EVALUATION OF REGIONAL TRENDS IN PRODUCTION FOR OLMOS AND LOWER WILCOX LOBO TRENDS, ONSHORE SOUTH TEXAS, USA

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ABSTRACT

South Texas is home to many oil and gas productive geologic formations, including sandstones within the Upper Cretaceous Olmos Formation and Late Paleocene Lower Wilcox Lobo Formation. Olmos Formation reservoirs originated in shelf, shoreface and fluvio-dominated deltaic paleoenvironments. The Lobo formation was deposited in shallow marine wave-dominated deltaic and shoreface environments. Both plays are tight sandstone gas-reservoirs with significant historical production.

Production analyses provide valuable insights into how different geologic factors effect production rates. Olmos updip trend reservoirs are characterized by thick, lobate but discontinuous deltaic sandstones while Olmos downdip trend reservoirs are thin, sheet-like shelf deposits. The Olmos AWP Field has three distinct depositional environments – delta front, slope and basin plain environments. By contrast, the Lobo play can be subdivided by gross reservoir thickness. Fault blocks in the Lobo formation also provide a geologic basis to differentiate wells and production.

Base decline rates indicate how well a play or basin is able to maintain current levels of production as hydrocarbons are extracted. Conventional reservoir plays tend to have better decline rates than unconventional plays. Olmos and Lobo base decline rates show meaningful similarities and differences to base decline rates for the Permian Basin, which has recently seen an exponential increase in unconventional drilling.

Production differences also contribute to differing levels of economic viability and exploitation. Since the Olmos and Lobo plays have been developed for decades and are nearing the end of their optimal development life, historical data is used to build financial models as if each region has not been developed. This provides an economic determination of which regions are better suited for oil and gas investments and development based on discounted cash flow analyses.

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