

What You “See” is What You Get – Openhole Sampling with MDT in Sudan

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Abstract

Fluid property is critical in reservoir characterization or reservoir management. Obtain the representative fluids samples (PVT samples) in the early stage have significant impact on the either the field development plan or the surface facility design.

Schlumberger Modular Dynamics Testers (MDT) provides the capabilities on downhole fluids analysis and sampling with the help of the fluid analyzer family*. The fluid type and contamination level can be estimated in real time with these “eyes” installed on the tool string. A few examples from Sudan are presented in this paper showing how MDT are used for identifying different type of oil/gas and obtaining the clean fluid samples successfully. And these fluid identification results are also confirmed with traditional well testing method later on.

Obtain the representative oil or gas samples in openhole/cased-hole with wireline formation testers. Identify the In-Situ fluid type in downhole in real time.

The Dynamics Formation Tester is highly flexible on the tool configuration for variable objective. Before the job start, careful job planning is necessary to select proper tool modules. For example, Large Diameter probe, extra large probe or packer can be chosen to achieve the desired pressure draw down for different type of formation.

During the job, reservoir engineers need work closely with the wellsite engineers to identify the fluid type and contamination level in order to make decision if the fluid is ready to sample.

Two examples are presented here Gas PVT samples in shallow formation. The target formation is shallow, about 400 meters. The objective was to find the suspected gas zone and take high quality PVT sample to quantify the content of CO₂.

Oil sampling in exploration well for reservoir characterization Oil was clearly identified from the fluid analyzer during the pumping while some amount of water remained in the flow line of the tool. The clean oil samples are collected eventually by controlling the time of opening the sampling bottle to capture the oil slugs.

With the help of the modern fluid analyzer modules, Modular Dynamics Tester (MDT) is able to obtain high quality fluids samples as well as providing down hole fluid identification capability within in a few hours and without environmental concern.

*Schlumberger Fluid Analyzer Family includes Live Fluid Analyzer (LFA), Compositional Fluid Analyzer (CFA), Insitu Fluid Analyzer (IFA)