PRODUCT SPEC SHEET

JAVELIN-GWD - STANDALONE

powered by SPEAR™

Solid-State Gyro While Drilling System with Retrievable Mud Pulser

MECHANICAL SPECS

Probe Length	20.98 - 26.51 ft	6.39 - 8.08 m
Probe OD (Standard probe)	1.875 in	47.6 mm

COLLAR SIZES VS. FLOW RATES

Collar Sizes	Flow Rate	Dogleg Severity
(inches)	(gallons/minute)	sliding/rotating
4 ¾	100 - 400	30° / 15°
6 ½	200 - 700	20° / 10°
6 ¾	200 - 700	21° / 10°
8 ¼	400 - 800	14° / 8°
9 ½	600 - 1200	12° / 8°

ENVIRONMENTAL SPECS

Maximum Pressure	20,000 psi	138,000 kPa
Maximum Operating Temperature	212° F	100° C
Lost Circulation Material	Fine..... 15 lbs/bbl Medium..... 10 lbs/bbl Coarse..... 8 lbs/bbl	
Maximum Vibration Maximum Shock	20 g_{RMS} (5 - 1,000 Hz) 500g ½ sine ½ msec	
Operating Time	Up to 300 hrs utilizing 2 lithium batteries	

SENSOR SPECS

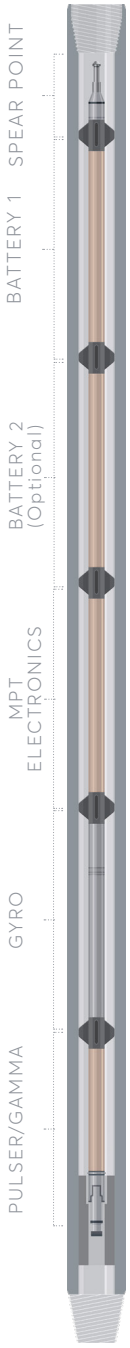
Sensor Type	3-axis coriolis vibratory rate gyro 3-axis accelerometer 3-axis magnetometer (optional)
Telemetry	Mud Pulse
Frequency Range	0.33 - 1.30 Hz Field Programmable
Data Rates	0.5 - 1.1 bps (downlink adjustable)

INSTRUMENT ACCURACY*

Measurement	Range	Accuracy
Gyro Inclination	0 - 40°	±0.05°
Gyro Azimuth	0 - 360°	±0.1°
Gyro Tool Face	0 - 360°	±1.0°
Gravity Tool Face	-180 - 180°	±1.0°
Magnetic Inclination#	0 - 180°	±0.1°
Magnetic Azimuth#	0 - 360°	±1.0°
Magnetic Tool Face#	0 - 360°	±1.0°
Gamma (cps)#	0 - 255.5°	5%

*ISCWSA / SPE WTS compliant error ellipse reports are available upon request for specific well profiles.

#Optional



Gyrodata's gyro while drilling service, Javelin-GWD provides accurate coriolis vibratory rate-gyroscopic surveys, up to 40 degrees of well-bore inclination. A three-axis digital magnetometer and gamma ray are optional add ons. This gyro while drilling tool includes Gyrodata's retrievable pulser technology.

DESIGN + PERFORMANCE

- Accurate coriolis vibratory gyro assures precise wellbore guidance for collision avoidance and trajectory placement
- Provides continuous inclination and tool face from vertical while sliding, and full surveys on demand
- Surveys are not affected by magnetic interference
- Surveys during the connections - no additional wait time
- Eliminates the need to use wireline gyros to orient or steer the drilling assembly, which saves considerable rig time and provides for safer operations
- Option for both live inclination and magnetic azimuth
- Robust, no mass unbalance or calibration shift
- Retrievable in the event of stuck pipe
- No East / West cautionary zones
- Tool can be utilized across multiple collar sizes

MARKET + APPLICATIONS

- Onshore Drilling
- Fix Offshore Drilling with riser
- Vertical and Lower Angle Drilling
- Multi-Well Pad Drilling
- Batch Well Drilling
- Collision Avoidance
- Side-Tracking
- Areas of Magnetic Interference
- Gross Error Detection

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