



Utilizing high resolution gas chromatography to detect light hydrocarbons

G8 provides customers with unparalleled interpretation of light hydrocarbon species in water and oil based mud systems. By combining the most advanced FID technology with advanced mud extraction at constant volume and temperature, GEOLOG is able to provide detailed interpretations of hydrocarbons up to nC8.



GEOLOG

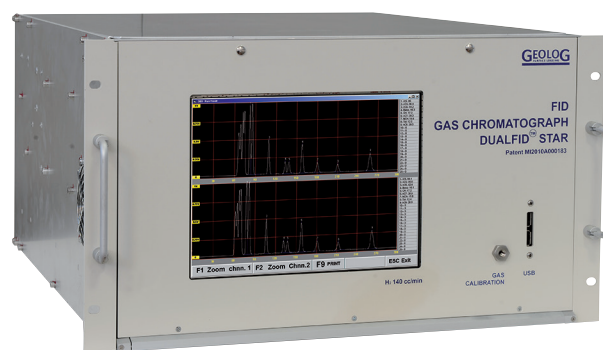
Benefits

- Near Real-Time reservoir characterization
- Determine reservoir heterogeneity
- Fluid contact identification (GOC, OWC, GWC)
- Fluid typing
- Quantitative gas analysis
- Optimize downhole sampling programs
- Optimize wireline and LWD logging programs
- Aid completion strategy

Challenges and Solutions

GEOLOG has improved mud gas extraction efficiency to overcome the issues with mud gas solubility and is able to provide an accurate, reliable, and efficient method for gas chromatograph resolution and interpretation. G8 extends the analysis to the hydrocarbon species which are more challenging to extract (aromatics, heptanes and octanes up to nC8).

Data previously available only from down hole testing tools is now available in real-time while drilling at a very low cost.



Applications

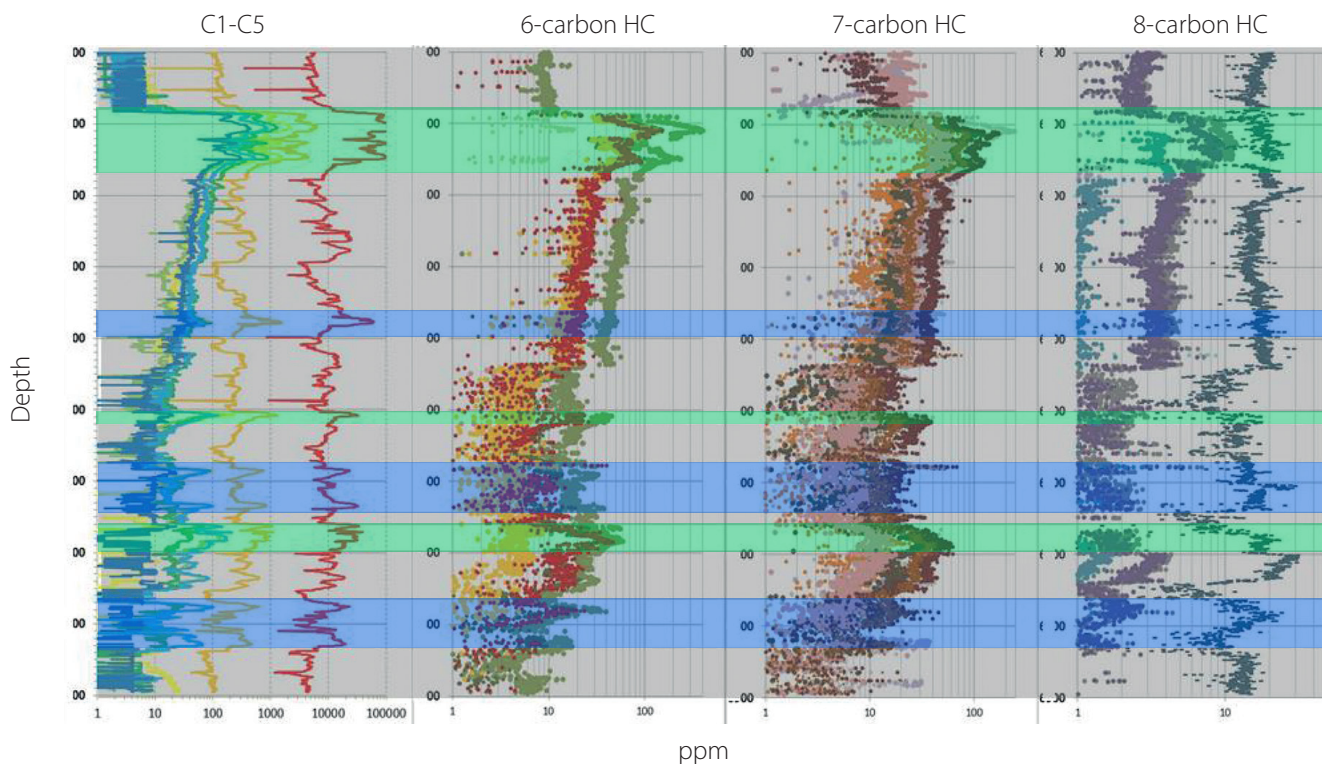
G8 is suitable for exploration, appraisal, and development projects where Oil Based Muds (OBM) or Water Based Muds (WBM) are used during the drilling phase of the well.

