

Improved Reliability of Drilling Operations Using Managed Pressure Drilling Technology: A Case Study in a Brown Field Environment

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ABSTRACT

The original Mars A-14 well was drilled and completed in 1996. Because of depletion and wellbore geometry, development drilling after years of production has become increasingly challenging. It is unavoidable to intersect both depleted and virgin pressured sands in the same interval. The high mud weights required for wellbore stability coupled with a narrow Pore Pressure / Frac Gradient window potentially subjected the well to the loss circulation – stuck – kick cycle, making any sidetrack an expensive and potentially hazardous endeavor.

Three sidetracks in close proximity to one another in the Gulf of Mexico in 3,000 feet of water were drilled into the same production horizons on the Mars Tension Leg Platform. Both Sidetracks 1 and 2 were drilled in the conventional manner – overbalanced and in an open vessel. Managed Pressure Drilling equipment and techniques were employed to drill Sidetrack03. Mud losses were greatly diminished. There were no recorded incidents of lost circulation, kicks, or wellbore instability that would have otherwise interrupted drilling operations. Unplanned non-productive time was less than 2%. Compared to conventional drilling operations TD was obtained and many millions of dollars were saved.

Significant improvement in drilling efficiencies were realized utilizing Managed Pressure Drilling technologies. A direct comparison of equipment and operational technologies will be discussed.

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