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## Enhanced Hydrocarbon Recovery (EOR) - Principles and Issues

TRAIN



## Course Overview:

Enhanced hydrocarbon recovery (EOR) techniques are employed to extract additional oil and gas from reservoirs beyond what can be obtained through conventional primary and secondary recovery methods. This comprehensive 5-day professional training course will equip engineers and geoscientists with the fundamental knowledge and practical skills to understand, evaluate, and apply EOR techniques for optimizing reservoir performance and maximizing hydrocarbon recovery.

## Course Objectives:

By the end of this course, participants will be able to:

1

Comprehend the fundamental principles of EOR and its significance in addressing global energy challenges

2

Identify and characterize different types of EOR techniques, including miscible flooding, chemical flooding, thermal EOR, and gas injection methods

3

Evaluate the applicability of various EOR techniques to specific reservoir types, fluid properties, and production scenarios

4

Apply EOR screening criteria to assess the feasibility and potential of EOR implementation in a given reservoir

5

Design and optimize EOR processes using reservoir simulation, economic analysis, and decision-making frameworks

## Course Agenda:

### Day 1: Introduction to Enhanced Hydrocarbon Recovery (EOR)

- Explore the significance of EOR in addressing global energy demand and increasing hydrocarbon recovery from mature reservoirs
- Delve into the historical development of EOR techniques and their evolution over time
- Discuss the classification of EOR techniques based on their mechanisms and application scenarios
- Analyze the factors influencing the selection of appropriate EOR techniques for specific reservoir conditions

### Day 2: Miscible Flooding and Gas Injection Methods

- Understand the principles of miscible flooding and its role in enhancing oil mobility and sweep efficiency
- Discuss the different types of miscible fluids, such as hydrocarbon gas, carbon dioxide, and nitrogen
- Analyze the factors affecting miscibility development and displacement efficiency in miscible flooding processes
- Explore various gas injection methods, including immiscible gas flooding, gas-lift, and huff-and-puff gas injection

### Day 3: Chemical Flooding and Thermal EOR Techniques

- Delve into the mechanisms of chemical flooding and its application in altering fluid properties and displacing residual oil
- Discuss various types of chemical flooding agents, including surfactants, polymers, and alkaline solutions
- Analyze the factors affecting the effectiveness of chemical flooding processes, such as adsorption, interaction with reservoir rock, and sensitivity to salinity
- Explore the principles of thermal EOR techniques, such as steam injection, steam-assisted gravity drainage (SAGD), and hot water flooding

### Day 4: EOR Screening Criteria and Feasibility Assessment

- Introduce EOR screening criteria and their role in evaluating the potential of EOR implementation in a given reservoir

- Discuss factors to consider in EOR screening, such as reservoir characteristics, fluid properties, and economic considerations
- Apply EOR screening criteria to real-world reservoir examples to assess the feasibility of various EOR techniques
- Analyze the impact of reservoir heterogeneity, fluid properties, and operational constraints on EOR performance

#### Day 5: EOR Design, Optimization, and Economic Evaluation

- Understand the process of designing and optimizing EOR processes for specific reservoir conditions and production objectives
- Utilize reservoir simulation tools to model EOR performance, predict fluid flow behavior, and evaluate production outcomes
- Apply economic analysis techniques to assess the profitability and cost-effectiveness of EOR implementation
- Discuss decision-making frameworks for EOR selection and prioritization, considering technical feasibility, economic viability, and risk assessment

#### Who Should Attend:

- Reservoir engineers and geoscientists involved in enhanced oil recovery techniques, reservoir management, and production optimization
- Petroleum engineers responsible for field development planning, well placement, and reservoir performance evaluation
- Students and professionals interested in pursuing a career in reservoir engineering, subsurface analysis, and EOR applications

#### Course Benefits:

- Develop a comprehensive understanding of EOR principles, mechanisms, and applications in various reservoir types
- Gain hands-on experience in EOR screening, design, and optimization using reservoir simulation and economic analysis tools
- Enhance your ability to evaluate EOR feasibility, assess EOR performance, and make informed decisions for EOR implementation
- Stay updated on the latest advancements in EOR technologies, reservoir characterization, and production optimization strategies
- Network with other engineers and geoscientists to foster collaboration and knowledge sharing in the field of enhanced hydrocarbon recovery