Case Study: Deep Water

Geolotope Service Identifies Reservoir Oil Fluid during Exploration Campaign

Client
Major E&P Company
Deep Water, Offshore West Africa

Challenge
To understand the lateral connectivity of reservoir channel sands between wells in a continuous exploration drilling campaign.

Solution
Perform detailed mud gas comparisons, including detailed compositional analyses and continuous isotopic measurements using a heated, temperature stabilized, constant volume gas extraction system in combination with a highly accurate FID chromatograph for gas composition and an Isotopic analyzer capable of measuring δ13C of C1, C2, C3 and CO2. These data sets were integrated and interpreted in real-time.

Results
High quality gas data, unaffected by typical cold mud issues from deep water drilling was captured, analyzed and interpreted along with the isotopic data to provide a complete vertical analysis. This was then correlated across wells to interpret the similarity of gas responses.

Value
The information obtained from the Geolotope service allowed the data to be analyzed and interpreted immediately without waiting for lab results. This allowed the update of the reservoir model as subsequent wells were drilled, and confirmed that adjacent wells were laterally connected with similar fluids from a similar source.

Services used

Deep Water Exploration campaign drilled to understand fluid typing
The target siliciclastic formations were highlighted to be part of a weakly confined channel system. Understanding changes in fluids would be helpful to understand the reservoir properties and identify the lateral variation with the channels. Real-time continuous data was requested by the client, rather than spot sampling and waiting for results.

Continuous Real-Time Data allows for clear differentiation of fluid types
The Geolotope service allows for Isotopic analysis of C1, C2, C3 and CO2. Results from this analysis were used to further enhance the results from the mud gas data by identifying the origin of the gases using Whiticar & Schoell and Chung interpretation charts and determining the fluid type (Schoell charts). The target sandstone reservoir was identified to be a combination of mixed thermogenic oil and biogenic gas. Non reservoir sands were identified to contain biogenic gas.

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