G5 (DualFID) Saves 30% on Wireline Costs While Identifying Hydrocarbon Fluid Changes in Deep Water Drilling Operations

G5
DualFid™

Client

Eni

Kutei Basin, Offshore, Indonesia

Challenge

Reducing the high cost of wireline sampling for determining the hydrocarbon content in reservoir formations in a deep-water drilling operation.

Solution

Developing a predictive model comprising PVT results and drilled surface gas data from offset wells, to enable surface gas readings to be used to optimize wireline sampling for the determination of hydrocarbon content. By utilizing a heated, temperature stabilized, constant volume gas extraction system in combination with highly accurate FID detection equipment the problems associated with surface gas extraction from muds cooled by deep-water risers was alleviated.

Results

High quality gas data, unaffected by the typical cold mud issues from deep water drilling were captured and analyzed. Gas While Drilling (GWD™) methodology was used to obtain gas ratio curves and cross-plots to enable characterization of the various hydrocarbon phases.

Value

A predictive model was obtained for the field allowing the operator to rely solely on the model based on the relationship between mud gas ratios and PVT results. Results from G5 reduced wireline testing time by 30% with a 35% savings in wireline costs.

Services used

G5
DualFid™

Improving reservoir fluid characterization to reduce formation evaluation uncertainties in deep water drilling.

Deep water drilling presents a challenging environment to extract mud gas information due to the cold temperatures of the mud. Utilizing a mud heating temperature stabilization system with a constant volume gas extractor and accurate gas detection system forms the basis of advanced hydrocarbon analysis.

Real-Time Decision Making

By providing a stable high temperature mud with a constant volume gas extractor, the Gas While Drilling (GWD™) methodology was able to be used to reduce the uncertainties in conventional gas analysis. A fluid prediction model based on gas analysis and PVT samples in previous wells was created. Once this semi quantitative fluid API evaluation could be established, then real-time fluid characterization could be performed. This information could then be integrated into the overall petrophysical evaluation to help understand the optimal downhole sampling intervals.

As a result of the model prepared for the Kutei basin, Eni was able to document that the rate of successful pretests increased by 20%, downhole wireline testing times decreased by 30% and overall logging costs reduced by 35%.
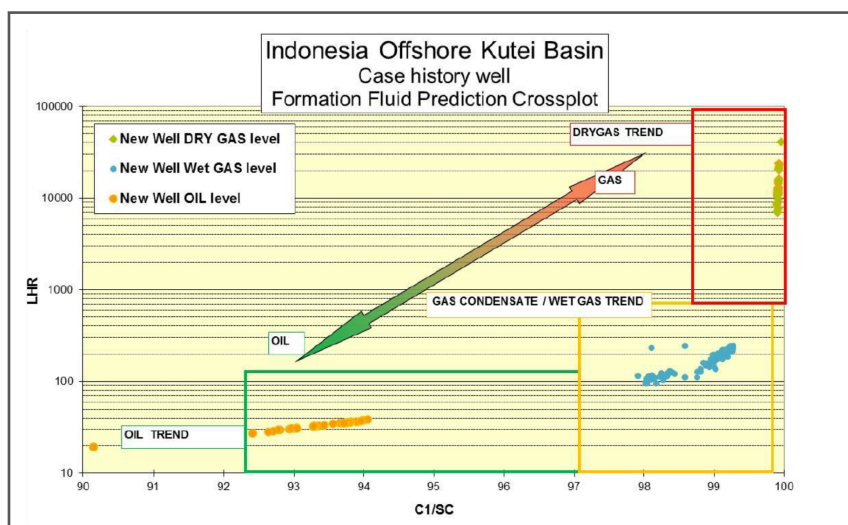

Figure 1. Green, Yellow, and Red blocks outline the predictive model developed in the Kutei basin for determining fluid typing.

Contact Sales & Marketing for more information at marketing@geolog.com