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Real-Time Fluid Logging and Analysis Service Reveals Unexpected Oil Layer, Offshore Malaysia

Advanced fluid typing optimizes sampling program with detection of possible zones of interest

PVT-analogous analysis using FlairFlex* advanced real-time fluid logging and analysis service enabled operator to optimize sampling and discover an unexpected layer of heavy oil.

The operator's concerns

The plan for a wildcat exploration well in a block located offshore Sarawak, Malaysia, was intended for testing hydrocarbon type and potential in clastic reservoirs. However, budget constraints forced reductions in the evaluation program, risking poorer quality and quantity of information acquired. The operator needed a cost-effective solution for early acquisition of quality formation evaluation information, which would drive the subsequent sampling plan for future appraisal wells.

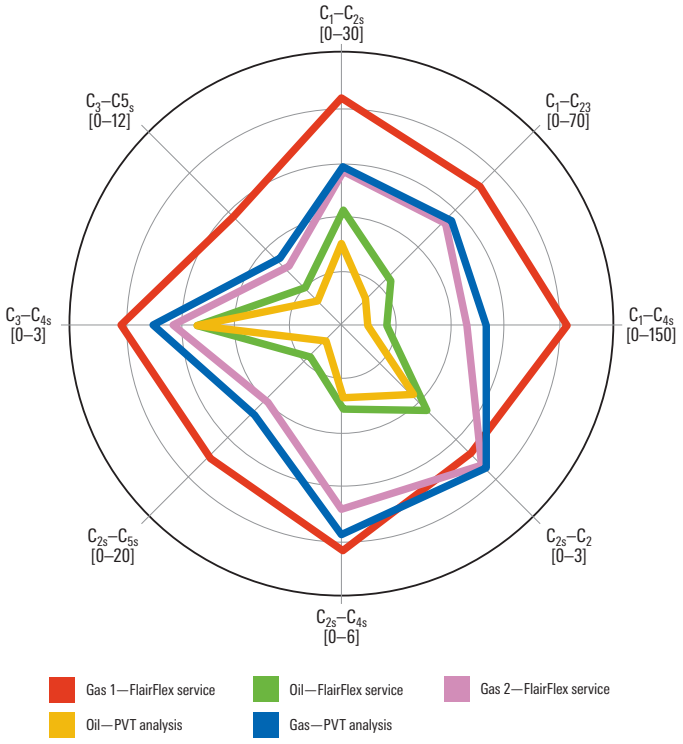
What Schlumberger recommended

Schlumberger recommended optimizing the sampling plan based on at-surface fluid logging while drilling results. The FlairFlex service provides early insight into reservoir fluid through PVT-analogous composition logs and qualitative measurement of heavier hydrocarbons and other markers. Hydrocarbons are extracted from mud returns at surface in real time, providing valuable downhole insight before downhole sampling or well testing is possible.

What was achieved

Using the FlairFlex service, the operator detected a thick column of relatively light fluid overlaying a layer of sandstone containing the presence of fluid components in the C6—C8 range. The appearance of the heavier fraction (n-C6–n-C8 and methylcyclohexane [MCC6]) suggested the presence of liquid hydrocarbons. Fluid markers such as wetness and light/heavy ratio confirmed the presence of gas on top of a light oil. Nearly no hydrocarbon was recorded below the oil zone, and Schlumberger experts interpreted this section as water bearing. Comparison with offset PVT analysis further confirmed the presence of gas and oil.

Based on the results from the FlairFlex service and the petrophysical logs, the operator reviewed its wireline sampling program and added a downhole sampling station in the potential thin oil zone. The collected sample confirmed the fluid type described by the FlairFlex service. Later, a full PVT analysis also confirmed the C1—C5 compositional analysis from the FlairFlex service.



This star plot is a visualization of real-time fluid analysis from the FlairFlex service and offset PVT sample fingerprints.

