MERCURY

Advanced Formation Evaluation in Carbonates

22 – 26 August 2027
Istanbul (Turkey)



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Advanced Formation Evaluation in Carbonates

Ref: 15352_305144 **Date:** 22 – 26 August 2027 **Location:** Istanbul (Turkey) **Fees:** 5500 Euro

Introduction:

Advanced formation evaluation and interpretation in carbonates is critical to exploration and production within the oil and gas industry. It focuses on understanding pore geometry and evaluating variables that influence carbonate formations. It thoroughly examines parameters such as the Archie variable m, the saturation exponent n, and the impacts of microporosity.

This advanced formation evaluation and interpretation in carbonates course is designed to develop proficiency in assessing complex carbonate reservoir scenarios. Exploration of dolomitization processes will also contribute to a robust understanding of carbonate geology. Additionally, the curriculum highlights formation evaluation techniques central to logging tools tailored explicitly for carbonates.

Techniques including Nuclear Magnetic Recognition NMR imaging, acoustic measurements, and borehole imaging tools will be explored, providing insights into the characterization of vascular and fractured networks in carbonate rocks. Key concepts such as capillary pressure measurements, J-Function applicability, and petro-rock classification will enrich the learning experience.

Targeted Groups:

- Exploration Geologists.
- Production Geologists.
- Well-site Geologists.
- Operations Geologists.
- Oil and Gas Well Data Managers.
- Geophysicists.
- Petrophysicists.
- Geotechnicians.
- Professionals who regularly interact with log data.

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Course Objectives:

Participants in this advanced formation evaluation and interpretation in carbonates course will:

- Delve into the details of diagenesis and the overarching geology of carbonate formations.
- Engage with deposition principles, Nuclear Magnetic Indonesia NMR technology, and the utility of NMR scanners.
- Expand knowledge of acoustic measurements and their implementation with acoustic scanners.
- Emphasize the integration of logging data and the targeted application of tools in formation evaluation.
- Address the intricacies of borehole imaging, including ultrasonic and micro-resistivity approaches.
- Discover the theoretical foundations of neutron logging and the physics behind dielectric logging.
- Unveil techniques for estimating permeability within carbonate rocks.
- Introduce the novel Connectivity Theory for the interpretation of carbonates without the reliance on the traditional Archie's Equation.
- Discuss the significance of flow units and the information derived from Lorenz graphs.
- Interpret capillary pressure data through core analysis and the NMT T2 conversion.
- Acquire a comprehensive understanding of various rock types, including the J-Function, Winland functions, and the ADNOC criteria.

Targeted Competencies:

Participants' competencies in this advanced formation evaluation and interpretation in carbonates training will:

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- Advanced understanding of carbonate reservoir characteristics and heterogeneities.
- Proficiency in interpreting complex logging data in carbonate formations.
- Ability to integrate core analysis results with log data for accurate reservoir characterization.
- Skill in identifying and evaluating diagenetic features and their impact on reservoir quality.
- Competence in applying advanced petrophysical models to carbonate reservoirs.
- Capability to assess and mitigate uncertainties in carbonate reservoir evaluation.
- Expertise in utilizing modern formation evaluation tools and techniques specific to carbonates.
- Based on formation evaluation findings, proficiency in recommending optimal oil and gas well placement and completion strategies.

Course Content:

Unit 1: Geology of Carbonates and Dolomitization:

- An in-depth look at the carbonate geology and the process of dolomitization.
- Exploration of NMR technology and its application in scans.
- Dive into acoustic scanners and the significance of accurate acoustic measurements.
- Focuses on diagenesis's impact on carbonate geology.
- Participants will gain insights into deposition processes, NMR technology, and the practicality of NMR scanners.
- The role of acoustic measurement techniques and acoustic scanners will also be examined.

Unit 2: Applications for Formation and Logging:

- Micro-resistivity and ultrasonic imaging methodologies for borehole characterization.
- Neutron logging physics with the application of pulsed neutrons for sigma log creation.
- Understand the physics underpinning dielectric logging and the functionalities of dielectric scanners.
- Explore the applications of the variable-M and its effect on the formation factor.

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Unit 3: Dual Porosity, Vugs, and Wettability:

- Discussion on the impact of variable-N and its correlation with wettability.
- Examine how vugs and fractures influence resistivity measurements within carbonate rocks.
- Quantitative analysis of dual porosity components: distinguishing between macroporosity and microporosity.
- Delves into the intricacies of wettability, the importance of the variable N, and the consequences of vugs and fractures on resistivity recordings.
- Participants will be provided critical insights into macro-, micro-, and dual porosity aspects, including a thorough assessment of dual porosity in carbonate formations.

Unit 4: Permeability Estimates and Flow Units:

- Introduction to the Connectivity Theory.
- An innovative strategy for carbonate interpretation without dependence on the traditional Archie Equation.
- Know the detailed methods for calculating flow units.
- Understand the implications of Lorenz plots.
- Master permeability estimation within carbonate frameworks.

Unit 5: Capillary Pressure and Rock Types:

- Techniques for calculating capillary pressure using core analysis data.
- Interpret capillary pressure through the J-Function and the subsequent NMT T2 conversion.
- Analyze rock types exemplified by the Winland R35 criteria and the ADNOC Pore Model.