

GENESIS OF OLIGOCENE SANDSTONE RESERVOIR
SEELIGSON FIELD, JIM WELLS AND KLEBERG COUNTIES, TEXAS¹

R. H. Nanz, Jr.

Abstract by
Rogge Marsh
Humble Oil & Refining Co.

The express purpose of this study was to determine the character and probable genesis of a stringer - or lens - type oil sand representative of those found in oil fields along the Gulf Coast. Sand 19-B was used for this study because: (1) it is geologically young and probably still retains some indication of its environmental origin; (2) its depositional environment is probably represented in present day Gulf Coast environments; (3) it has experienced only mild structural deformation, and (4) there is a great deal of easily - accessible information on the reservoir.

Sand 19-B is a part of the Oligocene - Frio strata of Seeligson field in the central part of the Rio Grande embayment in the Frio - Vicksburg trend of oil fields. The accumulation in this lenticular sand arises from normal faulting and gentle doming. By August, 1949, after 6 years of production, Zone 19-B had produced about 8 million barrels of oil, approximately one-eighth of the total production of the field.

The stratigraphic frame work was specified by cross sections, fence diagrams, isopach maps and facies maps. The sediments were characterized by size, shape, thin section, X-ray, differential thermal and chemical analysis.

The major results of the study are as follows: (1) the trend (Plate 41) of sand 19-B is essentially at right angles to the regional depositional strike; (2) the sand body has three textural zones, with the coarsest zone forming the lower part and the finest zone at the top; (3) the mineralogy of the sand is complex and reflects abrasional immaturity (Plate 20); (4) mud fragments are common constituents of the deposit. In all these characteristics, and in the absence of fossils, sand 19-B is similar to Recent deltaic-plain deposits of its own geologic province, and is dissimilar to any Recent beach, dune, or marine sands of the area examined. Since it is reasonable to assume that any sedimentation in the Rio Grande embayment in Oligocene time was similar to Recent deposition in that area, the data in this paper point overwhelmingly to the conclusion that sand 19-B represents the normal deltaic-plain depositional product of an Oligocene river, probably an ancestral Rio Grande or a tributary thereof.

The often stated opinion that oil-field trends of the Gulf Coast are "shore-line" trends has led many geologists to infer that the reservoir sands of these oil fields are strand-line deposits. The conclusions of the present study emphasize the risk of such deductions. The trends may be indirectly related to shore lines by reason of marine source beds, but many, or possibly most, of the reservoir sands are probably of continental origin.

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PLATE 41

Seeligson Zone 19B - Configuration base of sand.
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