

Poster 4      Three Dimensional GIS Modeling of Confined Oil Reservoirs with Examples in the Bartlesville Shoestring Sands

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Bartlesville Sand deposits of the Middle Pennsylvanian in eastern Kansas have produced high yielding oil fields since the 1920's. The Bartlesville Shoe-string sands are sandy tributary channels and distributaries which incised into the Cherokee Group shales during regression of the epicontinental sea. These maturing oil fields are somewhat unusual because the producing zones are lens shaped sandstone bodies confined within shale. Using Geographic Information Systems (GIS) with well tops data and scout cards, an accurate 3D view of the Bartlesville channels was modeled. A new approach was utilized to eliminate edge effects when interpolating well log data. This model of the channel sandstones will help delineate vertical and horizontal boundaries, leading to more accurate volume calculations of the confined petroleum producing zones. This type of GIS analysis can also be implemented in other confined systems to calculate reservoir volumes. Petroleum reservoirs having a consistent or known porosity and well quantified historical withdrawal records could be modeled using this approach to more accurately estimate the potential reserves available in those reservoirs.