Geology and Assessment of Undiscovered Oil and Gas Resources in Mesozoic (Jurassic and Cretaceous) Rocks of the Onshore and State Waters of the Gulf of Mexico Region, U.S.A.

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ABSTRACT

The U.S. Geological Survey (USGS) is in the final phase of the most recent assessment of the undiscovered technically recoverable oil and gas resources of the U.S. Gulf of Mexico coastal plain and state waters. Ongoing geologic, geochemical, and petrophysical framework studies have defined the total petroleum systems and assessment units (AUs) in the Gulf Coast region. Current studies examine the Mesozoic (Jurassic and Cretaceous) source rocks and reservoir units, and recent studies have assessed the undiscovered resources in Tertiary and certain Jurassic and Cretaceous units. The Upper Jurassic and Lower Cretaceous Cotton Valley Group and Lower Cretaceous Hosston and Travis Peak formations, as well as the Upper Cretaceous Taylor and Navarro groups and the Tuscaloosa and Woodbine groups downdip shelf-margin deltas, were assessed in 2006. Tertiary strata were assessed in 2007. Jurassic strata presently under evaluation include the Upper Jurassic Norphlet, Smackover, Haynesville, and Bossier formations. Lower Cretaceous units to be assessed in the present study include the Knowles Limestone, Sligo Formation, Trinity Group, Fredericksburg Group, and lower part of the Washita Group. Upper Cretaceous rocks being assessed include the Buda Limestone of the Washita Group, Eagle Ford Group (Eagle Ford shale, and the updip Tuscaloosa and Woodbine groups), Austin Chalk (Group), and Tokio and Eutaw formations. For each AU, a geologic model is developed to define hydrocarbon source, charge, migration, trap, and reservoir, and to estimate technically recoverable undiscovered oil and gas resources. The USGS assessment is focused on evaluating conventional clastic and carbonate deposystems, as well as resource volumes in emerging unconventional gas, shale gas, and shale oil plays currently attracting global attention.

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