

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

8th Online Version

**Jeffrey J. Dravis Ph D
Dravis Geological Services, Houston, Texas**

**April 16 - 17, 2025
(6 Hours Per Day)**

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 the application of any sequence stratigraphic models that assume sea level changes controlled carbonate facies and sequence evolution.

This two-day seminar reviews the key controls on carbonate facies occurrence and distribution. It demonstrates the strong influence of physiographic setting on these controls 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 the development of reservoir quality and hydrocarbon entrapment will become apparent.

SCHEDULE

APRIL 16, 2025

- 8:30 **LECTURE 1.** Introductory Comments (Please Scan the Appendix to Lecture 1
Prior to the Seminar)
- 8:45 **LECTURE 2.** Limestone Diagenesis and Porosity Evolution: Controls,
Processes and Products, and Timing
- 10:00 **COFFEE BREAK**
- 10:15 **LECTURE 3.** Dolomitization and Porosity Evolution
- 11:30 **LUNCH**
- 12:30 **LECTURE 4.** Carbonate Depositional Environments: Controls and Attributes;
Models for Platforms and Ramps (with short breaks)
- 2:30 Adjourn for the day

APRIL 17, 2025

- 8:30 **LECTURE 5.** Rock-Based Principles Used to Delineate Carbonate Depositional
Cyclicality and Their Stratigraphic Applications to Plays
- 9:15 **COFFEE BREAK**
- 9:30 **LECTURE 6.** Classification of Carbonate Play Types and Analogs with
Applications to Paleozoic Sequences of West Texas and New Mexico, Mid-
Continent Region and Western Canada
- 11:30 Lunch
- 12:30 **LECTURE 6.** (Continued, with short breaks)
- 2:30 Seminar Ends

COMMENTS FROM PAST PARTICIPANTS

“This seminar was incredibly helpful in my understanding of Paleozoic carbonate plays. I appreciated the incredible amount of core photographs, thin sections and cross sections used during the course. It really helped me understand carbonate environments and gives me an analogue to compare to my area of research.”

Was this seminar helpful: “Absolutely. I think this “Big Picture,” physiographic and trade wind location aspect of the systems gets too often looked over. Great, simplified review of depo. models, diagenesis and petrography.”

“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.”

Quality of Instruction: “Phenomenal. Very well spoken; patient with questions, regardless of topic. The examples shown will stick with me.”

“The best. Jeff, your experience, focus to detail and passion for carbonates is remarkable.”

“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.”

“Truly superb!! What a wonderful day to visit so many carbonate examples with your guidance and to hear about all of the trade wind agitation examples! BRAVO!!”

“My background in carbonates is almost entirely limited to undergraduate course work and field work. This [seminar] fortified my understanding of carbonates by starting with the basics and working from there up.”

“This was the most thorough and effective short course I have attended in my career so far. The flow of the material made it easy to follow and having so many different examples definitely provides a newfound appreciation/consideration for the factors that affect carbonate plays. I also liked the affirmation of how important petrographical work is to unravel the carbonate rocks one is looking at.”

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 applied carbonate training seminars for industry every 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.," supervised by Dr. Harold R. Wanless. Jeff then entered Rice University, 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 in Houston with Exxon Production Research Company. 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 (25-day duration).

In 1986, Jeff started his own consulting practice in Houston. First, he founded Dravis Interests, Inc., which provided technical expertise and training in applied carbonate petroleum geology to the oil and gas industry. Then, Dravis Geological Services was created to handle mostly technical consulting projects. Now, Dravis Geological Services handles all consulting and training activities. Jeff has been involved in 201 technical projects worldwide, working sequences ranging in age from Cambrian to upper Tertiary. He has presented 343 in-house and field seminars to industry, both on a public and private basis, including 74 modern field seminars on Caicos Platform in the southeastern Bahamas, and numerous ancient field seminars to central and west Texas, and New Mexico. His clients are domestic and foreign oil companies, both majors and independents. This is the twelve online (ZOOM) version of this seminar presented since the fall of 2020 (the year of COVID).

Jeff is an Adjunct Professor of Geology at Rice University. Since 1987, he has taught parts of graduate courses, taken students into the field, and served on thesis committees. In 2016, as an adjunct professor, he began teaching the carbonate geology segment of the University of Houston's Professional Master's Program in Petroleum Geology. The last segment was presented in June and July of 2024.

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

2-19-2025

REGISTRATION FORM

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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 MARCH 27, 2025.

SEMINAR FEE: \$1,595 USD/person

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MC/VISA/AMEX CREDIT CARD PAYMENT CAN BE MADE OVER THE PHONE.
BANK WIRE TRANSFER IS ALSO POSSIBLE AND PREFERRED.

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