Applied Petroleum Geoscience Workshop

Course general description:

The proposed course is a unique program that was designed for the reservoir geologists and engineers, subsurface geologists and the others who are working in the hydrocarbon exploration. It mainly concerns with the petroleum regimes and exploration petroleum geoscience. It covers also some petroleum engineering and reservoir geology disciplines. The course covers the whole range of core analyses and well logging tools and their applications for carbonate reservoirs. It starts with an overview of the carbonate depositional environments, and reservoir rock properties. The attendees will feel that they became more professional in reservoir characterization and rock typing using different techniques. They will be able to characterize and evaluate the reservoirs and assess their performance. The comprehensive course documentation has been designed as a useful guide for future reference.

Audience:

This course is designed for:

1. Geologists
2. Petroleum Geologists
3. Geophysicists
4. Wellsite geologists
5. Drilling engineers
6. Stratigraphers
7. Geochemists,
8. Petroleum engineers
9. Production Engineers
10. Petrophysicists.

Course objectives:

By end of the course participants will learn:

- Introduction to reservoir characterization (RC)
- Tools used for Reservoir Characterization
- Depositional Environments of carbonate reservoirs
- Surface & subsurface geology
- Application of sequence stratigraphy in Reservoir Characterization
- Porosity & permeability description & analysis
- Uncertainties in characterizing carbonate reservoirs
- Seismic as a tool for Reservoir Characterization
- Geophysical, geological and engineering Modeling
- Integration of all available data into 3D Models
- Case studies from the Middle East region
- Thamama, Arab and Mishrif Carbonate Reservoirs in UAE

Course duration:

5 days

Course location:

Dubai

Course contents:

Day 1: Carbonate Reservoir Depositional Environments and Reservoir Characterization

- Reservoir characterization and Formation evaluation; Different tools and applications

- Tools applied for reservoir characterization, rock typing and Hydraulic flow units.
- Importance of understanding the various scales of heterogeneity in carbonate reservoirs.
- Carbonate deposition, diagenesis, mineralogy, rock textures, and pore types.

Day 2: Porosity and Permeability of Carbonate Rocks

- Carbonate rocks and carbonate pore system classification.
- Surface & subsurface geology
- Application of sequence stratigraphy in Reservoir Characterization
- Carbonate rock properties on the core scale, routine and special core analysis.
- Porosity and permeability, estimation and governing factors.
- Estimating porosity and permeability in carbonate rocks.
- Case study.

Day 3: Well Log Response and CT-Scan for Carbonate Reservoir Applications

- Well log response, limitations, and strengths in carbonates.
- X-ray computer tomography (CT-scan); concepts and needs.
- Applications of CT-scan and interpretations.
- NMR studies in carbonate reservoirs.
- Case studies and applications.

Day 4: Fractured Carbonate Reservoirs

- Importance and distribution of naturally fractured carbonate reservoirs.
- Classification of natural fractures.
- Indicators of Natural Fractures and visual identification.
- Fracture porosity determination, core analysis and well logging.
- Fracture Intensity Index.
- Porosity-depth relationship in limestone and dolostone reservoirs.

Day 5: Carbonate reservoirs in UAE and Middle East

- Giant Carbonate Reservoirs the Middle East.
- Facies analysis and petrophysical properties of Thamama, Arab and Mishrif Carbonate Reservoirs in the Arabian Gulf.
- Workshop.

Methodology:

- 50% lectures & concepts
- 10% Videos
- 20% Case studies
- 10% Exercises
- 10% Discussions

Course code: (TEXP002)