Training - Drive Mechanisms and EOR

DRIVE-EN-P | Face-to-face only | 4 days

This course provides an in-depth understanding of reservoir drive mechanisms and Enhanced Oil Recovery (EOR) methods and corresponding recovery performances

Level

Knowledge

Public

Newly-hired and 2- to 3-year experienced reservoir engineers willing to deepen their knowledge in drive mechanisms and Enhanced Oil Recovery methods; geoscientists, petroleum engineers and production engineers moving towards reservoir engineering

Objectives

Attendees will be able to implement the following skills:

- Discuss the natural mechanisms of production of oil and gas reservoirs and their corresponding expected performance
- Discuss the mechanisms of secondary recovery through water injection and non-miscible gas injection and their related expected performance
- List the main Enhanced Oil Recovery methods and discuss their mechanisms and corresponding expected performance
- Describe typical EOR projects workflow and related screening criteria

Pedagogical & technical resources

Interactive lectures and exercises

Assessment of achievements

- 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

Prerequisites

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

Program

DRIVE MECHANISMS - PRIMARY RECOVERY — 2 days

Oil reservoirs:

- Undersaturated oil expansion.

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- Solution gas drive.
- Gas gap drive.
- Natural water drive.
- Introduction to analytical aquifer models.
- Steady-state models - Small Pot model.
- Transient models - Hurst & Van Everdingen model and Carter-Tracy model.

Gas reservoirs with and without aquifer.
Material Balance:

- Principles and equations.
- Generalized Material Balance.
- Drive Index.
- Campbell and Cole plots.
- Application: estimating recovery factors from material balance, checking aquifer and gas cap size, checking accumulation estimate...

DRIVE MECHANISMS - SECONDARY RECOVERY — 2 days

Reminders about multiphase flow in the reservoir: wettability, capillarity, relative permeability.
Water and non-miscible gas injection:

- Principles.
- Sources of fluid, well injectivity, injectors pattern.
- Expected performance of water and gas injection.

Sweep efficiency:

- Microscopic efficiency & influence of Capillary Number.
- Areal efficiency and influence of Mobility Ratio.
- Vertical efficiency and influence of permeability vertical heterogeneity.

ENHANCED OIL RECOVERY — 1 day

Principles and mechanisms of main EOR methods:

- Chemical flooding.
- Miscible gas injection.
- Thermal flooding.

EOR projects:

- Screening criteria & economics.

Application - Field cases review.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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