

Regional Distribution and Occurrence of Chlorite in the Tuscaloosa Sandstone, Eastern to Central Gulf of Mexico; Insight into the Controls of Chlorite Occurrence and Implications to Reservoir Quality

Kurtus Woolf

The University of Texas at Austin, Jackson School of Geosciences Austin, TX, USA

kurtuswoolf@utexas.edu

The Tuscaloosa Sandstone is a fluvial/deltaic to nearshore marine formation in the U.S. Gulf Coast region that has been a prolific hydrocarbon bearing unit. Chlorite in this formation is thought to preserve primary porosity which leads to anomalously high porosities and good reservoir quality at great depths. However, the exact source, regional distribution, and mechanisms of formation of chlorite in the Tuscaloosa remain problematic. The presence of chlorite in the Tuscaloosa has been proposed by others to be controlled by provenance and may also be controlled by depositional environment. An understanding on the controls and distribution of chlorite in the Tuscaloosa across the region will greatly aid in the understanding and prediction of productive locations of hydrocarbons in this formation in both onshore and offshore locations.

This study will determine the nature and occurrence of chlorite in the onshore Tuscaloosa trend, what controls the presence of chlorite in that formation, and what implications the presence or absence of chlorite has for the reservoir quality of the Tuscaloosa Formation in frontier areas including offshore deposits.

Core of the lower Tuscaloosa formation across Alabama, Mississippi, and Louisiana will be described in detail. Petrography from each core at different intervals and depositional systems will be used to determine a diagenetic sequence and to quantify the amount of chlorite in each sample. Trends in chlorite abundance compared to depositional environment and provenance will be analyzed to better determine how either of these factors controls chlorite deposition.