

Case Study of an Oil Field in the Regional Peripheral Fault Trend Play: North Choctaw Ridge, Alabama.

PANETTA, BRIAN J., Center for Sedimentary Basin Studies and Department of Geological Sciences, University of Alabama, Box 870338, Tuscaloosa, AL, 35487-0338

North Choctaw Ridge Oil Field, Choctaw County, southwest Alabama, was discovered in 1972 with the drilling of the Pruet & Hughes Trice Estate 25-9 well. A total of 10 wells have been drilled in the field. The field has been developed on 120 to 160 acre well spacing. Oil production, to date, exceeds 8 million barrels. Three wells are currently producing for a total of 150,000 barrels of oil per year. The field is located within the regional peripheral fault trend play. The petroleum trapping mechanism in the field is a structural trap associated with salt movement along the Gilbertown extensional fault system.

The trap is bounded on three sides by dip closure and by a fault to the south. The fault provides a lateral seal, while the Buckner anhydrites are the top seal rocks. The petroleum trap formed during the Early Cretaceous. Smackover carbonate shoal ooid grainstones are the principal reservoirs in the field. Reservoir porosity was enhanced through diagenetic processes, including dissolution and dolomitization. Porosity types are primary interparticle and secondary grain-moldic and dolomite intercrystalline. 3-D geologic visualization modeling of the shoal grainstones indicates that opportunities for in-fill drilling in the field exist. Undrained oil remains to be recovered primarily along the fault, which marks the southern boundary of the field. It is estimated that additional drilling in the field would prolong the productive life of this field.