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## Large-Scale Depositional Characteristics of the Wilcox Formation, Central Gulf of Mexico Deepwater

Paul K. Wieg

Houston Energy, L.P., 228 St. Charles Ave., Ste. 1428, New Orleans, Louisiana 70130

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### EXTENDED ABSTRACT

The Wilcox Trend (also known as the Paleogene Trend or Play) of the deepwater Gulf of Mexico is today transitioning from rank exploration to an early stage of maturity for oil and gas development, with numerous giant or near-giant class discoveries known and multiple producing fields online flowing over 140,000 barrels of oil per day. More fields are planned to come online in the future. Although the commercial case for the Wilcox Play in deepwater has been established over the course of a decade and a half of drilling, most publically available characterizations of regional to sub-regional depositional facies are highly generalized and conceptually based. Presumably the paucity of detailed regional descriptions published to date is due in part to the relatively sparse well control available across the trend, in addition to the limited availability of high-quality depth migrated seismic data (at least in the public domain) that can be used for regional observations as well as the importance of maintaining detailed regional knowledge on a proprietary basis for the few operators currently working and investing in the trend.

This paper describes some preliminary observations made using interpretations performed with a state-of-the-art seismic dataset (WAZ FWI RTM PSDM) from a portion of the Green Canyon and Walker Ridge protraction areas within the central deepwater Gulf of Mexico (Figs. 1–7). As such, although all available well control has been used to constrain the seismic interpretation and well correlations and lithofacies have been considered for this study, most of the focus of this study is placed on constraints derived from observations using seismic stratigraphy. Seismic stratigraphic or seismic facies analysis is particularly useful for the Wilcox interval because the gross Wilcox section, as well as the superjacent Oligocene interval and subjacent Upper Cretaceous interval, are typically represented by a distinct reflector series on seismic datasets which allow for making seismic interpretations in deep primary basins and areas with limited or no well control (for constraining correlations) with a high degree of confidence. This reflector series is characterized by: (1) a sequence of high amplitude, low frequency events, often consisting of two or three seismic loops, which represent a marl-rich Oligocene interval, (2) a non-reflective (“transparent”) seismic interval of variable thickness (but typically having multiple low-amplitude seismic loops) that corresponds to the high

net-to-gross or sand-rich Paleocene to Lower Eocene interval (the Wilcox section), and (3) an underlying sequence of high amplitude, low frequency events that represent the uppermost Cretaceous interval dominated by limestone and marls. In some areas, within the “transparent” Wilcox interval, there is mappable reflectivity, including a continuous event of moderate amplitude which is presumed to correspond to the “Big Shale” equivalent, or top Lower Wilcox.

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