

**CONTROLS ON CARBONATE PLAY DEVELOPMENT IN
THE PALEOZOIC OF NORTH AMERICA
Influence of Physiographic Setting and Structural Controls**

**A ONE-DAY APPLIED SEMINAR – ONLINE FORMAT
JANUARY 31, 2024
(8:00 AM - 5:00 PM)**

Jeffrey J. Dravis Ph D

Dravis Interests, Inc./Dravis Geological Services, Houston, Texas

SUMMARY

Understanding the key controls on the distribution and geometry of carbonate plays is critical to their enhanced exploration/exploitation in any basin. Further, delineating potential carbonate plays using seismic or wireline logs requires a very sound understanding of the depositional and diagenetic controls that create the reservoir facies, but it must be considered within the context of geological age and physiographic setting. One must appreciate the environmental controls on carbonate facies development, and the potential pathways for diagenesis and porosity evolution in both limestones and dolostones. For this reason, strategies employed in the search for sandstone or mudstone reservoirs never work for carbonate sequences, including application of any sequence stratigraphic models that assume sea level changes overridingly controlled carbonate facies and sequence evolution.

This one-day seminar reviews the key controls on carbonate facies occurrence and distribution and demonstrates the strong influence of physiographic setting on these controls, both at the global and local scale. Because most Paleozoic carbonate reservoirs in North America were developed within tropical or subtropical settings, paleotrade winds often influenced their occurrence and distribution. In addition, favorable limestone diagenesis or dolomitization controlled porosity and permeability evolution in these plays. My diagenesis discussion shows how to resolve the relative timing of secondary porosity development in these carbonates, which is key to exploiting regional porosity trends.

This short course culminates with a discussion of conventional and unconventional carbonate play types (occurrence, geometry and distribution) related both to geological age and local physiographic setting (platform versus ramp bottom topography). This approach will be supported by case studies from different basins, and then applied to specific Paleozoic play type examples from West Texas/New Mexico., the Mid-Continent Region and Western Canada. In doing so, the role that deep-seated faulting often plays in carbonate diagenesis and development of reservoir quality, as well as hydrocarbon entrapment, will become apparent.

TOPICS DISCUSSED

Introductory Comments (Distinctive Aspects of Carbonates; Constituents and Textures; Classification Schemes) Send Summary

Limestone Diagenesis and Porosity Evolution: Controls, Processes and Products, and Timing

Dolomitization: Models; Porosity & Permeability Evolution; Timing Relationships.

Carbonate Facies Relationships: Controls and Attributes; Review of Carbonate Facies Model (steep platforms versus ramps).

Applications of Rock-Based Principles to Delineating Carbonate Depositional Sequences and Cyclicality.

Classification of Carbonate Play Types and Analogs: Applications to Paleozoic Sequences of West Texas and New Mexico, Mid-Continent Region and Western Canada.

TYPICAL SCHEDULE

8:00	Introductory Comments
8:15	Limestone Diagenesis and Porosity Evolution: Controls, Processes and Products, and Timing
9:00	Dolomitization and Porosity Evolution
9:45	Coffee Break
10:00	Carbonate Depositional Environments: Controls and Attributes; Models (steep platform versus ramp)
11:00	Applications of Rock-Based Principles to Delineating Carbonate Depositional Sequences and Cyclicality
11:30	Introduction to Carbonate Plays
12:00	Lunch
12:45	Classification of Carbonate Play Types and Analogs with Applications to the Paleozoic of West Texas and New Mexico, Mid-Continent Region and Western Canada
1:45	Coffee Break
2:00	Discussion of Carbonate Plays - Continued (with short stretch breaks)
5:00	Seminar Ends

COMMENTS FROM A PAST PARTICIPANT

“I also wanted to tell you thank you so much for the class. I thought the class was great. I like that it contained a complete review of carbonates. I had forgotten quite a lot of it from my school days and think it’s useful to have a complete, one day review. I wish I could take this class once a year.

