Stratigraphy and Petroleum Exploration History of the Smackover Formation (Oxfordian), Northeastern Gulf of Mexico

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ABSTRACT

The Smackover Formation, a prolific producer in basins onshore Mississippi, Alabama, and northern Florida, has yet to produce in federal waters. Reservoir facies are localized over paleotopographic features (e.g., salt-cored anticlines and/or salt-rollers, high-relief salt structures, or adjacent to peripheral or marginal fault systems), and consist of oolitic or pellet grainstones and packstones, and thrombolitic microbial patch reef boundstones.

Deposited in outer and inner ramp, marginal marine sabkhas and nearshore environments, the Smackover Formation overlies the uneven bedding surface of the underlying Norphlet Formation, consisting primarily of sand dunes that vary in thickness from little or no sand in interdune areas to over 300 meters (1,000 feet) in major dunes.

Despite sparse drilling in the offshore Federal Outer Continental Shelf (OCS) Destin Dome and Pensacola protraction areas, the Pensacola 996-1 well demonstrated a working petroleum system in these offshore Florida areas. The Pensacola 996-1 well had 10 meters (33 feet) of oil, indicated by core and log analysis, in an oolitic packstone reservoir in the Smackover encountered on an upthrown structure associated with the peripheral (marginal) fault system.

Basement topographic features are generally smaller along the Pensacola Ridge Complex compared to those on the Southern Platform. Thrombolitic buildups are postulated to occur on, or associated with, these topographic features. Although thrombolite buildups remain undrilled in federal waters, drilling approval was granted in 1997 on Pensacola 933 lease block.

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