# Depositional Sequences and Reservoir Development in the Sub Trenton Black River Group of East Central Indiana

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Prolific hydrocarbon production from the Black River Group was established in Delaware County, East Central Indiana during the early 1900's. During early exploration, the Black River Reservoir zones were referred to as the deep Trenton pay. This "deeper pay" was discovered as wells were drilled through the depleted main Trenton reservoir zones of the Giant Lima Trenton Field in search of additional pay. Unlike hydrocarbon production from the overlying Trenton Formation of the Giant Lima Trenton Field, which covered many counties in Indiana and Ohio, commercial Black River hydrocarbon production was found in smaller, complex, dolomitized reservoir bodies.

The Black River Group consists of a series of marine, carbonate depositional cycles that were deposited on the irregular topography of the Ancell Group sediments that filled and covered the Knox erosional unconformity surface. Low stand surfaces in the Black River Group can be correlated over broad areas. Positive paleotopography controlled the development of higher energy carbonate facies. Productive reservoir porosity and facies in the Black River Group consists of intercrystalline and vuggy porosity developed in multistage dolomitized intervals that tend to correlate with low stand facies. Late stage, high temperature dolomite (HTD) development is judged to be critical for commercial Black River reservoir development. Reactivated basement faults are interpreted to be the preferred pathways for late stage dolomitizing fluids responsible for Black River HTD reservoir development. Black River carbonate facies variability, faulting, basinal fluid movement patterns and dolomitization have resulted in complex Black River reservoir geometries and distribution in the area.