REGIONAL GEOLOGY OF THE HUGOTON EMBAYMENT

by

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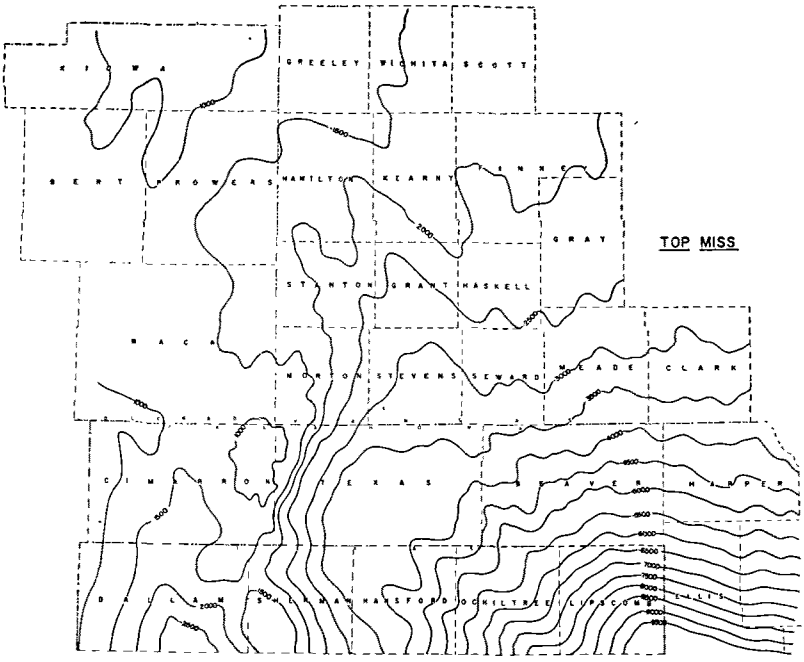
Abstract

The Hugoton Embayment represents the northwestern shelf area of the Anadarko Basin. Positive elements bounding the area are the Central Kansas Uplift on the east, the Las Animas Arch on the west, and the Wichita and Buried Amarillo mountains on the south.

Structural relief within the embayment is restricted in general to broad regional features. The low order of folding has produced nosing conditions over much of the area with these features plunging toward the Anadarko Basin Proper. Two dominant trends of folding are found in the area: The older prominent folding with a northwest-southeast alignment, which was most active through Chester and Morrow times; and the northeast-southwest folding which parallels the Las Animas Arch and is believed to have occurred from Missourian through Cretaceous time. These forces have produced cross-folding in many localities thereby giving rise to small structures.

Stratigraphically, the embayment is an area of facies changes, porosity variations and other shelf area phenomena. The greater proportion of exploration work being carried on is directed toward the finding of stratigraphic traps. Prime targets are the lenticular sands of Morrow age and the sand facies of Missourian age. Rocks of Morrow age cover a large portion of the



area and productive sands within this section have accounted for the most prolific production on an increasing scale. Sands occurring in this section are generally classified into two groups: basal sands and upper sands. The basal sands are best known for production in the Keyes Pool of Cimarron County while the upper sands are most prolific in the Camerick Pool of Texas county, the Interstate Pool of Morton county, and the Light Pool of Beaver County. Rocks of Missourian age cover the entire area and are represented by limestones and shales which undergo a facies change basinward to furnish the sand reservoirs being exploited on a major scale in the Laverne area of Harper county, Oklahoma.

Porosity variations in the Pennsylvanian limestones and truncated upper Chester limestones have furnished additional reservoirs and add substantially to the overall success ratio of the area.

1. Lion Oil Company.