

PATTERNS IN FINE GRAINED SEDIMENT DEPOSITION IN THE FALSE RIVER POINT OF THE LOWER MISSISSIPPI RIVER VALLEY

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ABSTRACT

A combination of 2D seismic reflection surveying and petrophysical logging will investigate the relationship between stratigraphic dip and fine grain sediment proportion at various sites on the False River point bar in southeastern Pointe Coupee Parish, Louisiana. Flume experiments have shown that the rate of lateral accretion of the point bar is proportional to the rate of outer bank erosion, that rapid increases in channel width can cause the deposition of mud drapes on the point bar, and that the height of the water column controls the limit of vertical aggradation of the point bar. Depositional models of point bar complexes predict a downstream fining of coeval deposits and maximum migration rates in the downstream direction. An inverse relationship is thus expected to exist between the dip angle of undisturbed point bar units and their proportion of fine grained sediment due to the effects of cut bank erosion rate and lateral position within the bar on progradation rate. Changes in the calculated dips of seismic reflectors will be compared to the special frequency of mud interlayering apparent in log and core data. A better understanding of mud distribution in point bars can enhance our ability to model their permeability, aiding in petroleum recovery and groundwater management. If this relationship can be verified, these findings could be applied to petroleum development processes to identify, using seismic methods alone, locations within subsurface point bars with the least probability to contain extensive reservoir compartmentalization.

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