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## Lower Tertiary Wilcox Play with Prospective Wells, Keathley Canyon, Gulf of Mexico

Jean Pierre Malbrough and Abu Kabir Mostofa Sarwar

Department of Earth and Environmental Sciences, University of New Orleans,  
2000 Lakeshore Dr., New Orleans, Louisiana 70148–2000

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### ABSTRACT

For several decades the onshore Wilcox trend has been a substantial asset to North American oil field exploration. Estimated recoverable reserves of natural gas in the onshore Wilcox trend are upwards of 30 trillion cubic ft (TCF). Having discovered a vast majority of its onshore reserves, focus has now been shifted towards the offshore Wilcox trend. Spanning an area of over 35,000 square miles, the Wilcox is made up of upper Paleocene and Eocene sediments and has been compacted under huge masses of allochthonous salt. Thick and rich in carbonate and clastic sediments, the Wilcox of the deep water Gulf of Mexico appears to follow the prolific trend of its onshore counterpart. Several high end discoveries have been made in the Keathley Canyon (KC), including Sardinia, Kaskida, and Hadrian. Estimated reserves are in the range of 3–15 billion barrels of oil equivalent (BBOE). Wells target depths range from 12,000 to 35,000 ft. Extensive salt canopies cover roughly 90% of the trend and are from 7000 to upwards of 25,000 ft thick. Over 20 wildcat wells have been drilled inside the Wilcox trend resulting in 15 discoveries having the potential to recover between 40 and 500 MMBOE (million barrels of oil equivalent). Overlain by thick Reklaw shales, these same lower Tertiary turbidites have also been documented 200–300 miles east in new exploration wells, furthering the reach of this fruitful trend.

Through analysis of well logs from KC 102 in Keathley Canyon, has resulted in a basic understanding of the Wilcox and its several horizons. Through analysis of the 3D seismic provided by PGS, that basic understanding has become a comprehensive overview of the entire basin for which this data set was intended.

Considered a structural play, the Tiber prospect area exhibits a four way closure, visible in a seismic depth slice. While structure plays an important role in reservoir quality, root mean square (RMS) amplitude data, calculated using known horizons, display high amplitudes within these closure areas. Through a combination of active diapirism and compaction due to sedimentation and salt growth, this target area falls within the acceptable depth range and temperature for hydrocarbon migration and storage, without degradation due to “overcooking” of oil and gas. Reservoir quality, sand thickness and porosity were acquired from analog well and seismic data, then combined with

**all of the input above have alluded to two possible prospects located in KC 59 just east of the KC 102 well, within another well-structured four way closure towards the eastern portion of the project data.**