

Mud Logging
Field Surveillance
Well Intervention



ISOTOPE LOGGING FEATURES

▶ Reservoir Connectivity/Compartmentalisation

Isotope logging is a tool for the identification of reservoir connectivity or compartmentalisation.

▶ Fluid Characterisation

$\delta^{13}\text{C}-\text{CH}_4$ data provide information about encountered fluids, their origins, their characteristics and their behaviour in the subsurface.

▶ Rock Characteristics

Isotope data provide the means for evaluating the sealing characteristics of cap rocks and faults.

▶ Hydrocarbon Genesis

$\delta^{13}\text{C}-\text{CH}_4$ ratios are related to hydrocarbon generation and therefore possess information about the hydrocarbon source rock, including its kerogen type and thermal maturity; these data can be utilised for correlating hydrocarbons with their source. The genetic information obtained from $\delta^{13}\text{C}-\text{CH}_4$ ratios might provide information about a possible pay zone.

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Isotope Logging Service

Continuous $\delta^{13}\text{C}-\text{CH}_4$ Measurements in Real-Time

The Isotope Logging service provides a completely new dataset helping to assess the quality of the hydrocarbons in the formation in real time and on a continuous basis. Isotope data deliver information about the geochemical and geological hydrocarbon system and allow its characterisation in terms of source, generation and processes. This information enhances the knowledge about the system drilled and therefore the geochemical characterisation of encountered fluids and their behaviour in the subsurface.

Applications and Benefits

Improvement of the Isotube/Vacutainer Process

Continuous real time measurement with implemented QA/QC procedures reduces uncertainties related to Isotube/Vacutainer sampling.

Continuous measurement of $\delta^{13}\text{C}-\text{CH}_4$ provides dramatically improved depth resolution and the identification of small scale features that would otherwise be missed.

Possibility of obtaining $\delta^{13}\text{C}-\text{CH}_4$ data in places where the analysis of gas samples (Isotubes, etc.) is difficult or impossible and also contributing to a reduction of risks associated with Isotube/Vacutainer shipment and analysis.

Integrated Interpretation/ Decision Making

The availability of $\delta^{13}\text{C}-\text{CH}_4$ ratios in real time allows a fast and integrated interpretation of the geological and geochemical system for improving the decision making process.

Optimisation of Downhole Sampling

In conjunction with the quantitative composition derived from the FLAIR™ service, Isotope Logging provides additional information about the similarity or dissimilarity of fluids encountered in the subsurface and therefore vital information for optimising the downhole sampling. In addition, when using the FLAIR™ and Isotope $\delta^{13}\text{C}-\text{CH}_4$ service, worldwide support by our network of Remote Service Delivery centres is included.

In-Reservoir Processes

In-reservoir processes (e.g. biodegradation, water washing, etc.) alter the isotopic composition of methane and Isotope Logging can be utilised for the identification of the presence of such processes including possible identification of the type of process and its magnitude.