

## Integrated Petrophysics for Reservoir Characterization

Instructor **Mark Deakin, PhD (Petrophysics)**

[www.petrophysics.net](http://www.petrophysics.net)

### Who Should Attend?

Petrophysicists, exploration geologists, operations geologists, reservoir geologists, reservoir engineers, geophysicists, core analysts or anyone with a year or more of experience with creating or using formation evaluation results.

You Will Learn

- How to drill, core, log and test for clear formation evaluation results
- How to critically review petrophysical studies & quickly identify flawed results using simple, logical checks
- How to perform Quick Look Log Analysis, core-log integration and the basic seismic-petrophysics work flow
- How to de-mystify petrophysics, clarify field management decisions and reduce uncertainty
- How to extract the key data from modern hi-tech logs and integrate it simply and powerfully with LWD, core and logs
- How to identify, extract and deliver what really matters from the barrage of modern petrophysical data
- How to avoid 10 common errors which ruin geological models

### About the Course

IPRC slide example

Testimonials

**This course will teach you how to evaluate reservoirs and quickly identify flawed results.** Robust, minimum error reserves are achieved by a logical, systematic integration of all relevant data. Interpretation is cost-effective compared with data acquisition or development mistakes and is essential for the complex reservoirs and marginal fields being evaluated today. Systematic Integration often replaces the need to run expensive logs and explains apparent data conflicts. It provides the right answer faster, minimizes uncertainty and strengthens your position as an operator. By contrast, stand-alone log analysis often results in bad economic decisions and bad personal reputations. This course demonstrates through an experienced consultant how robust answers are achieved by the integration of diverse data. Basic economic questions are addressed first by **Quick Look Log Analysis** then head-on by a disciplined, logical process which optimizes the interpretation of Porosity, Saturation, Permeability, Netpay, and Fluid Contacts - the basis of Reserves. Low-Contrast-Low-Resistivity pay, clastics and carbonates are evaluated by simple integration techniques which outperform log analysis with clear, direct results. LWD, wireline, NMR, image logs, routine & special core and MDTs are brought innovatively together to interpret difficult exploration wells, clarify Sw and permeability, increase reserves and improve reservoir simulation. The basic seismic "rock petrophysics" work flow to project results into geo-models is then reviewed.

**This course is a condensed packet of powerful integration techniques.** It continuously evolves by natural selection over 20 years of presentations and mainstream consulting. It's manual provides comprehensive and lasting benefit to the novice and experienced student alike. *Integrated Petrophysics* was the first mainstream, public petrophysics integration course and remains **THE BENCHMARK PETROPHYSICS COURSE TODAY**. Do not be fooled by imitations!

### Daily Content

Detailed contents

*All Days: Interactive Petrophysics and Geolog* real-time demos of key petrophysical procedures -

**MS Excel based Workshops** - Key vendor movies - Daily Recaps to reinforce lessons learned and review the Master Plan - Reviewer's checklists (greenlists) - 25 years experience - Open minded and unprejudiced debate!

*Day1:* Petrophysical objectives. Measurement value. Data hierarchy & calibration logic. Why integrate? Quick Look Log Analysis. What is capillary pressure? Vshale & lithology, complex lithology. Quick Look Log Analysis Workshop: Vsh,  $\emptyset$ , Sw, k. (**Excel Quick Look sheet with equations**)

*Day2:* Porosity: Total or Effective? Gas zones & complex lithologies. Calibrating porosity. Sw100 zones & Rwa's: their derivation & effective use. DST-Core-Log Reconciliation Workshop; Water Zone or SCAL m? Workshop

*Day3:* Sw: improving the inputs which really matter: Rw, m, Ro, Rt, n, Sw: OBM/WBM core, capillary pressure Sw, NMR Swi & Sw-Height, routine core K4 Sw. Facies & wettability defined, explained and properly integrated. Calibrating Sw. Shaly sands: Defined & explained, integrating resistivity with non resistivity data e.g. FMI/NMR/Pc. WaxmanSmits Qv, m\*, n\* with or without core! A→Z Evaluation Workshop:  $\emptyset$ , Rw, Rwa, m, Pickett Plot, Sw<sub>pc</sub>, core-log n, Sw, k, Netpay.

*Day4:* Fluid Contacts & Capillary Pressure: using MDTs effectively. Distinguishing mobile phases. The Reservoir Master Equation: What is it? How do I use it. Permeability: Rock-types, NMR, Conventional logs, Bound fluid volume, Timur-Coates Permeability, Well test kh calibration, Producibility, Using the Sw Decision Tree. Improved simulation input. MDT Workshop: Acquisition, Interpretation.

*Day5:* What is Netpay? Definition: proper criteria & evaluation. Geo-model checks. Seismic-petrophysics work flow, fluid substitutions. Course Review. Key recommendations: Mud, Drilling, Coring, Logging, Sw & k evaluation. Surviving Peer Reviews. PhD Conglomerates case history. 10 common systematic errors which ruin geological models.

### The Instructor

CV

Dr Mark Deakin is an experienced and innovative mainstream petrophysical consultant, author and [enthusiastic tutor](#) in petrophysics. He holds a Ph.D. in 'Integrated Petrophysics' from London's Imperial College, is an ex Amoco petrophysicist, and has 25 years experience, including 12 as a lecturer, independent consultant and Director of his consulting company. He has performed over 50 detailed reservoir studies, primarily in Southeast Asia's difficult carbonates and stacked 'low-contrast-pay' reservoirs. Deakin chooses to work frequently in operations to keep abreast of new LWD, coring and wireline technology. His holistic approach brings each field's development uncertainties into sharp focus and then systematically reduces them by a strict, cost-benefit ranked plan of action. Innovative, appropriate integration and clear, practical recommendations result in improved simulation and increased reserves, at very low cost. Soon after his petrophysics PhD Deakin authored **the first public petrophysical data integration course**. He has continually evolved and chaired this and his Carbonates & Fracture course, publicly and in-house, for 20 years through OGCI, HOT and independently. Deakin is a long standing member of the SPWLA.

*PS: This course for benchmark mainstream petrophysics training*

### REGISTER

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