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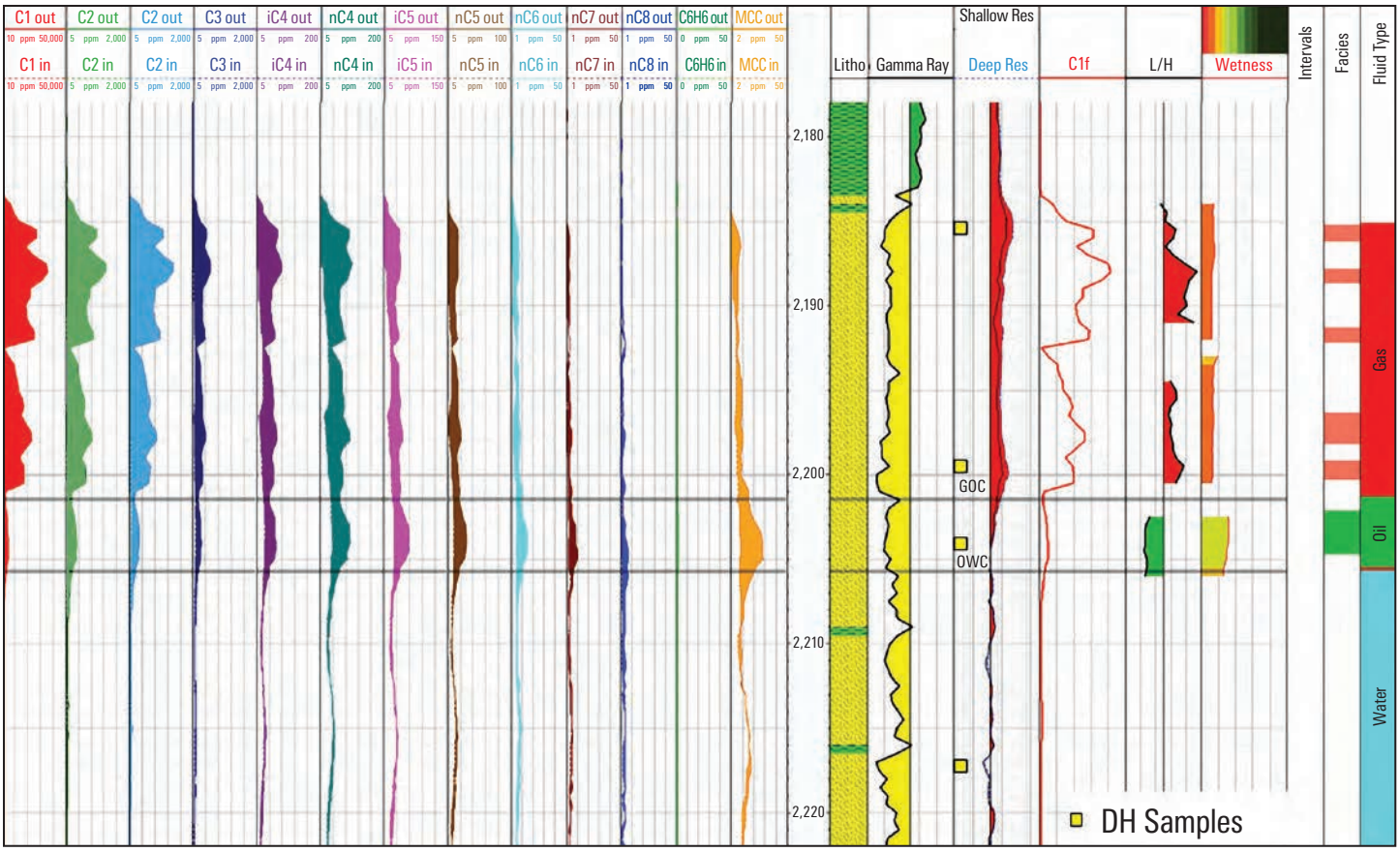

The FlairFlex service accurately identified OWC and GOC, providing critical input for reviewing sampling operations.

slb.com/FlairFlex

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