

STRUCTURAL AND HYDROLOGICAL PARAMETERS MODELING OF WILCOX GROUP, CENTRAL LOUISIANA AND MISSISSIPPI

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ABSTRACT

In a 900 square miles area between Louisiana and Mississippi 300 well logs were studied. Three major sand formations in middle Wilcox and five target log picks within upper and middle Wilcox were correlated. The lithofacies variation appear to be related to the sequence and eustatic boundaries. The temperature and salinity values modeled were also obtained from E-log and BHT (Bottom Hole Temperature) data. The relationships among the temperature and salinity distributions, topography, stratigraphy and subsurface structure are provided. Several real images of 3-D topography, formation structure and stratigraphic boundary were reconstructed by using the well log data.

This detailed study suggests that the productive oil fields along the east and west flank of Mississippi Embayment are related to the salinity anomalies, and are controlled by structural and stratigraphic features. From the 3-D maps confident interpretation about the structure and stratigraphy changes with time and basin growth history can be made. For instance, it appears that the Holocene Mississippi River course in the study area is nearly coincident with the main depositional axis of Middle and Late Wilcox time. The current Mississippi River channel, as well as the basin's depositional axis of 20-50 million years ago, appear to have been affected by some regional structural events. Also, a north-south salinity anomaly in the east part of study area is a possible indicator of a northeast trending wrench fault along the Mississippi river.