Formation - Core Analysis for Reservoir Characterization

CONSCAL-EN-P | Présentiel | 5 jours

This course provides a comprehensive and practical understanding of methods, procedures and issues related to laboratory conventional and special core analysis for describing and evaluating reservoir rock properties, and all considerations that should be taken into account for reservoir characterization

Niveau

Perfectionnement

Public

Geoscientists, petrophysicists, reservoir engineers, petroleum engineers and other E&P professionals willing to deepen their knowledge in conventional and special core analysis

Objectifs

Attendees will be able to implement the following skills:

- Discuss rock properties used in reservoir modeling and reservoir simulation models
- Discuss, interpret and validate a CCAL and a SCAL report and review a quality control process
- Design a SCAL program with regard to given objectives

Pédagogie & ressources techniques

- Highly interactive course alternating theory, exercises and field cases
- Use of the SCAL (Special Core Analysis) license free simulator SCORES

Évaluation des acquis

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prérequis

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Programme

CORING & CORE ANALYSIS — 0.5 day

Introduction.
Business value of core analysis demonstrated on real life examples.
Necessary quality procedures at the start of a measurement program.
Coring methods (conventional vs. pressure coring, decompression during tripping).
Core preservation.
Core cleaning.

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Representative wettability (fresh vs. restored state).
Conventional and Special Core Analysis (SCAL).

GENERALITIES ON TWO-PHASE FLOW PROPERTIES — 0.5 day

Darcy's law for two phases, relative permeability.
Capillary pressure.
Wettability (Amott and USBM methods).
Impact of wettability on relative permeability and capillary pressure.
Basics of JBN analysis for the UnSteady-State experiment.
Effect of capillary pressure demonstrated by hands-on simulation, using the SCORES SCAL simulator.

CONVENTIONAL CORE ANALYSIS — 1 day

Porosity definition and measurement.
Permeability (absolute) definition and measurements.
Formation factor and Resistivity Index definition and measurement.
Mercury injection (MICP) for reservoir saturation height function and pore size distribution.
Recent developments in MICP showing important problems in MICP for low permeability rock when assessing transition zones.

SPECIAL CORE ANALYSIS (SCAL), MEASUREMENTS OF SCAL PROPERTIES — 1 day

Overview of measurement methods and data interpretation for relative permeability and capillary pressure.
Steady-state technique, in-situ saturation monitoring.
Unsteady-state technique, in-situ saturation monitoring.
Multi-speed centrifuge technique.
Single-speed centrifuge technique.
Porous plate technique.
Analysis of centrifuge data using Hassler-Brunner, Forbes methods.
Analysis of centrifuge data using Hagoort method.
Effect of relative permeability on capillary pressure measurement demonstrated by hands-on simulations using the SCORES SCAL simulator.

QUALITY CONTROL OF AVAILABLE DATA — 1 day

Sample selection using X-ray CT for homogeneity assessment.
Representative wettability, special considerations for transition zones.
Recognizing unusual features.

AVERAGING PETROPHYSICAL PROPERTIES — 0.5 day

Saturation height function assessment.
Leverett-J function.
Initial water saturation.
Rock-typing.
Gridding for reservoir simulation.

DESIGN OF SCAL PROGRAM — 0.5 day

Demonstration step-by-step approach.
Establish SCAL program objective.
Understanding of strength and weaknesses of each SCAL method.
Need for imbibition capillary pressure to interpret relative permeability data.

IFP Training est référencé au DataDock. Rapprochez-vous de votre OPCO pour connaître les possibilités de financement de cette formation.
Pour vérifier l'accessibilité de cette formation à une personne en situation de handicap, contactez notre référent à l'adresse suivante : referent.handicap@ifptraining.com

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