Morrow Incised Paleovalley Production, Stateline Trend, Northern Anadarko Basin

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Detailed sedimentological and petrophysical analyses of cores from producing Morrow Sandstone fields along the Colorado–Kansas Stateline Trend indicates that reservoir production properties differ greatly between the two major paleovalley-fill producing facies, fluvial and tidal (estuarine) sandstones. The suite of sedimentary structures observable in cores also differs greatly between fluvial and tidal deposits, in fields such as Moore–Johnson, Arapahoe, and SW Stockholm. These fields are complex internally, contain geographically and vertically limited reservoirs, and only can be drained effectively and economically if the detailed internal architecture of the reservoirs is understood. Where tidal sandstones interfinger with fluvial sandstones, vertical permeability is diminished and flow units are fragmented. Tidally deposited (estuarine) sandstones are finer grained and more clay prone than the sandstones deposited by fluvial processes, and as a result have poorer reservoir properties. Thin, mm-thick, clay drapes, abundant in tidal channel accretion point bars, may reduce vertical permeabilities significantly .

Paleovalley-fill deposits in the Morrow Stateline Trend fields differ significantly from deltaic deposits with which they usually are confused. They differ depositionally, geometrically, and in the characteristics and distribution of flow units.

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