

PETROLEUM SEDIMENTOLOGY

EXP004

COURSE DESCRIPTION

The Petroleum Sedimentology course focuses on the formation, accumulation, alteration, and preservation of sediments in the geological record, specifically in relation to petroleum exploration. The course provides participants with the knowledge and skills necessary to reconstruct and interpret ancient carbonate and siliciclastic paleoenvironments based on sedimentary structures, depositional environments, stratigraphic successions, and fossils.

COURSE GOAL

The goal of this course is to enhance participants' understanding of sedimentology, particularly its application in petroleum exploration. Participants will gain knowledge, skills, and abilities related to the analysis of depositional environments and their relevance to the exploration and production of petroleum resources.

COURSE OBJECTIVES

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

- Understand the different types of depositional systems and their relationship to petroleum exploration.
- Be familiar with the physical properties of sediments and their implications in petroleum exploration.
- Understand the correlation of sedimentologic data with seismic data and well logs.
- Explore the use of sedimentology in petroleum exploration and production.

WHO SHOULD ATTEND

- Geologists
- Geophysicists
- Petroleum engineers.

COURSE DURATION

5 Working Days

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COURSE OUTLINES

1. Sedimentologic and Stratigraphic Principles

- Introduction to sedimentology and its significance in petroleum exploration
- Overview of stratigraphic principles and their application in understanding sedimentary rocks

2. Relative and Absolute Dating Techniques

- Understanding the principles of relative dating and their use in determining the sequence of events
- Introduction to absolute dating methods such as radiometric dating and their application in establishing numerical ages of rocks

3. Diagnostic Sedimentary Structures for Depositional Environment Interpretation

- Identification and interpretation of sedimentary structures indicative of specific depositional environments (e.g., cross-bedding, ripple marks, mud cracks)
- Linking sedimentary structures to depositional processes and paleoenvironmental conditions

4. Physical Properties of Sediments

- Overview of physical properties of sediments, including grain size, porosity, permeability, and compaction
- Understanding the relationship between sediment properties and reservoir quality

5. Origin and Significance of Overpressure in Sedimentary Basins

- Causes and mechanisms of overpressure in sedimentary basins
- Implications of overpressure on hydrocarbon migration, trapping, and drilling operations

6. Extraction of Sedimentologic Data from Seismic Data and Borehole Logs

- Integration of sedimentologic interpretations with seismic data for mapping subsurface sedimentary features
- Utilizing borehole logs (e.g., gamma ray, resistivity) to analyze sedimentary facies and depositional environments

7. Extraction of Sedimentologic Data from Image Logs

- Application of image logs (e.g., dipmeter, borehole imaging) for detailed sedimentologic analysis
- Interpretation of sedimentary features, sedimentary facies, and sedimentary architecture using image logs

8. Petrophysical Challenges Associated with Thin Beds

- Understanding the challenges in petrophysical characterization of thin beds in sedimentary sequences
- Techniques for accurate reservoir evaluation and modeling in thin bed environments

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