WELLSRVICES-GWD

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
- Multi-well platforms or pads
- Highlatitudes



Features

- 60s 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 (Heatshield)
- 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 tool-face from vertical
- 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 & az
- Advanced decoding and mud pulse transmission.

[1] excludes referencezone,+-20degrees ofEast/West at horizontalforgyro-compassing.



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 capabilities ensure a high level of reliability and calibration stability.

The sensor technology also results in faster gyro surveys because surveys can be made during connections, rather than up to 20 minutes later. In fact, the Meridian-GWD service can perform up to 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 with 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 “mule-shoe” orientation assembly that has two functions:
- To lock in alignment with the high-side of the mud motor.
- An adjustable flow restriction to generate the mud pulse signal downhole

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WELLSERVICES EGYPT

PRECISION IN EVERY WELL

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

	BHA SIZE (INCHES)	BEND RADIUS	MAXIMUM FLOW RATE	
MECHANICAL OPERATING THRESHOLDS	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			

	FINE	MEDIUM	COARSE
LOST CIRCULATION MATERIAL (FAST-PULSE SCREEN)	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 Pbw

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 TOOLFACE	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.



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Case Study

WELLSERVICES-GWD saves an offshore operator over 36 hours of rig time, and US$225,000 in costs, in a tight anti-collision environment.

Summary

An operator encountered significant drilling challenges while executing a 16-inch hole section due to severe magnetic interference from an adjacent well and stringent anti-collision requirements. To maintain accurate wellbore positioning throughout the magnetically disturbed interval, WellServices deployed the Meridian Gyro While Drilling (GWD) system, delivering 37 reliable gyro surveys over seven drilling days. GWD maintained accurate directional measurements until conventional magnetic MWD could operate reliably, once clear of magnetic interference at approximately 2,000 ft. By replacing extensive wireline-deployed gyro single-shot surveys with an integrated GWD solution, the operation achieved more than 36 hours of rig time savings, while improving operational efficiency and reducing HSE exposure.



Date:

- December 2025

Location

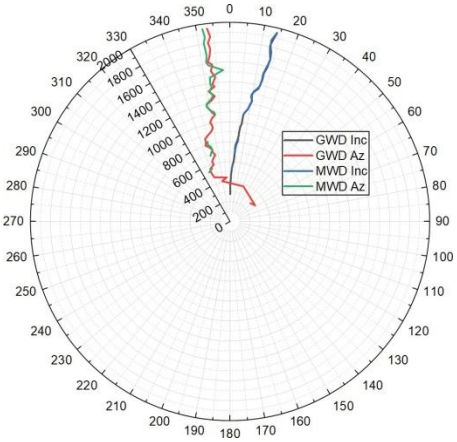
- Jack up - Gulf of Suez
- Egypt - Middle East

Well Details

- Depth: Surface to 2,000ft
- New well

Partners

- IceField Corp.
- Tooltronix JAE



Objective

Drill the 16 in hole section from below the conductor shoe to a depth clear of magnetic interference from the adjacent well, employing a positive displacement motor (PDM) in combination with Gyro While Drilling (GWD) and mud-pulse MWD technology

Technology Used

Meridian-GWD integrated with ToolTronix MWD.

Results & Value Created

Over 36 hours of rig time was saved by using the Meridian-GWD system versus wireline deployed gyro tools. HSE risk was reduced due to no wireline operations and GWD personnel operated the system therefore no additional engineers were required.