Multidisciplinary Solution to Enhance Field Development Plan in Burgos Basin, North Mexico

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The Fundador Field accounts for the most relevant gas productivity reservoirs and represents a drilling challenge in Burgos Basin. High and low pressures zones, associated to complex geological events are present. The first six wells drilled from 2002 until February 2005 presented important mud losses, gas influx, three sidetracks and one blow out. The objective of this work is present the contribution of one timely integral multidisciplinary solution to these kind of concerns and enhance the field development plan.

Proposed work included geomechanical, seismic, geological, reservoir and drilling analysis. A Mechanical Earth Model was generated. All the information was integrated in a geocellular modeling software. Good match between seismic-geological horizons and geomechanical, reservoir and drilling events were observed. Mechanical Earth Model and properties were layered, up scaled and propagated geo-statistically afterward, to perform a realistic 3D model. Synthetic sets of curves for each location were generated. New drilling plan included an casing shoe setting depth design in accordance to the expected safe drilling window.

After the study, six wells have been drilled. No sidetracks, nor important loses or fishing happened. All new properties obtained from new wells were compared with model forecasts and shows an excellent match. High productivity zones that were identified in the reservoir model, which contributes to improve the field development, represent an additional value. An integral multidisciplinary solution like this, can offer the way to enhance the timely development of problematic fields, reducing drilling risks and increasing the profitability. Fundador case is one of these examples.