

Trevena and Clark, 1986

Data Set 68

Reference: Trevena, A.S. and R.A. Clark, 1986, Diagenesis of sandstone reservoirs of Pattani Basin, Gulf of Thailand: American Association of Petroleum Geologists Bulletin, v.70, n. 3, p.299-308.

Author's affiliation: Unocal Corporation

Age: early middle to late Miocene

Formation: not named

Location: Baanpot, Erawan, Satun, and Platong Fields, Pattani Basin, Gulf of Thailand

Wells: 37 conventional cores from several wells in 4 fields.

Depth range: 4800 - 8000 feet.

Lithology: Sublitharenites, feldspathic litharenites, and litharenites. "Grain size and sorting are the only important non-diagenetic variables that influence reservoir properties in the Pattani basin. Coarser grained and better sorted sands generally have higher porosities and permeabilities than finer grained and more poorly sorted sands. Depositional environment indirectly influences reservoir properties, in that the energy of the ancient streams determined the grain size and sorting of these fluvial sandstones. Provenance differences do not significantly influence reservoir properties because no major vertical or regional changes occur in detrital mineralogy."

Alteration: "Three major diagenetic processes decrease porosity and permeability: (1) mechanical compaction, (2) quartz cementation, and (3) kaolinite cementation. Another major process, dissolution of detrital feldspar, locally enhances porosity. Two additional cements --- calcite and ankerite -- are locally abundant, but they have restricted distributions within the basin. Small amounts of mixed-layer illite-smectite are widely distributed. Authigenic illite is abundant in deep Pattani basin reservoirs (those below 8,000-ft burial depth)."

Production: gas and condensate.

Core measurement conditions: conventional, Boyles law method.

Data entry: End points of a regression line based upon 404 core plugs are given below, taken from Figure 3 of the referenced paper. Lower limit of 1 md and upper limit of 3000 md bracket the data set. R-squared for the regression line was given as 0.67.