Standalone solid-state gyro while drilling service

Gyro while drilling system with mud pulse telemetry

Applications

- ✓ Onshore and offshore drilling
- ✓ Anticollision drilling
- ✓ Extended reach drilling
- ✓ Precision well placement
- ✓ Multiwell platforms or pads
- ✓ High latitudes

Features

- ✓ 60 s survey time
- ✓ Two single-axis, solid-state high accuracy
- ✓ gyro sensors, three single-axis magnetometers (optional) Temperature rating of 85 degrees C
- ✓ Temperature rating of 125 degrees C (coming soon) Precision accuracy unaffected by magnetic interference No mass unbalance, very stable calibration
- ✓ Rugged design - reliable in extreme drilling environments
- ✓ Extended calibration intervals
- ✓ All latitudes
- ✓ Continuous inertial toolface from vertical (coming soon)
- ✓ Horizontal surveying capability[1]
- ✓ Minimal MWD expertise required to operate the tool. Places gyro sensor as close to the bit as possible.
- ✓ Optional add-on sensors: Gamma, S&V, RPM & stick slip, continuous inc & azi
- ✓ Advanced decoding and mud pulse transmission.

How the standalone Meridian-GWD adds value

The Meridian-GWD gyro while drilling service is a state of the art measurement while drilling tool that used solid-state north seeking gyro sensors to provide precise wellbore surveys with unparalleled accuracy. Unlike clunky mechanical gyro while drilling systems, the solid-state sensors and high shock and vibration capabilites ensure a high level of relibaility and calibration stability.

The sensor technology also results in faster gyro surveys because surveys can be made during connections, rather than upto 20 minutes later. In fact, the Meridian-GWD service can perform upto three surveys in the time mechanical gyros take to spin up for one. Quality control is transparent with horizontal earth rate and gravity checks.

The system is a compact design, with advanced features and modular assembly wtih mud pulse transmission and advanced decoding.

Modular

The 29Ah batteries can be changed between runs as necessary to ensure minimal service disruption

Accurate

The north-seeking gyro sensor is housed within the pulser as close to the bit as possible above the mud motor.
A triaxial accelerometer sensor works in conjunction with the gyro to measure other parameters of interest.

Reliable

Vibration activated, the mud pulser transmits the signal using tried-and-true M-Ary encoding (reliable and compatible with most industry standard MWD systems).

Adjustable

The Meridian-GWD is a steerable MWD system thanks to real-time data made possible using a specialized "Muleshoe" orientation assembly that has two functions:

1. To lock in alignment with the highside of the mud motor

2. Anadjustable flow restre- ictions to generate the mud pulsesignal doewnhole

These are the minimum specifications and subject to change depending on the tool version and availability Users can expect no less than the following characteristics when operating the Meridian-GWD system.

PHYSICAL

TOOL OD	47.625 mm	1-7/8 in
TOOL LENGTH	6.2 m	21 ft
MAXIMUM PRESSURE	124,105 kPa	18,000 psi
MAXIMUM TEMPERATURE	85°C	185°F

MECHANICAL OPERATING THRESHOLDS

BHA SIZE (INCHES)	BEND RADIUS	MAXIMUM FLOW RATE	
3-½	30°	0.8 m³/min	200 gpm
4-¾	25°	1.5 m³/min	400 gpm
6-½	18°	2.6 m³/min	700 gpm
6-¾	20°	2.6 m³/min	700 gpm
8-½	12°	3.5 m³/min	900 gpm

MAXIMUM SHOCK	500g, 0.5 msec, ½ sine all axes
MAXIMUM VIBRATION	50 – 500 Hz - 10g all axes

LOST CIRCULATION MATERIAL (FAST-PULSE SCREEN)

FINE	MEDIUM	COARSE
50 lb/bbl	30 lb/bbl	20 lb/bbl

TECHNICAL

TELEMETRY SYSTEM		Positive Mud Pulse		
RETRIEVABILITY		Wireline Retrievable BHA ID >= 57 mm [2-¼ in]		
TOOL ACTIVATION		Vibration Sensor Switch		
OPERATING CAPACITY		180 Hours Per Battery 3 Batteries Maximum		
DATA RATE		0.5 - 1.2 Bits/Second		0.250 - 2.00s Plsw
SENSOR	**PARAMETER**	**RANGE**	**ACCURACY**	**SPREAD**
3-AXIS ACCELEROMETER	INCLINATION	0° - 180°	+/- 0.10°	0.20°
	GRAVITY TOOL FACE	0° - 360°	+/- 0.10°	0.20°
	TEMPERATURE	-35 - 200°c	+/- 0.5°C	1.00°C
NORTH-SEEKING GYRO-SCOPE	AZIMUTH	0° - 360°	+/- 0.10°	0.20°
	GYRO TOOL FACE	0 - 360°	+/- 0.10°	0.20°
GYRO ACQUISITION TIME		< 1 minute (depending on accuracy requirements)		
TELEMETRY UPDATES		10 - 28 seconds between data points		
GYRO CONSIDERATIONS		Azimuth values are not reliable at orientations within 20° of an east-west horizontal line but are valid at other horizontal azimuths. Inclination values are valid at all orientations.