AAPG Annual Meeting
March 10-13, 2002
Houston, Texas

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The Role of the El Totumo/El Palmar-Avispa Highs in Controlling Paleogene Sedimentation Patterns and the First Phase of the La Luna-Misoa (!) Petroleum System, Western Venezuela

Biostratigraphic/well log sequence stratigraphic correlations along the Perijá and across Lake Maracaibo, Venezuela, are presented. These confirm the importance of the El Totumo/El Palmar-Avispa Highs as a control on sedimentation. The correlation shows the distribution of six tectonosequences. The oldest Paleocene sequence was deposited over a wide area, but eroded to the northeast and across the El Totumo/El Palmar High. The lower Eocene sequence was also widely deposited and thickens to the northeast. It too was eroded across the El Totumo/El Palmar High. Middle Eocene sedimentation can be divided into two tectonosequences, the lower is restricted to an area northeast of the highs. The higher of the two sequences is largely restricted to the northeast, but crossed the highs in the late middle Eocene. Uplift of the northern Lake Maracaibo area occurred in the latest middle Eocene. Two further Eocene - Oligocene tectonosequences were deposited thickening to the south into Colombia.

These results are similar to those of early studies made in the 1950's and 60's. The authors of these studies used similar tools, biostratigraphy, electric logs and outcrop observations. Later seismic correlation often contradicted this earlier work, minimizing the importance of the highs and postulating more complete middle Eocene sections to the southwest. These studies obscure the importance of the highs as a barrier to oil migration from the northeast. The highs are responsible for limiting the first phase of the La Luna-Misoa (!) petroleum system in the northeastern part of the Lake Maracaibo Basin.