

NOTES

Abstract:Port Acres - Port Arthur Field, by Thos. D. Barber*

The basic material and most of the illustrations for this talk were taken from a paper entitled "Port Acres and Port Arthur Gas Condensate Fields" written by Michel T. Halbouty, George C. Hardin, Jr., and Thos. D. Barber for the forthcoming A. A. P. G. Gas Volume.

Port Acres and Port Arthur Fields are located immediately west of the town of Port Arthur in southeastern Jefferson County, Texas, eight miles southeast of Spindletop salt dome and a like distance southwest of Port Neches Field. Pre-development exploration consisted of seismic by several companies which mapped a southwest plunging nose with 300 to 600 feet of northwest dip but little or no northeast closure. Between 1941 and 1956 three wells were drilled in the area which established the presence of (a) a down-to-the-south fault bisecting the nose and (b) lower Hackberry sands.

In 1957, after a seismic-subsurface review of the area, Meredith, et al drilled the #1 Edwards as an upper Frio wildcat to test a pie-shaped fault closure on the upthrown side of the major fault. This well was dry through the upper Frio sands but with support from Pan American and Michel T. Halbouty was carried deeper and on August 18, 1957 blew out at a depth of 10,534 feet. The #1 Edwards completed through the drill pipe making 16,000 MCF per day through the pipe line. The Halbouty-Pan American No. 1 Rosen, drilled immediately thereafter, discovered the massive development of the lower Hackberry about 100 feet below the stringer member in which the Meredith #1 Edwards blew out.

It is interesting to note that the McCarthy No. 1 Shelby drilled in 1941 to 10,585 feet penetrating the section in which the Meredith well blew out but had no sand development and stopped only 20 feet above the top of the massive pay sand.

Subsequent drilling at Port Acres reveals that the production results from pinchout of the upper member of the lower Hackberry sand on a southeast dipping monocline. The field covers approximately 3200 acres on which 46 wells have been drilled. Of these, 20 wells, representing 43% of the total drilled, have been located on town lots which cover approximately 32 acres. That is, 43% of the wells are located on approximately 1% of the field area.

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Development at Port Acres delineated the trace of the major fault in the area and proved northwest dip into the downthrown side of the top of the Frio. In the fall of 1958, Meredith & Company drilled the No. 1 Doornbos to 12,290 feet and found several lower Hackberry sands productive plus the Nodosaria sand immediately below. Port Arthur is a classic example of an anticlinal closure located on the downthrown side of a contemporaneous down-to-the-south fault. Thirteen wells have been drilled at Port Arthur Field which covers approximately 1700 acres. Unlike Port Acres Field, which produces principally from the first member of the lower Hackberry series, Port Arthur Field produces from 12 separate reservoirs in the lower Hackberry and Nodosaria section.

Several questions are raised by a study of the Port Acres - Port Arthur Field Area.

No. 1. Why is it here? ... One possible explanation, based on regional studies, indicates that the lower Hackberry sands were deposited near the lower Hackberry shoreline at the mouth of an ancient stream. Sand occurrences in the area suggest a deltaic deposition with distributaries extending to the southwest and to the southeast from Port Acres - Port Arthur delta.

No. 2. Where will the balance of the lower Hackberry sands pinch out in the Port Acres Area? ... These sands have been proven capable of production at Port Arthur and it is reasonable to assume that at the proper pinchout point they too will be found productive.

No. 3. Where will another Hackberry be found?

No. 4. No one can complete a study of Port Acres Field without wondering "Where did I plug a well just 20 feet above the pay sand?"