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## **Mesozoic Thrombolitic Reef Play, Northeastern Gulf of Mexico**

Thrombolitic reefs are known from Upper Jurassic and Lower Cretaceous carbonate strata of the northeastern Gulf of Mexico. These microbial buildups are Upper Jurassic petroleum reservoirs in the eastern Gulf Coastal Plain. These thrombolites developed on Paleozoic rocks in an inner carbonate ramp setting in early highstand systems tract deposits. They attain thicknesses of 150 feet and areal extents of 1 to 2 square miles. These reefs include microbes, cyanobacteria and other bacteria that are chemosynthetic, and encrusting organisms, Tubiphytes, foraminifera and metazoans. Upper Jurassic microbial buildups have been interpreted from seismic data from the continental shelf of the northeastern Gulf of Mexico. Lower Cretaceous microbial reefs have been observed from core from a well in Louisiana. These thrombolites developed seaward of the Lower Cretaceous shelf margin on a continental slope. Buildups of 22 feet have been observed. The presence of thrombolites in deeper water is consistent with the occurrence of microbial buildups observed in outer carbonate ramp settings from Upper Jurassic outcrops in Portugal. Development of microbial reefs in Upper Jurassic strata in the offshore Gulf of Mexico and in Lower Cretaceous slope paleoenvironments extends the thrombolitic reef play from inner ramp, shallow water paleoenvironments to deeper water paleoenvironments. Key factors for microbial buildups are hard substrates for colonization, low background sedimentation rate and sea-level rise for continued growth, and abnormal marine conditions to reduce organism competition and predation. Detection of these microbial buildups involves seismic interpretation and geologic modeling of reef development and inherent variabilities.