An Intensive 5 Day Training Course

Open and Cased Hole Log Interpretation

29 Oct - 02 Nov 2017, Dubai

This course is Designed, Developed, and will be Delivered under ISO Quality Standards
WHY CHOOSE THIS TRAINING COURSE?

This interactive, applications-driven 5-day training course will highlight the techniques and principles of the main open and cased hole logging tools used in the oil industry for professionals who needs to deal with wireline logs in their daily job.

This PetroKnowledge training course will explore the tools response explained from their physical principles as well as their relationship with the rock and fluid properties, most common open and cased hole logging technologies will be covered explaining their main applications and limitations. Interpretation methods will be discussed with examples and exercises.

This training course will feature:

- Discussions on open hole tools physical principles and applications
- Tool limitations on different borehole environments
- Tips and examples to identify and understand common logging issues
- Explanation of petrophysical concepts and techniques for basic log interpretation
- Cement and corrosion evaluation tools principles and applications
- Cased hole resistivity, porosity and saturation tools
- Application of interpretation methods in some examples and exercises

WHO IS THIS TRAINING COURSE FOR?

This training course is suitable to a wide range of professionals but will greatly benefit:

- Engineers in exploration and production departments
- Geologists, geophysicist and petrophysicist
- Petroleum, reservoir and drilling engineers
- In general, all other oil & gas industry professionals who are involved in logging data interpretation and validation

WHAT ARE THE GOALS?

By the end of this training course, participants will be able to:

- Understand the physical principles of main open and cased hole logging tools
- Know the main applications and limitations of the different tool readings
- Perform a quantitative formation evaluation on a simple lithology
- Understand the uses and interpretation of open and cased hole logging tools

HOW WILL THIS TRAINING COURSE BE PRESENTED?

This PetroKnowledge training course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented, the sessions will include visual, auditory and kinesthetic elements to cover the three different learning modalities. The daily sessions will be highly interactive and participative. This involves regular discussion of applications as well as hands-on exercises that will be solved manually and/or using Microsoft Excel.
Day One: Basic Concepts Review, Resistivity and Conductivity Tools

Competency Description: It is crucial that the participant understand the basic concepts and physical principles that rule all the tools, procedures and techniques used to evaluate hydrocarbon reservoirs. Learn the use of resistivity and conductivity logging tools for hydrocarbon identification.

Topics to be covered

- Basic Well Logging concepts
- Auxiliary measurements, applications and common issues
- Basic measurements: Gamma Ray and Spontaneous Potential
- Resistivity Theory, principles and applications of laterologs
- Microresistivity devices, principles and applications
- Conductivity tools, uses and limitations
- RT and invasion profile determination

Day Two: Nuclear, Acoustic and Geological Logging Tools

Competency Description: Learn the applications of nuclear, acoustic and geological logging tools to well log interpretation, their use to determine important parameters for proper reservoir evaluation, hydrocarbon detection and quantification, geological models and facies analysis.

Topics to be covered

- Formation density tools, principles and applications
- Neutron tools principles and applications
- Porosity determination from density and neutron logs
- Lithology determination and calibrations
- Basic sonic tools, borehole compensation
- Dipole sonic tools, applications
- Mechanical properties determination and uses
- Dipmeter interpretation principles
- Geological Image (resistivity and ultrasonic) Logging Tools
- Structural and Stratigraphic Interpretation Principles
- Facies analysis for reservoir characterization with image logs
Day Three: Advanced Logging Tools and Formation Testers

Competency Description: Learn the applications of advanced logging tools and formation testers to well log interpretation, their use to determine important parameters for proper reservoir evaluation, hydrocarbon detection and quantification and reservoir models.

Topics to be covered
- Nuclear Magnetic Resonance, applications and limitations
- Relaxation mechanisms and their association with fluid and rock properties
- Porosity, irreducible water saturation and permeability determination
- Advanced fluid determination methods: 3D map T1-T2-Diffusion
- Dielectric tools principles and applications
- Saturation determination parameters, m, n and CEC
- Geochemical logging tools, uses and limitations
- Reservoir pressure determination tools
- Pre-test interpretation, common issues
- Pressure gradient interpretation and examples
- Fluid sampling, optical and composition fluid analyzers
- Advanced probes for special well and reservoir conditions
- Permeability determination

Day Four: Cased Hole Logging Tools

Competency Description: Learn the applications of cased hole logging tools to well log interpretation, casing integrity evaluation and reservoir production analysis and remedial operations.

Topics to be covered
- Cement Evaluation Logs: CBL-VDL. Interpretation and LQC
- Ultrasonic cement evaluation tools.
- Corrosion logging tools
- Saturation determination in cased hole
- Pulsed Neutron and Carbon/Oxygen tools
- Cased Hole Resistivity and Porosity tools
- Comparison with open hole logs
- Formation testers in Cased Hole
- Basic Production Logging Sensors
- One and two-phase fluid analysis
- Multi-phase fluid analysis with advanced sensors

Day Five: Well Perforating and Basic Formation Evaluation Techniques

Competency Description: Learn well perforating basics, safety rules and different systems used to optimize well production. Learn methods and techniques of formation evaluation in simple shaly-sand lithologies including graphical interpretation methods.