The class also got me thinking about some new approaches to the area I am currently working and thoughts on where the best reservoir rock might be.”

“I enjoyed today’s lecture. Incredibly detailed and comprehensive. Thanks for taking the time today to share your extensive knowledge and experience with carbonates.”

“I had a lunch yesterday (with a colleague). He told me about the carbonate course you have offered (on Paleozoic Carbonate Plays) and how useful it has been in his prospect generation/ evaluation. I would be very interested in attending the next time that course is offered.”

“Hi Jeff, it was a great course. It was recommended to me by multiple people and I’m glad I came all this way to take it.”

“I really enjoyed your thorough and comprehensive understanding of carbonates.”

JEFF DRAVIS BIOGRAPHY

Jeff Dravis is a carbonate geologist whose consulting activities primarily focus on aiding in the discovery of oil and gas deposits, or enhancing their development once they are found. He also conducts numerous applied carbonate training seminars for industry each year.

Jeff received his Bachelor of Science degree in Geology from St. Mary’s University in San Antonio, Texas. He received a Master of Science degree in Marine Geology from the University of Miami’s Rosenstiel School of Marine and Atmospheric Sciences in Florida. His thesis was entitled “Holocene Sedimentary Environments on Eleuthera Bank, Bahamas.” His advisor was Dr. Harold R. Wanless. Jeff then entered Rice University in Houston, Texas, to begin work on deep-water carbonates under the direction of Dr. James Lee Wilson. He was awarded a Ph D in Geology; his dissertation was entitled “Sedimentology and Diagenesis of the Upper Cretaceous Austin Chalk Formation, South Texas and Northern Mexico.”

Dr. Dravis began his professional career with Exxon Production Research Company in Houston. There, he conducted applied research on carbonate facies, diagenesis and porosity evolution, but also headed up Exxon’s worldwide training efforts in carbonates.

This training included teaching in-house seminars, as well as leading combined modern (Bahamas and Florida) and ancient (Texas and New Mexico) carbonate field seminars for the corporation.

In 1986, Jeff started his own consulting practice in Houston. First, he founded Dravis Interests, Inc. to provide technical expertise and training in applied carbonate petroleum geology to the oil and gas industry. Later, Dravis Geological Services was created to handle all technical consulting projects. Jeff has been involved in 199 technical projects worldwide, including numerous studies of Paleozoic carbonates in west Texas and New Mexico. He has presented 332 in-house and field seminars to industry, both on a public and private basis, including 73 modern field seminars to Caicos Platform in the southeastern Bahamas, and numerous field seminars to the Paleozoic of west Texas and New Mexico. His clients are domestic and foreign oil companies, both majors and independents.

Jeff is an adjunct Professor of Geology at Rice University, where since 1987 he has taught parts of courses, taken students into the field, and served on thesis committees. As an adjunct professor at the University of Houston since 2016, he also has taught the carbonate geology segment of their Professional Master's Program in Petroleum Geology. His last segment was presented in January and February of 2023.

Jeff Dravis (<http://www.dravisinterests.com>)
E-Mail: jdravi@rice.edu

11-29-2023

REGISTRATION FORM

**CONTROLS ON CARBONATE PLAY DEVELOPMENT IN
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January 31, 2024

NAME _____

TITLE (Geologist, Engineer, etc.) _____

YEARS OF EXPERIENCE _____

WORKING PALEOZOIC CARBONATES NOW? _____
WHERE? _____

WORKED ANY CARBONATES IN THE PAST? _____

WHERE? _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

E-MAIL _____

BUSINESS PHONE () _____

REGISTRATION DEADLINE IS JANUARY 17, 2024.

SEMINAR FEE: \$1,095 USD/person

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ZOOM Meeting link and PDF's of lectures will be sent after payment is received.

Contact Jeff Dravis at 713-819-4444 or by email: jdravi@rice.edu