Seismic Interpretation and Analysis of the Etouffee Reservoir Sand and the Surrounding Area in Terrebonne Parish, Southeastern Louisiana

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ABSTRACT

The western Terrebonne Parish area in southeastern Louisiana is the site of interesting geologic features and processes. Slumping, growth faulting, anticlines, and salt tectonics are only a few that are present here. That being said, one of the biggest discoveries during the 1990s in southeastern Louisiana was the Etouffee prospect. Located south of Kent Bayou Field in Terrebonne Parish, the Etouffee prospect developed estimated reserves of about 250 billion cubic ft of gas equivalent. Newly acquired 3D seismic data of the area helped identify this prospect. The survey was one of the first to fully explore and provide deeper imagery of the onshore of southeastern Louisiana. This thesis will provide an explanation and interpretation on how the Etouffee and other sand horizons formed. Along with this, various maps will be produced to illustrate thicknesses of multiple sand horizons and the overall structure of the area. These maps, both isopach and structure maps, will be developed in Petra Software. When comparing the Etouffee sand to the other sands in the area, we expect the final results of these maps to show a significant change in thickness and depth. Correlating well logs throughout the area will further help the interpretation and understanding of the depositional environments in which these sands were deposited in. These correlations will be done in Petra software and will also show the exact locations of any faults that are present. The well logs around the Etouffee sand should produce higher gamma ray, resistivity, and neutron density measurements than the other logs in the dataset. Using 3D Kingdom software, horizons and faults will be picked and interpreted. Some of these horizons include the *Textularia* L (*Tex* L) and *Robulus* L (*Rob* L) sands. This will help understand not only the structure of the area, but to see how the horizons develop and change across the region. The biggest faults and most developed horizons are expected to be around the Etouffee sand area. The WesternGeco division of Schlumberger licensed the 3D seismic data of the area for this study, which will allow for mapping and analyses of the sand horizons.