Influence of Growth Faulting on Lower Cretaceous Clastic Sediment Units, Raleigh Field, Smith County, Mississippi

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ABSTRACT

Geophysical well logs and core descriptions from 38 wells drilled in the Raleigh Field area of Smith County, Mississippi, were examined to evaluate the influence of growth faults on sediment accumulation in Lower Cretaceous units. Previous work by Bland and Gardner (1960) identified growth faults in Raleigh Field, and mapped the faulted anticlinal graben controlling the field structure. Raleigh Field is four miles west of a shallow piercement salt dome (Raleigh Dome) and the field structure was likely developed above a deeper seated salt uplift. For the present study, structure contour maps, cross-sections, isopach maps, and sand percent maps were used to compare upthrown and downthrown Cretaceous units across major faults, particularly the Paluxy. The Paluxy Formation has a thickness of 1400 ft to 1440 ft on the upthrown section and 1740 ft to 1900 ft on the downthrown section, indicating a substantial amount of growth (~500 ft) in comparison to most of the formations studied. Growth faulting may have been initiated by deposition of the thick clastic section underlying the studied interval. Reservoir sands are laterally continuous in upthrown and downthrown sections, except where truncated by the field fault or west flank fault. The reservoir sands are thicker on the downthrown section, but sands tend to be thicker or more uniform on upthrown sections not affected by growth.

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