

## Is the Mississippian of Kansas a Viable Petroleum Target After a Century of Exploration?

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The Mississippian rocks in Kansas have produced about 16% of the oil and 11% of the gas of the total in the past 100 years. The Mississippian units are predominately uniform carbonates (mostly limestone), but are missing on the higher positive structures such as the Central Kansas Uplift and Nemaha Anticline. Production of petroleum is from both structural and stratigraphic traps. The present configuration of structures, formed near the end of the Mississippian when the North and South American plates collided, overprinted the previous structures and caused a change in the previous structural and sedimentary regimes in the region. An influx of upper Paleozoic clastics alternating rhythmically with carbonates signaled the onset of the Quachita Orogeny and major changes and provided the seal for the reservoirs. Mississippian units (up to 1,700 feet thick) include (from oldest to youngest): Kinderhookian, Osagean, Meramacian, and Chesteran; unconformably overlie the Siluro-Devonian or Ordovician units and are unconformably overlain by rocks of Pennsylvanian age - (from oldest to youngest) Morrowan, Atokan, or Desmoinesian.

Since discovery of oil in the Mississippian in 1916 in the Virgil field (Greenwood County), production from Mississippian rocks has accounted for slightly more than 13% of the state's total oil and gas production. Although historically most of the Mississippian oil has been produced from the Salina and Sedgwick Basins, the increasing contribution of Mississippian oil to total production is primarily the result of exploration in the Hugoton Embayment in western Kansas.

Information from 16,000 qualified wells was used to quality check formation data from 43,000 operator reported wells. Separating these new discoveries by date and comparing their spatial distribution to historical production provides a better understanding of emerging trends and new areas for exploration.