

Mature Fields - Subsurface Issues

5.00 days

RMGT/MATFIELD

Overview

AUDIENCE

Geoscientists, reservoir engineers, petroleum engineers and asset managers involved in managing and optimizing mature fields.

PURPOSE

This course provides a comprehensive and practical understanding of methods and issues related to the reevaluation of mature hydrocarbons fields (brown fields) in order to optimize the production and increase the reserves.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:

- discuss and apply principles of mature reservoir characterization and reserves re-evaluation and upside opportunities,
- describe the workflow for optimizing the production decline of a mature field,
- evaluate the feasibility of optimizing a given mature field and discuss the main concepts of risks and uncertainties management,
- discuss and apply the economical criteria for reviving mature fields.

WAYS AND MEANS

Interactive courses and exercises.

Agenda

BASICS OF RESERVOIR CHARACTERIZATION OF MATURE FIELDS

0.50 d

Introduction to field redevelopment study.
Reminder on rock and fluid properties.
Volumetric evaluation of Oil & Gas accumulation for mature reservoirs.

RESERVOIR MONITORING & DATA ACQUISITION FOR IOR/EOR ACTIVITIES

1.00 d

Definitions, facilities, planning and costs.
Behind pipe oil and bypassed reserves determination:
Open hole logging (pressure profile, saturation...)
Cased hole logging (CBL, RST...)
Production logging.
4D seismic.
Exercises.

RESERVES ESTIMATIONS & PRODUCTION PROFILES IN BROWN FIELDS

1.00 d

Performance analysis:
Analog.
Material balance.
Decline curves analysis (estimation of ultimate recovery).
Dynamic reservoir simulation and history matching (saturation maps, bubble maps...)
Criteria for performance analysis methods.

Field case.

PROBLEM IDENTIFICATION & REMEDIATION TECHNIQUES

2.00 d

Implementing state of the art reservoir management system.

Identifying shut-in or low PI's wells.

Analyzing the surface gathering network and identifying the main bottlenecks.

Defining a monitoring plan.

Improved Oil Recovery (IOR) techniques:

Artificial lift.

Infill drilling.

Deviated and horizontal wells.

Sidetracks and smart completions.

Produced water management.

Wax and asphaltene treatments.

Enhanced Oil Recovery (EOR) techniques:

Chemical (P, SP, ASP, FWAG...).

Miscible (solvent).

Thermal.

PETROLEUM ECONOMICS & RISK ASPECTS

0.50 d

Fundamentals of petroleum economics.

Economic selecting criteria (NPV, IRR, PI...).

Well potential based on reserves to be drained, surface facility, well condition...

Review of well history and operational cost.