

## **Skinner Sandstone: Depositional History, Reservoir Distribution and Sequence Stratigraphy**

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The Skinner Sandstone interval (Middle Pennsylvanian, Desmoinesian) contains two important oil and gas producing reservoirs that represent two major depositional cycles in the Cabaniss Subgroup of the "Cherokee Group." The lower cycle contains the Lower Skinner Sandstone, a major producing reservoir on the NE Oklahoma Platform. The upper cycle contains the Upper Skinner Sandstone, a significant producer on the platform and in the Anadarko basin. Both cycles represent progradational sequences whose primary E-W sand distribution trends are markedly different than N-S trends of the older "Cherokee" Red Fork and Bartlesville sands. The shift in the Skinner distribution pattern was likely a response to changing accommodation space as a result of Red Fork deposition and regional tectonics.

Westerly progradation of the Lower Skinner was limited by the Nemaha uplift. Minor extension of the fluvial-deltaic complex beyond the uplift occurs where the system prograded beyond the southern end. By Upper Skinner time, the effect of the Nemaha Uplift was reduced and the Upper Skinner fluvial-deltaic system extended across the ridge in northern Oklahoma. However, major progradation occurred to the south where the system skirted the southern end of the Nemaha and extended westward into the Anadarko basin.

The Skinner appears to represent a third-order sequence. The two major cycles consist of lowstand fluvial channels and incised valley fills, transgressive coal, limestones and dark shales and highstand deltas. Much of the oil and gas is trapped in deltaic and marginal-marine sandstones, but the highest per well reserves are from incised valley fill reservoirs.