Smith, 1985 Data Set 57

Reference: Smith, G.W., 1985, Geology of the deep Tuscaloosa (Upper Cretaceous) gas trend in Louisiana: Gulf Coast Section of the Society of Economic Paleontologists and Mineralogists Foundation Fourth Annual Research Conference Proceedings, June

Reference: Smith, G.W., Sedimentology and reservoir quality of the "19,800 foot" sandstone, False River Field, Pointe Coupee and West Baton Rouge Parishes, Louisiana: in Steward, D.B., ed., Tuscaloosa Trend of South Louisiana, New Orleans Geological Society, 1981, p. 45-81.

Author's affiliation: Chevron USA, Inc.

Age: Late Cretaceous

Formation: "19,800 foot sandstone" of Tuscaloosa Formation

Location: False River Field, Pointe Coupee and West Baton Rouge Parishes, Louisiana, United States

Structural Setting: Downdip Tuscaloosa-Woodbine Trend, Louisiana, United States

Wells: five Chevron wells: Alma Plantation 2, Alma Plantation 3, L. Crochet, et al 1, F.E. Farwell et al 1, W.A. Lorio Jr. 1

Depth range: 19,780-20,624 feet.

Depositional Environment: The often repeated lithologic succession within the 19,800-foot sandstone is suggestive of a prograding offshore barrier bar environment, interrupted by periods of transgressive sedimentation.

Lithology: The 19,800-foot sandstone is not a single lithologic unit but rather a 100 to 300-foot thick interval of sandstone, siltstone, and shale. … A typical section is an upward-coarsening sequence of four common lithofacies. In descending order they are: (a) fine to medium-grained sandstone that may be laminated or structureless, (b) fine-grained, laminated sandstone, (c) very fine-grained, burrowed sandstone, (d) shale and siltstone. Reservoir quality sandstones are always fine to medium-grained and generally occur at the top of an upward-coarsening sequence. ... The detrital framework of the fine to medium-grained massive sandstones is approximately 90% monocrystalline quartz (predominantly quartzarenites and occasionally chert sublitharenites).

Alteration: "Before mechanical compaction was complete, chlorite was precipitated in the reservoirs as a pore-lining cement. The initial stage of chlorite cementation developed as grain-coating crystals arranged more or less parallel to the detrital grain surface. The formation of this thin layer of authigenic clay was possibly the most important event because it effectively protected the detrital quartz from pore-filling quartz overgrowths. ... Following quartz cementation, there occurred selective dissolution of detrital grains which were composed of rock fragments and feldspar." "Secondary porosity is evident where chlorite coats and rims effectively outline sites of grain dissolution. ... secondary porosity in the 19,800-foot sandstone ranges between 5 and 7%."

Whole rock mineralogy by x-ray diffraction: See Table 4 of reference. Quartz ranges from 81 to 92%, chlorite from 12.5 to 6.1%, feldspar, illite-mica, and other minerals are each less than 2%.

Production: gas.

Core measurement conditions: unstressed, porosity by summation of fluids.

Data entry: manual entry from Figure 31 of Smith, 1985.