

The Coalbed Methane Potential of Louisiana and Texas

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ABSTRACT

A regional evaluation of the coalbed methane potential of the Wilcox Group in Louisiana and Texas was performed to evaluate the potential of the Gulf Coast. Coal in Louisiana is associated primarily with the Paleocene/Eocene Holly Springs Delta System and, to a lesser extent, with the Rockdale Delta System located to the west. Wilcox coal seams in Louisiana appear to be significantly more numerous than coal seams in Texas, but most of the coal beds are much thinner, generally less than 5 ft thick. However, individual coal beds may reach 23 ft in thickness in some parts of Louisiana and net coal thickness may exceed 70 ft.

Wilcox coal rank in Texas and Louisiana is low even to depths in excess of 10,000 ft, indicating that coals at shallow depths with better permeability have not reached the threshold of thermogenic methane generation. The dominant types of gas in Wilcox lignites in Louisiana are expected to be secondary biogenic and migrated thermogenic and biogenic. The Wilcox Group in Louisiana appears to have a much more dynamic hydrologic system than the Wilcox Group in east and east-central Texas. Potentiometric surface and hydrochemical maps of the lower and upper Wilcox indicate updip migration of geopressed fluids to shallower parts of the Wilcox; however, the basinward migration of meteoric water facilitating salt dissolution partially explains the relatively high salinity of the Wilcox formation waters. The density contrast between shallow saline-enriched meteoric water and relatively fresh water derived from clay diagenesis deeper in the basins may have resulted in density-driven convection that promoted the updip migration of fluids and potential trapping of coal gases.