



Optimizing Drilling Efficiency by PWD (Pressure-While-Drilling) Sensor in wells which were drilled in the Khazar-Caspian Sea of the Azerbaijan Republic

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Sperry Drilling Services' PWD sensor improve and support drilling efficiency by providing very important, real-time downhole pressure information that allows to make faster and better drilling decisions.

The PWD service, provides accurate annular pressure, internal pressure and temperature measurements using any of well-known telemetry systems: positive mud pulse, negative mud pulse and electromagnetic. Pressure data can be transmitted in real time and recorded in downhole memory. In the pumpsoff mode, the minimum, maximum and average pressures observed during the non-circulating period are transmitted via mud pulse telemetry when circulation recommences. These measurements provide the knowledge to avoid lost circulation and detect flow/kicks before they happen. The PWD sensor also reduces the risk of problems related by unexpected fracture or collapse. Sperry's PWD sensor also helps to avoid lost circulation and flow/kick, which can lead to costly delays in drilling. Annular pressure increases often reflect ineffective cuttings removal and poor hole cleaning, both of which can lead to lost circulation. The PWD sensor detects the increase and drilling fluid parameters and operating procedures can be modified to improve hole-cleaning efficiency. On extended reach wells, real-time information helps to maintain wellbore pressures between safe operating limits and to monitor hole cleaning.

The PWD sensor also provides early detection of well flows and kicks. A drop in pressure, can indicate gas, oil and water kicks. Because the sensor is making its measurement downhole, the PWD sensor makes it possible to detect such pressure drops earlier than more traditional surface measurements.

The PWD sensor has high-accuracy quartz gauges and is able to record data because of its battery-powered operation. It is also extremely useful in specialized drilling environments, such as high-pressure/high-temperature, extended-reach and deepwater wells.

When combined with the rig management system, surface and downhole measurements, can be compared for more accurate and extensive analysis.

PWD sensor was utilized with encouraging results in many wells up to 3000-6000m subsurface reservoirs (these wells were drilled in the Khazar-Caspian region of the Azerbaijan Republic) and acquired PWD RT/RM data implemented for best drilling practices in other brand new drilled offset wells in order to help us achieve our mission to drill safe, faster, on target, optimize drilling efficiency, maximize well value and reservoir insight.