Stratigraphic Variability of the Desmoinesian Marmaton Group Across the Lips Fault System in the Texas Panhandle Granite Wash, Southern Anadarko Basin

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ABSTRACT

The Desmoinesian Marmaton Group, located along the southern portion of the Anadarko Basin in the Granite Wash, contains over 2,000 feet of stacked tight-sand and conglomerate unconventional reservoirs. Facies variability and lateral continuity within reservoirs represent the biggest challenges to reservoir characterization due to laterally restricted alluvial fan systems. A high-resolution stratigraphic hierarchy mapped across fault blocks should identify previously undocumented syndepositional faults. These fine-scale time sequences should constrain reservoir thicknesses and frame facies changes near sub-seismic faults. Twenty-one stratigraphic surfaces were enveloped into a scalar stratigraphic hierarchy used for estimating fault timing and duration. Well log trends were calibrated to core descriptions, which enable interpreting depositional environments directly from well logs across the 810 square mile study area. The well log trends in non-cored wells were calibrated to cored wells to extrapolate depositional environments over the study area. This interrelationship between structure and stratigraphy provides tools to optimize the placement and design of lateral wells.