

Upper Jurassic Smackover Facies Characterization at Little Cedar Creek Field Area, Conecuh County, Alabama

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Little Cedar Creek Field, developed in 1994 by Hunt Oil, Co., is currently the most productive field developed in Alabama with a cumulative production of approximately seven million barrels of oil. The dual reservoir petroleum system is a pure stratigraphic trap within the Upper Jurassic (Oxfordian) Smackover Formation. The Smackover, as seen in the field area, is a carbonate unit ranging from 60 to 120 feet in thickness. The upper reservoir is characterized as a peloid-oid grainstone facies overlain by a peritidal lime wackestone to packstone facies. The lower reservoir is characterized as a thrombolite boundstone facies overlying a transgressive mudstone to packstone facies. The two reservoirs are separated by a subtidal wackestone facies. Previous exploration techniques have relied on seismic reflection technology to recognize Paleozoic paleotopographic features on which microbial buildups developed. The discovery of microbial buildups at Little Cedar Creek Field indicate that microbial growth and development was not restricted to paleotopographic highs in this area. Thrombolites in this field have been discovered further updip than other microbial facies found in the eastern Gulf coastal plain. Previous work has interpreted and mapped these facies, but no new study has been done on the field even though 30 new wells have been drilled since the last study. The objectives of this study are to establish a sequence stratigraphic framework for the Smackover and associated strata in the updip area, construct a 3-D depositional model for the field, characterize and map the distribution of the lithofacies having resource potential, and demonstrate the use of the depositional model in order to enhance future exploration strategies.