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This may also be of interest

Basics of Petrophysics

Petrophysics  
Characterization of  
Hydrocarbon Reservoirs

Geostatistical Reservoir  
Modelling with Petrel

## Description

This is a 5-day lecture presenting the more important Routine and Special Core Analysis (SCAL) concepts required for reservoir characterization, dynamic reservoir simulation modelling, field development plans and Enhanced Oil Recovery studies. It describes the petrophysical parameters and techniques to develop representative reservoir properties to be used in classical engineering and numerical simulations considering native state, cleaning and restored state analyses by describing best practices and limitations of the results. The lectures include presentation and discussion of field cases of core capture and SCAL programs for implementation of Enhanced Oil Recovery projects.

By the end of the course, the participant will be able to understand the entire process of planning core acquisition, core preparation, plugs selection, preparation, planning and supervising the experiments and data interpretation, preparing a coring program from a drilling campaign, designing a core analysis program for conventional and special analysis (SCAL) and to select representative results for reservoir engineering studies. This training can be done in house based on workshop sessions for groups of delegates with interest in Conventional and Special Core Analysis; it can be tailored to specific company needs.

## Objectives

- Present an introduction to core analysis
- Summarize the importance and value of Core Analysis.
- Describe the coring capture procedures
- Overview of the core acquisition, sample selection and preparation for Routine Core Analysis
- Pre-screening of materials and sampling for Special Core Analysis (SCAL)
- Describe the SCAL techniques, Electrical Properties, Capillary Pressure, NMR, Relative Permeabilities, Wettability Measurements
- Data Quality Control and Interpretation
- Integration of petrophysical results and applications in typical field development plans and EOR projects.

## Audience

- Reservoir and Production Engineers,
- Well Engineers,
- Reservoir Managers
- Geologist and Geophysicists
- Professionals from oil companies and service companies that need to gain knowledge of the methods to reduce the produced water increasing the oil rates, understanding the possibilities and implications of core analysis importance and applications.

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## Content

### Day 1

#### Introduction, Coring & Routine Core Analysis

- Example of SCAL program for a Polymer Injection Project
- Coring at Wellsite
- Coring Recommendations
- Basic Core Handling, Sampling and Preparation
- Cleaning and Drying Methods
- Conventional Core Analysis
- Porosity and Permeability
- Overburden Effects
- QA/QC of Conventional Data
- Special Core Analysis Tests and Program Design
- Samples Screening
- Electrical Properties
- Archie Equations
- Porosity Exponent 'm'
- Saturation Exponent 'n'
- Conductivity
- Wrap Up Day 1

### Day 2

#### Special Core Analysis Tests

- Capillary Pressure
- Mercury Injection
- Ultra-centrifuge
- Porous Plate
- NMR
- Pore Size Distribution and Applications
- Wettability Concepts and Determination
- Amott and USBM Wettability Tests
- Effects of Wettability
- Water Oil and Gas Oil Relative Permeability
- Single Phase Permeability
- Unsteady State Relative Permeability
- Steady State Relative Permeability
- Centrifuge Relative Permeability
- Wrap Up Day 2


### Day 3

- Whole Core & Integrations
- Rock Mechanics
- History Matching and Simulation
- Unconventional Analysis
- QA / QC of SCAL Data
- Petrophysical Techniques
- Thin Sections
- SEM Spectro Electrical Magnetic analysis
- XRD X Ray Diffraction Analysis
- Integration of Results from Conventional and Special Core Analysis



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### Day 4

#### SCAL Programs for Enhanced Oil Recovery Process

- Laboratory Experiments for Low Salinity Waterflooding
- SCAL Programs for Miscible Gas Flooding
- Example SCAL for a Miscible Gas Flooding project
- SCAL Programs for Chemical Injection Process
- Example of SCAL program for a Polymeric Gels Treatments
- Example of SCAL program for a Polymer Injection Project
- SCAL Programs for Thermal EOR Process
- Example of Thermal EOR SCAL projects

### Day 5

#### Importance and Implications of a SCAL Experimental Program

- Safety Consideration in RCA and SCAL
- Laboratory Selection Discussion
- Cost Implications in a RCA and an SCAL program
- QA / QC of SCAL Data
- Delegates Discussion of RCA and SCAL programs
- Wrap Up

End of the training