

A Model for Single-Phase Migration of Trenton-Black River Hydrocarbon in the Southern Michigan Basin

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A model is presented in which hydrocarbons of the southern Michigan Basin Trenton-Black River migrated into existing reservoirs as a single liquid phase. Based on an assumption that southern Michigan once had an overburden of an additional 2000+ feet which has been eroded away, data is presented demonstrating the likelihood that the gas currently contained in hydrocarbon reservoirs was transported in the liquid phase. Pressure relief owing to overburden removal (and uplift?) after migration allowed the gas cap to form. This model is consistent with, and offered as the best explanation for: 1.) Presence of a gas cap throughout the southern Michigan Trenton platform; 2.) Trenton-Black River gas composition; 3.) Presence of "perched" water in the oil zone; and 4.) Presence of "perched" oil in the gas zone.