructor for Basic, Intermediate, Advanced Petrophysics, Core-Log Integration, Image Interpretation, IP software Application and LQC for Data Management training courses. He was supervised the Petrophysical studies and Wire-Line operations for Apache Egypt operated by: APACHE, QARUN and KHALDA Companies for 10 years. He did Petrophysical Evaluation projects in a few countries such as Algeria, Egypt, Yemen, Kuwait, Madrid, South Africa and East Asia.

Sample Major Project List

- The Reservoir Description Studies (RDS) for several reservoirs in several fields in Abu Dhabi using ADNOC – Schlumberger Multi Well Data Base (MWDB).
- Kuwait Oil Company (KOC) Project for several carbonate reservoirs in Kuwait with (KOC) from Dubai with
- Halliburton.
- Apache Oil company, Established the Data Base for all fields of Egyptian Khalda and Qarun companies in Houston.
- RPS Energy company, Petrophysical Evaluation of 4 Gas wells for Sasol company in Johannesburg, South Africa.
- Apache Oil Company, Reservoir Petrophysical Modeling for Ras Qattara Gas reservoir of the Western Desert in Egypt.

Reservoir Petrophysical Modelling for the Arab-D Oil Carbonate reservoir' in the Arab Gulf Area.

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Instructor Profile - Continue

Partial Client List

- ARAMCO (Cairo)
- Petronas (Sudan)
- ADCO (UEA)
- Cairan Energy
- Cepsa (Madrid)
- Hess & Nalpetco (Cairo)
- Sasol (Cairo)
- Ganoub (Cairo)
- EGAS (Cairo)
- OXI (Oman)
- Repsol (Madrid)
- Al Furat Petroleum Co. (Syria)
- Sudapet (Sudan)
- CCED (Oman)
- BGFCL
- PetroGulf (Cairo)
- PDVSA (Venezuela)
- KPC & KOC (Kuwait)
- Cuu Long Joc, Vietnam (UK)
- RPS Energy (UK)
- Dana Gas (Cairo)
- Qatar Petroleum (Qatar)
- EGPC (Cairo)
- Petrobel (Cairo)
- Khalda (Cairo)
- Qarun (Cairo)
- KPC (Kuwait)
- OXI (Oman)

Publications

- "Estimation of Formation Characteristics From Nuclear and Other Well-Logs" M. Sc. Thesis, Faculty of Science, Ain Shams University, (Cairo, Egypt, 1986)
- "Accurate Estimation of Water Saturation in Complex Carbonate Reservoirs" presented in the "2nd Abu Dhabi Petroleum Conference", (Abu Dhabi, April 1986)
- "Accurate Estimation of Water Saturation in Complex Carbonate Reservoirs" SPE 15714 presented in the fifth SPE Middle East oil show (Bahrain, March 1987)
- "Petrophysical Model Evaluation of Arab–D in Satah Field, Arabian Gulf, Using Modern Logs and Techniques" Ph.D. Thesis, Faculty of Science, Ain Shams University, PP. 212 (Cairo, Egypt, 1996)
- "The Use of Well Logging Analysis in Identifying The Bitumen Occurrences and Determining Their Effects on The Reservoir Characteristics in Satah Field, Arabian Gulf" presented in the "GAW-4" (Geology of Arab World), (Cairo University, Feb., 1998).
- "Lithofacies Identification in Satah Field, Arabian Gulf, Using Well Log Analysis and Modern Technique of Multi-Well Data Base" presented in the EGPC 14th Petroleum Conference (Cairo, Oct. 1998).
- "Reservoir Petrophysical Modelling of Arab–D in Satah Field, Arabian Gulf, Using Multi-Well Data Base and Modern Techniques" presented in the EGPC 14th Petroleum Conference (Cairo, Oct., 1998).
- "Application of Modern Techniques and Data Base for Reservoir Petrophysical Modelling" presented in the "MOC 2002" (Mediterranean Offshore Conference & Exhibition), (Alexandria, April 2002).
- Numerous internal studies in petrophysics were done for GUPCO (Egypt), ADCO and ADNOC (Abu Dhabi) and QGPC (Qatar).

COURSE DETAILS

Title : Advanced Well Log Analysis and Interpretation
Date : 11th - 15th December 2023
Location : Kuala Lumpur, Malaysia

INVESTMENT PACKAGES

Please checklist the package that you are attending!

	Advanced Well Log Analysis and Interpretation SCHEDULE	LOCATION	PRICE
☐	11th - 15th December 2023	Kuala Lumpur, Malaysia	USD 3,295

** All prices are subject to change without notice and are not guaranteed, except that prices for an order that have been accepted by PetroSync is not subject to change after acceptance*

** Price is nett excluding Withholding Tax if any and will be quoted separately. Please send us the withholding tax payment receipt.*

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1st Delegate Name _____ Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Others ☐
Direct Line Number: _____ Email: _____
Mobile Number: _____ Job Title: _____
Department: _____ Head of Department: _____

2nd Delegate Name _____ Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Others ☐
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Mobile Number: _____ Job Title: _____
Department: _____ Head of Department: _____

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

4th Delegate Name _____ Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Others ☐
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Mobile Number: _____ Job Title: _____
Department: _____ Head of Department: _____

**Please fill all the details including mobile number. This help us to contact participant if they are late in class or if there is any urgent update (through whatsapp/call)*

INVOICE DETAILS

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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**

☐ **By Direct Transfer : Please quote invoice number(s) on remittance advice**

PetroSync Global Pte Ltd Bank details:
Account Name : PetroSync Global Pte Ltd
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Bank Code : 7171 • Bank Swift Code : DBSSSGSGXXX • Branch code : 288
Account No : 0288-002682-01-6-022 (USD)
Bank Address : 12 Marina Boulevard, Level 3. Marina Bay Financial Centre Tower 3. Singapore 018982

All bank charges to be borne by payer. Please ensure that PetroSync Global Pte Ltd receives the full invoiced amount.

PROGRAMME CONSULTANT

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Phone : +65 3159 0800

TERMS AND CONDITIONS

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CANCELLATION POLICY

Delegates who cancel after the training is officially confirmed run by email, are liable to pay the full course fee and no refunds will be granted. You may substitute delegates at any time as long as reasonable advance notice is given to Petrosync.

In the event that PetroSync cancels or postpones or change the trainer or change the training location (classroom / virtual) of 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.

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CERTIFICATE OF ATTENDANCE

80% 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.

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CHARGES & FEE(s)

- For Payment by Direct TelegraphicTransfer, client has to bear both local and oversea bank charges.

- For credit card payment, there is additional 4% credit card processsing fee.

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

Signature : _____
Date : _____

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