

A SUBSURFACE STUDY OF THE NORTH FRISCO CITY FIELD MONROE COUNTY, ALABAMA

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ABSTRACT

The 1991 discovery of the North Frisco City Field has led to a resurgence of industry activity in the updip Jurassic trend of Monroe County, Alabama. Six wells in the field are presently delivering 6,000 BOPD and 5 MMCFGPD out of the Frisco City Sand Member of the lower Haynesville Formation.

The North Frisco City Field is a combination structural-stratigraphic trap associated with Paleozoic basement topography. A geological and geophysical exploration model for Haynesville production in Alabama was developed from existing subsurface and seismic control. The model predicted hydrocarbons generated from Smackover carbonates migrated through an incompetent or absent Buckner Anhydrite seal into the overlying Frisco City Sand. The Frisco City Sand is vertically sealed by overlying Haynesville shales and anhydrites.

The sedimentary strata of the Frisco City Sand Member at North Frisco City Field are interpreted to have accumulated as fluvial deposits. The predominate lithology is a coarse - to fine-grained sandstone deposited in a sandy braided stream environment. The sandy braided stream deposits occur in stacked fining upward sequences and have excellent reservoir character. Some of these sequences are very gravel rich and may have accumulated in braided streams associated with alluvial fans. A nonconformity exists locally between the Jurassic sediments and the underlying crystalline metamorphic basement rock. Comparison of petrographic data from the metamorphic rock and the sandstone clearly indicates the local metamorphic rock could not be the sole clastic source for the Frisco City Sand.

A 3-D seismic survey was acquired after the discovery well was drilled. The survey covered 8 square miles of surface area with a bin size of 82.5 feet. This provided excellent structural control across the prospective area and resulted in better drilling decisions. Also, once 3-D acquisition was complete the field was development at an accelerated pace, which has had a positive impact on cash flow and field economics.