Investigation of the Lower Wilcox Group for Coal Distribution in Parts of Avoyelles, Rapides, Grant, La Salle, Catahoula, and Concordia Parishes, Louisiana for Coal Distribution

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EXTENDED ABSTRACT

Considerable lower Wilcox Group coal exists in the subsurface throughout parts of north-central Louisiana. Production of coalbed methane in Louisiana is minimal compared to that of other comparable basins throughout the U.S. Other basins such as the San Juan Basin of Colorado, Black Warrior Basin of Alabama, and the Powder River Basin of Wyoming account for 7.3% of the U.S. natural gas production in 2011 (U.S. EIA, 2013). Past and ongoing studies by the U.S. Geological Society and the University of Louisiana at Lafayette (UL–Lafayette) have proven that there are numerous unexploited coalbed methane and in situ gasification coal resources remaining in northern Louisiana.

Previous studies conducted at the UL–Lafayette were completed by Kull (2005), Comegys (2006), Guidry (2006), Dew (2007), and Ball (2007) at a regional scale to gather reconnaissance level information on coal concentrations and structural/stratigraphic settings in the lower Wilcox Group. Later studies, including Sheahan (2008), Copeland (2009), Han (2010), and Kruse (2011), were conducted within the boundaries of a composite of these previous regional studies (Ball, 2007; Ball and Kinsland, 2009). These sub-regional studies consisted of smaller mapping areas but included all available wells in the area resulting in greater well densities. In these sub-regional studies the distribution of individual coals were mapped. This present study, of the sub-regional type, evaluates the distribution of individual coals in the southeastern portion of the previous regional studies. This study covers portions of Avoyelles, Rapides, Grant, La Salle, Catahoula, and Concordia parishes, Louisiana (Fig. 1).

The goals of this study are to investigate the structure and stratigraphy of the coals within the Lower Wilcox Group, and the depositional environments responsible for producing these coals. Structural maps on multiple horizons, following those defined by Coates et al. (1980), within the lower Wilcox Group have been produced. The lower Wilcox Group encompasses the interval from the top of the Midway Shale to the top of the Big Shale. The upper Wilcox encompasses the interval between the Big Shale and the top of the Carrizo sand (Fig. 2).

The sub-regional nature of this study aims to be as detailed as possible, unfortunately much of the hydrocarbon production in north-central Louisiana is upper Wilcox. Consequently, most wells stop before fully penetrating the entire lower Wilcox section. Wells were selected for study if the expected depth of the stratigraphic interval correlative to the Reynolds coal based on the existing reconnaissance studies, was penetrated. Approximately 131 wells that reached the anticipated depth of the Reynolds coal were investigated. Logs from these wells were downloaded from the Louisiana Strategic Online Natural Resources Information System (SONRIS), digitized in Neuralog™ and analyzed in Petra™.

… (Note: The full version of this extended abstract, including complete text, illustrations, and references, will be made available at a later date on both the 2014 GCAGS convention website [www.gcags2014.com] and AAPG Search and Discovery website [www.searchanddiscovery.com]).