Topics to be covered
- Well perforating principles and techniques
- Formation evaluation principles
- Rr. determination methods
- Crossplots utilization, Hingle and Pickett plots
- Graphical interpretation techniques for porosity and lithology
- Saturation determination equations and techniques
- Complete formation evaluation for simple lithology
Open and Cased Hole Log Interpretation

COURSE DATES, VENUES AND FEES

<table>
<thead>
<tr>
<th>Date</th>
<th>Venue</th>
<th>Fee</th>
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<tbody>
<tr>
<td>29 Oct - 02 Nov 2017</td>
<td>Dubai</td>
<td>$4,500</td>
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This fee is inclusive of Documentation, Lunch and Refreshments

Please use BLOCK CAPITALS to fill in this form. It is important that you read carefully through all information before starting to complete the form.

REGISTRATION DETAILS

Family Name: ____________________________________________ First Name (Mr./Ms.): ____________________________________________
Position: ________________________________________________ Company: ________________________________________________
Mailing Address: __________________________________________ Telephone: ______________________ Mobile: ______________________ Fax: ______________________ Email: ______________________

AUTHORISATION

Authorisation By: __________________________________________ Position: ________________________________________________ Company: ________________________________________________
Mailing Address: __________________________________________ Telephone: ______________________ Mobile: ______________________ Fax: ______________________ Email: ______________________

IN-HOUSE TRAINING

Maximize your training budget and have several members of your staff, who require specific training, to attend with the advantage of not incurring additional travel costs when attending a ‘public’ training courses & seminars.

Would you like a PetroKnowledge training course delivered at a time or location to suit you? Would you like PetroKnowledge to tailor a course from our comprehensive library of programmes? Or would you like us to create an entirely new, bespoke course to suit the exact needs of your organisation?

Working in partnership with our clients, PetroKnowledge provides an enjoyable, creative learning experience that enables participants to develop their skills and knowledge. We can deliver not only generic, off-the-shelf courses from our extensive learning portfolio, but we can provide tailored as well as bespoke learning on any aspect of skill development or knowledge. Our in-house courses are conducted by the same expert trainers who conduct PetroKnowledge public courses so you can be assured they will fulfill the learning objective of any organisation.
BOOKING TERMS & CONDITIONS

Booking

- Bookings for courses can be made via our website (petroknowledge.com) or by contacting our Registration Desk on +971 2 5577389 or at reg@petroknowledge.com
- For on-line bookings, please select the course that you require and click on the “Register Now” button, following the instructions step by step
- Upon receipt of booking in order, enrollment on the respective training course will be confirmed by Registration Team with all necessary documentation

Invoicing and Payment

- Our fees include course presentation, relevant materials, physical & digital documentation, lunch and refreshments served during entire training. Accommodation charges are not included in the course fees
- Course fees are payable upon booking unless a valid, authorized Purchase Order is provided and accepted
- Invoices will be sent via email/courier to the ID/name and address provided
- We prefer to have the fees payment in our account before the start of training course. However, if your company has a different payment policy, the same should inform us in advance
- The currency of fees is in US Dollars (USD). Payments can be made in USD or UAE local currency AED (Arab Emirates Dirhams) either by Bank Transfer or by Credit Card. Our Bank Account details will be provided on the Invoice
- Please note that we do accept payment by cash, in USD or AED, only for the last minute bookings

Cancellation of Courses

- It may be necessary for PetroKnowledge to amend or cancel any course, course times, instructors, dates or published fees due to unforeseen circumstances and we reserve the right for such changes
- Any amendments will be advised before the course start date and any bookings already paid in full will not be subject to increased fees

Cancellation by Client

- Once you have completed your booking, received your confirmation of enrollment and a dated payment Invoice, you are deemed to have a contract with PetroKnowledge. You reserve the right to cancel this contract given the below terms
- All cancellations must be received in writing at reg@petroknowledge.com and info@petroknowledge.com at least 14 days prior to the training
- After the cancellation period has expired, consideration may be given, on a case to case basis, if a registered delegate nominates a substitute on the same course, shifts to next session of the course or moves to a new course
- For a cancellation request made on or before the statutory 14 day cancellation period, a refund may be given or a credit note issued which can be used against future course fees
- A 25% administration fee (of the total course fee at the time of booking) will be charged for any cancellations made outside of the statutory cancellation period

Attendance Certificate

- The daily course schedule should be accurately followed to ensure undeterred implementation of our training
- All delegates, who participated in their course throughout, will receive the Certificate of Completion on the last day
- Please report any foreseeable absences to a PetroKnowledge representative or to your sponsors directly
- An absence of three (3) or more sessions of the course will invalidate your eligibility for the Certificate of Completion