Carbonate Geology for Exploration and Production

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Introduction:

This five-day program introduces participants to established principles of carbonate sedimentology applied to hydrocarbon exploration and development geology.

The purpose of this seminar is to introduce participants to established principles of carbonate sedimentology, applied to hydrocarbon exploration and exploitation. Hydrocarbon play relationships associated with both shallow- and deep-marine sequences are emphasized, stressing the interrelationship between reservoir, source, and seal and trapping mechanism. How one zones a carbonate reservoir to more effectively extract oil and gas is discussed as well.

Using a highly acclaimed, hands-on and rock-based approach, each participant learns to describe typical carbonate rocks, delineate facies and sequences, evaluate reservoir quality, relate carbonates to log and seismic expression, better predict play relationships in the subsurface, and construct a time-stratigraphic facies framework essential for both accurate regional correlation of carbonate sequences and zonation of carbonate reservoirs. Lectures are reinforced with exercises and problems keyed to identical sample rock sets, each containing 56 representative samples from around the world. A 750+ page notebook, with color copies of all power point slides shown in lectures, accompanies the course, as well as a reference book with pictures of samples used in various exercises. This seminar has been presented to industry over 100 times!

Objectives:

- **CLASSIFY AND IDENTIFY** characteristics of a typical carbonate rock
- **EVALUATE** reservoir quality in limestones and dolostones
- **INTERPRET** facies relationships, delineate stratigraphic sequences and correlate facies within them
- **IMPROVE UNDERSTANDING** of hydrocarbon play relationships associated with both shallow – and deep-marine sequences
- **UNDERSTAND** the interrelationship between reservoir, source, seal and trapping mechanism
- **LEARN** how to zone carbonate reservoir to more effectively extract oil and gas

Who should attend?

This program is designed for exploration geologist, geophysicist, reservoir engineering, log analyst, exploration supervisors, and subsurface managers who are currently working or will be working with carbonate systems exploration, and are in need of a better understanding of the key subsurface properties for exploration and production. Geologists working with mixed carbonate and siliciclastic sequences will also benefit from this program.

Course Outline:

DAY 1:

Distinctive Aspects of Carbonates || Non-Skeletal Grains & Skeletal Grains

- DISTINCTIVE ASPECTS OF CARBONATES
- GRAIN TYPES
- CARBONATE CLASSIFICATIONS AND SEDIMENTARY STRUCTURES

DAY 2:

Carbonate Classifications and Structures|| Limestone Diagenesis and Porosity Evolution

- LIMESTONE DIAGENESIS AND POROSITY EVOLUTION
- DOLOMITIZATION AND POROSITY EVOLUTION
- CARBONATE POROSITY TYPES (Review of Coquette and Pray scheme for classifying carbonate pore types [exercise])

DAY 3:

Dolomitization and Porosity Evolution Porosity Classification; Attributes

- CARBONATE FACIES MODELS
- VERTICAL DEPOSITIONAL SEQUENCES AND CYCLICITY

DAY 4:

Carbonate Depositional Sequences & Cyclist; Log and Seismic Expression of Carbonates; Core Exercise with Logs

- LOG AND SEISMIC EXPRESSION OF CARBONATES
- CORE PROBLEM

DAY 5:

Carbonate Play Types and Review of Case Studies; Use of Depositional Cyclist to Zone Carbonate Reservoirs; Carbonate Facies Correlation

- CARBONATE PLAY TYPES
- USE OF DEPOSITIONAL CYCLICITY TO ZONE CARBONATE RESERVOIRS
- CARBONATE FACIES CORRELATION EXERCISE