

Grigsby and others, 1992

Data Set 28

Reference: Grigsby, J.D., J.M. Vidal, D.L. Luffel, J. Hawkins, and J.M. Mendenhall, 1992, Effects of fibrous illite on permeability measurements from preserved cores obtained in Lower Wilcox Group gas sandstones, Lake Creek field, Montgomery County, Texas: Gulf Coast Association of Geological Societies, v. 42, p. 161-172.

Authors' affiliation: Bureau of Economic Geology at University of Texas at Austin; ResTech Houston

Age: Paleocene to early Eocene

Formation: G sandstone of Wilcox Group

Location: Lake Creek Field, Houston Embayment, Montgomery County, Texas

Well: LCU No. 48 well

Depth range: 11,526-11,605 feet

Depositional Environment: "The G sandstone, composed of individual multistoried, stratigraphically heterogeneous reservoirs, is one of several 150- to 500-ft-thick upward-coarsening intervals that form part of the fluvial-dominated Brazos delta of the lower Wilcox Rockdale delta system. ... At the LCU No. 48 well, the G sandstone is 290 ft thick and consists of repetitive upward-thickening sandstones separated by mudstone-rich intervals. .. Each parasequence corresponds to a period of deltaic progradation."

Primary mineralogy: "G sandstones are poorly to moderately well sorted, fine-grained, quartz-rich arkoses to lithic arkoses having an average composition of Q62F26L12. ... Detrital quartz averages 42.5% of the rock volume and ranges from 31.5% to 52.5%. ..."

Alteration: The major authigenic minerals affecting reservoir quality are quartz overgrowths and fibrous illite. Although quartz overgrowths have resulted in a permanent reduction in intergranular porosity in G sandstone reservoirs, this study found that fibrous illite, extending into and bridging pore throats, plays a major role in reducing permeability.

Production: gas condensate.

Core measurement conditions: Measured at net overburden pressure. Permeability corrected for Klinkenberg effect.

Data entry: manual entry from Tables 2, 3, and 4 from the referenced paper.