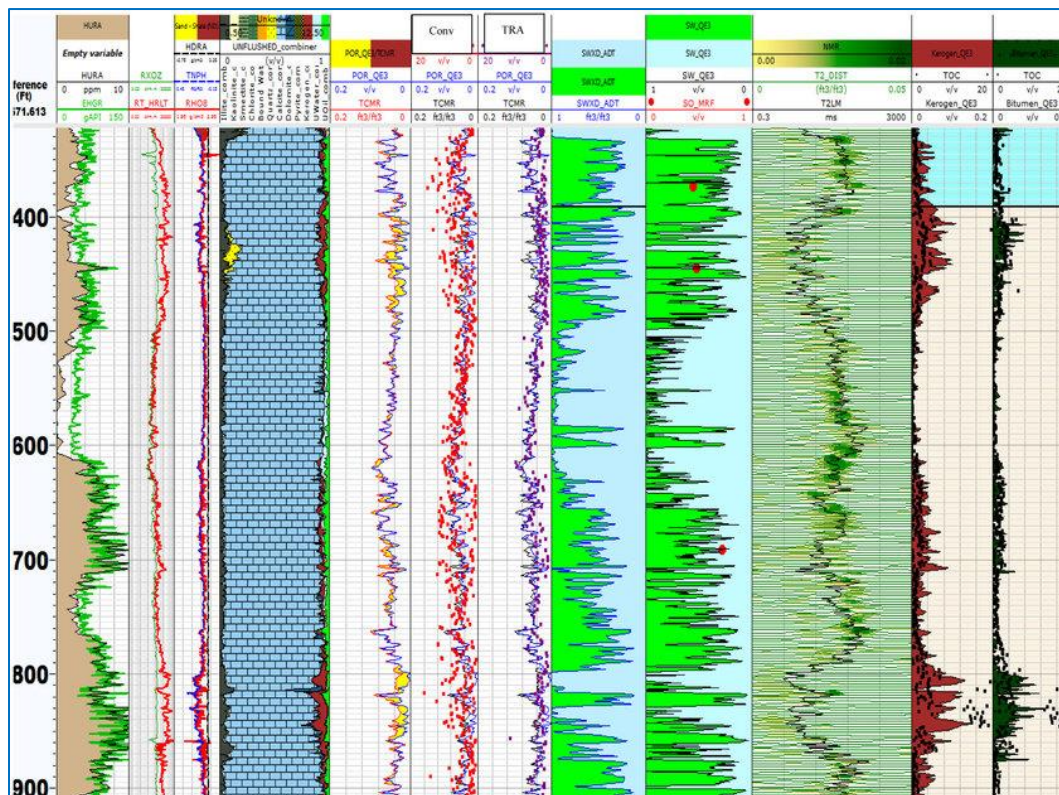




DE522: Tight Reservoirs Advanced Petrophysical Analysis

Training Description:

This intensive training course explores how the physical and chemical nature of mudstones constrains our petrophysical approach and how core, log, image, and geochemical data can be integrated to develop an appropriate petrophysical evaluation workflow. The analysis can be applied to pilot wells to determine favorable zones to go horizontal, or to horizontal wells to determine optimum completion intervals. Unconventional reservoirs are typically dual porosity and dual permeability, which often forces petrophysical modeling into two-dimensional analysis.

Business Impact: Application of the learnings of this course will empower participants to understand the petrophysical concepts to allow for determination of flow units and hydrocarbons in place (HIP) in mixed or oil wet formations.

Training Objectives:

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

- ✓ Evaluate the fluid distribution in unconventional reservoirs
- ✓ Determine how maturation affects pore distribution and connate water salinity
- ✓ Distinguish geologic environments that require special logging tools
- ✓ Select advanced techniques for the analysis of NMR and/or dielectric measurements
- ✓ Formulate special core analysis techniques to calibrate or verify petrophysical models
- ✓ Judge pore size distributions in heterogeneous formations
- ✓ Formulate reservoir wettability from logs and core
- ✓ Determine with accuracy the amount of clay bound water and free water

Training Designed for:

This course is intended for Anyone involved in the petrophysical evaluation of shale reservoirs, including geologists, geophysicists, petrophysicists and engineers.

Training Requirement:

"Hand's on practical sessions, equipment and software will be applied during the course if required and as per the client's request."

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

FIVE DAYS:

- ❖ **Part 1: The Physics of Log Measurements**
 - Introduction to well logging
 - Principles and theories behind log measurements
 - Logging tools and their applications in unconventional reservoirs
- ❖ **Part 2: Log Normalization, QC, and Measurement Error**
 - Normalization techniques for well logs

- Quality control procedures for log data
- Understanding measurement errors and their impact on resource evaluation
- ❖ **Part 3: Mineralogy Determination from Logs**
 - Log responses related to mineralogy
 - Interpretation methods for mineralogical analysis from logs
 - Quantitative mineralogy estimation using log and core data
- ❖ **Part 4: Clay Responses and Clay Bound Water**
 - Clay mineral identification from well logs
 - Clay responses in vertical pilot holes and horizontal production wells
 - Clay-bound water estimation from log and core data
- ❖ **Part 5: TOC Models**
 - Introduction to Total Organic Carbon (TOC)
 - TOC estimation methods using well logs and various core measurements
 - Application of TOC models
 - Organic porosity in unconventional reservoirs
- ❖ **Part 6: Porosity Determination**
 - Log-based porosity calculations
 - Different porosity models, their assumptions, and NMR log and core measurements
 - Evaluating reservoir quality using total and effective porosity data
- ❖ **Part 7: Fluid Saturation Models and Measurements**
 - Introduction to fluid saturation and its significance
 - Interpretation methods for fluid saturation using standard and specialty well logs
 - Unconventional reservoir saturation models and hydrocarbon recovery
- ❖ **Part 8: Permeability from Core and Logs**
 - Core analysis techniques for permeability determination
 - Log-based permeability estimation models
 - Integration of core and log data for dual permeability evaluation
- ❖ **Part 9: Rock Mechanics**
 - Introduction to rock mechanics and its importance in reservoir engineering
 - Logging tools for rock mechanical analysis
 - Interpretation of rock mechanical properties in vertical and horizontal wells
- ❖ **Exercises Included:** These hands-on activities will enhance your understanding and application of theoretical concepts in petrophysics
 - Determine key petrophysical properties such as Kerogen Volume, PHIT, VCBW, and PHIE using Core NMR.
 - Analyze log data distribution in formations through Log NMR-Dielectric exercises.
 - Calibrate logs by determining PHIT and PHIE at specific depths using Core PHIE data.
 - Calculate water saturation and effective porosity (SWT and SWE) under various conditions in Core SWE Determination exercises.

- Determine initial water saturation (BVWi) using XRD & GRI core data in Core BVWi Determination exercises.
- ❖ Course Conclusion
- ❖ POST-ASSESSMENT and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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