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Structurally Controlled Porosity Evolution and Production, La Paz Field, Maracaibo Basin, Venezuela

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La Paz Field is a large inversion structure, partially uplifted in the late Eocene and later inverted in the Mio-Pliocene. Fracture distributions, initial rates, cumulative production, pressure declines and trends in formation water chemistry suggest the reservoir is compartmentalized and that reservoir quality and reserves are controlled by the position of current strike-slip faults and by the geometry of the earlier Eocene block uplift. Within the area of Eocene uplift, production levels are high and drainage areas overlap substantially. This suggests highly elliptical to linear drainage along faults, higher than anticipated matrix storage, or likely a combination of the two. Diagenetic microporosity may be an important component in matrix storage, and may be due to water-rock interactions within the Eocene uplifted block. Initial and cumulative production, formation water chemistry, and lower than anticipated baseline fracture intensity in cores support the concept that in La Paz Field rate and reserves are dependent on the interaction of planar zones of intense fracturing along faults and secondary porosity (macro & micro) in the matrix. In field like this, reserves may be optimally developed by judicious selection of well locations and well paths.