Operating environments such as Managed Pressure Drilling (MPD) or Underbalanced Drilling (UBD) can be accommodated with our specialized gas acquisition manifold. HP/HT wells are not an issue with surface measurements such as G8 and provide data insurance where conventional downhole methods may fail.

Using advanced techniques for gas ratio processing and formation fluid interpretation in real time, G8 technology has been successfully deployed onshore and offshore, across more than 600 wells for over 60 clients in 37 countries.

"The advanced gas system "G8"...was able to give key information on the reservoir characteristics and fluid identification..." PTTEP

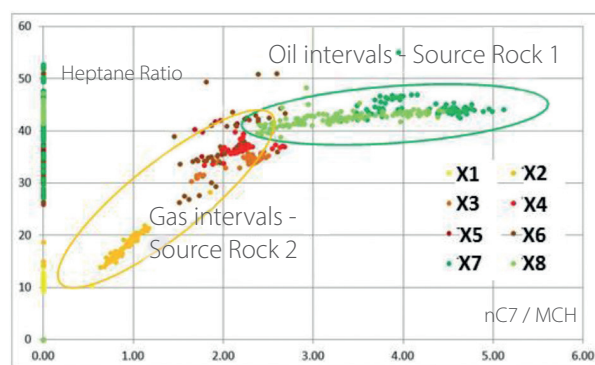




Presence of heavy gas components corresponds to hydrocarbon identification in some of the well targets, water confirmed in others.

- Hydrocarbon zone
- Identified water zone

Among the benefits of using advanced gas measurements are the service's contribution to optimisation of down hole sampling and pressure testing programs. By identifying, during the drilling phase, the appropriate intervals to test whilst avoiding less promising zones, the testing program and associated rig time spent can be reduced, contributing to higher efficiency and lower overall cost.



Hydrocarbon ratios confirm presence of different source rocks in this well section.

Specifications

Hydrocarbon Analysis: Three Service Modes	Full Scan C8 G5 + 2,2 DMB - nC8
	Full Scan G5 + 2,2 DMB - Toluene
	Standard nC6, nC7, Benzene, CH, MCH, Toluene
Limits of Detection	1 ppm – 1,000,000 ppm
Analysis Time	Full Scan C8: 150 sec
	Full Scan/Standard: 120 sec

GEOLOG around the World



Technical Paper References



Advances in Detection and Interpretation of Hydrocarbons, Non-Hydrocarbons and Noble Gases While Drilling. OMC-2015-323 (OMC, Ravenna, March 2015, Eni)

Evaluation of a Complex Carbonatic Reservoir via the Analysis of Mud Gas Data from an Advanced Gas Detection System. EAGE 026 (EAGE Conference, Kuala Lumpur, February 2014, Saudi Arabian Chevron)



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