



PBS-SEPM APRIL LUNCHEON

Tuesday, May 16, 2023 – 11:30AM

Bush Convention Center - 105 N Main St, Midland, TX 79701

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Re-exploring the Eastern Shelf of the Midland Basin

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ABSTRACT

The Eastern Shelf of the Midland Basin is one of several high-standing Permian-Pennsylvanian depositional shelves surrounding the deeper Delaware and Midland Basins. Dipping a modest 1.3 degrees eastward, stratigraphic units of the Eastern Shelf consist of a relatively thin succession of pre-Pennsylvanian units (Upper Cambrian sandstones and Lower Ordovician and Mississippian carbonates) unconformably overlain by a thick section of Upper Pennsylvanian to lower Permian cyclothem (alternating lowstand clastics and highstand carbonates). A century of exploration has shown the region contains a multitude of small- to medium-sized conventional oil and gas fields, most of which are housed within Pennsylvanian (Strawn, Canyon) reservoirs. These hydrocarbon reserves occur at a relatively

shallow depth (-4000 to -8000 ft. MD). The complex stratigraphy of the region suggests that much oil and gas remains to be found. Detailed analysis of producing fields from Nolan County, Texas, indicates a wide range of structural and stratigraphic traps within a total of eleven (11) individual producing zones. These include, from oldest to youngest: Cambrian sandstone; Lower Ordovician Ellenburger dolomite; Mississippian limestone; Lower Strawn Caddo and Odom limestone; Upper Strawn sandstone and limestone; Pennsylvanian (Strawn - Canyon) reef; Canyon (Lower Wolfcamp) sandstone; and Cisco (lower Wolfcamp) sandstone and limestone. Some operators have recently initiated exploration of Lower Wolfcamp shales utilizing horizontal drilling and completion techniques. The prospect of further shale exploration along western margin of the Eastern Shelf, as well as the possibilities of additional development of conventional reservoirs within and between existing fields, may provide exciting future opportunities in this region.

BIOGRAPHY: Lowell Waite is currently a Lecturer in the Department of Geosciences and Co-Director of the Permian Basin Research Lab at the University of Texas at Dallas. He received his B.S. degree (Geology major) from the University of Michigan and an M.S. in Geology from the University of Texas at Arlington. He was employed by Mobil Oil Corporation and Pioneer Natural Resources for a total of 38 years, holding several positions in carbonate research and in domestic and international E & P. At UTD he teaches courses and directs research related to petroleum geology. Lowell is a member of the AAPG, SEPM, DGS, and SIPEs. He was recently named the recipient of the 2023 Southwest Section of the AAPG Distinguished Educator Award.

Permian Basin Research Laboratory

