

Investigations into the Oil and Natural Gas Resource Potential of North Carolina State Waters

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The state waters area of eastern North Carolina consists of the large, shallow brackish waters of Pamlico and Albemarle Sounds and their smaller bays, sounds, and drowned river valleys, plus a three-mile wide coastal zone, which is seaward of the Outer Banks and landward of the Outer Continental Shelf (OCS) management area of the U. S. Bureau of Ocean Energy Management, Regulation and Enforcement (formerly Minerals Management Service, MMS). These state water areas have seen sparse seismic profiling and deep drilling since 1925. Of the 116 wells drilled in eastern North Carolina, only six wells reported some type of show of oil or natural gas. Of these six, only one was drilled within a state water body; the remaining five wells were drilled onshore, but near the marshlines of Pamlico and Albemarle Sounds.

The geology of the state waters area is dominated by an unknown thickness of Precambrian and Paleozoic high grade metamorphic and igneous rocks overlain by an eastward dipping wedge of Mesozoic and Cenozoic sedimentary rocks. Based on well data, regional gravity and aeromagnetic maps, and limited seismic profiles, the swarm of Triassic – Jurassic rift basins that extend from Georgia to offshore Maine (and their accompanying petroleum system) appear to bypass the Pamlico – Albemarle Sound area. This condition raises questions as to the potential source rock interval for the hydrocarbon shows reported in the six wells. The data reported in these six wells will be reviewed, and sources for the reported hydrocarbon shows will be speculated.