BaseStar® Service

INTEGRATED MWD SERVICE DELIVERING CRITICAL REAL-TIME MEASUREMENTS FOR WELL PLACEMENT, DRILLING OPTIMIZATION, AND BOREHOLE QUALITY

OVERVIEW

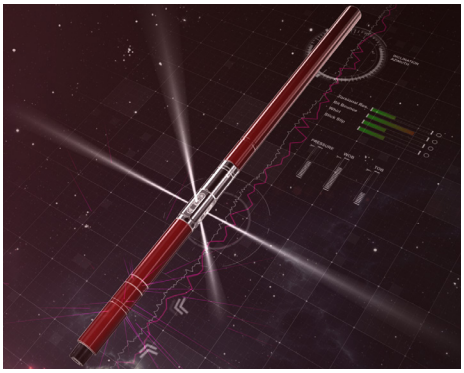
In today's challenging drilling environments, operators need to fully understand the bottom hole assembly (BHA) position and dynamics to optimize drilling performance and well placement. The BaseStar® service from Sperry Drilling is an integrated measurement-while-drilling (MWD) service that delivers the information you need to understand drillstring dynamics, manage wellbore trajectory, and safely deliver your well on target and on time. The compact footprint of this complete package moves critical measurements closer to the bit, reduces the length of pilot holes, and drives quicker decisions.

CONTINUOUS DATA, PRECISE POSITIONING

The BaseStar service takes pumps-off static surveys for reduced well time and accurate geometric wellbore positioning. High-frequency, continuous inclination and azimuth measurements enable automation through the LOGIX® automated drilling service from Sperry Drilling to adapt to downhole uncertainty and accurately place the well. The BaseStar service provides high-resolution gamma-ray logs for correlation between wells, along with gamma-ray borehole images to further reduce the geological uncertainty of your reservoir in real time and enhance well placement. Directional data from the BaseStar service supports Sperry Drilling survey management services that can increase the accuracy of the survey measurements by correcting for localized environmental influences. These methods help reduce inherent uncertainties when calculating the wellbore trajectory and increase the accuracy of the wellbore position.

REDUCED WELL TIME

Downhole torque, weight, and vibration measurements drive real-time decision-making for improved drilling efficiency and optimal rate of penetration. Real-time bore and annular pressure measurements allow monitoring of equivalent circulating density and rapid decisions to modify drilling and drilling-fluid parameters or operating procedures to improve hole-cleaning efficiency. This comprehensive sensor package allows operators to mitigate risks such as pack-offs and tool damage, monitor and efficiently transfer weight and torque along the drillstring, minimize wasted energy transfer, and manage drilling dysfunction, which minimizes non-productive time and reduces well time.



BENEFITS

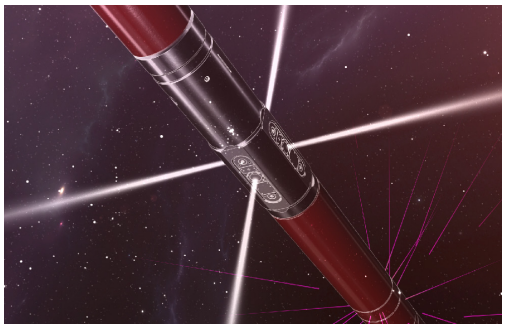
- Improve accuracy of geometric well placement and understanding of borehole tortuosity
- Acquire correlation, geosteering, and structural dip measurements
- Identify casing or coring points and determine accurate shale volumes
- Improve drilling efficiency and reduce well time
- Monitor hole cleaning and wellbore stability, and maintain wellbore pressures on extended-reach wells in real time
- Detect well flows and kicks immediately to maintain well control
- Reduce the risk of unexpected fracture or collapse

FEATURES

- Compact 13-ft (4-m) collar design moves critical measurements closer to the bit
- Definitive pumps-off surveys complemented by continuous inclination and azimuth measurements
- Comprehensive drilling dynamics from weight on bit, torque on bit, pressure, and vibration measurements
- High detector sensitivity provides precise gamma-ray measurements and clear borehole images
- Hole shape and size measurements

IMPROVE WELLBORE STABILITY

Real-time hole shape and annular-pressure measurements allow ongoing evaluation of wellbore stability and effective control of the mud program to protect formation integrity and mitigate hole problems. In the pumps-off mode, the service measures the minimum, maximum, and average pressures during non-circulating periods and transmits the results to the surface when circulation resumes. These measurements help avoid lost circulation and detect flow or kicks immediately. The BaseStar service also reduces the risk of problems caused by unexpected fracture or collapse. On extended-reach wells, real-time information helps to maintain wellbore pressures within safe operating limits.



BaseStar® Service Technical Specifications

Mechanical Specifications	4.75 inch	6.75 inch	8.00 inch
Nominal Tool OD	4.75 in. (121 mm)	6.75 in. (171 mm)	8.00 in. (203 mm)
Maximum Body OD	5.25 in. (133 mm)	7.125 in. (181 mm)	9.00 in. (229 mm)
Hole Size Range	5.875 to 6.75 in. (149 to 171 mm)	7.875 to 9.875 in. (200 to 251 mm)	10.50 to 14.75 in. (266.7 to 374.7 mm)
Collar ID*	1.25 in. (32 mm)	1.82 in. (46 mm)	2.37 in. (60 mm)
Length	13.40 ft (4.08 m)		13.88 ft (4.23 m)
Weight	735 lbm (333 kg)	1227 lbm (557 kg)	1822 lbs (827 kgs)
Connections	HAL40 (box up x pin down)	HAL50 (box up x pin down)	HAL56 (box up x pin down)
Make-Up Torque	14,000 ft lbf (1900 daN·m)	35,000 ft.lbf (4750 daN·m)	50,000 ft.lbf (6780 daN·m)
Maximum Dog Leg Severity - Rotating	14°/100 ft (14°/30 m)	10°/100 ft (10°/30 m)	8°/100 ft (8°/30 m)
Maximum Dog Leg Severity - Sliding	30°/100 ft (30°/30 m)	21°/100 ft (21°/30 m)	14°/100 ft (14°/30 m)
Maximum Drilling or Operating Rotary Torque	12,000 ft.lbf (1630 daN·m)	35,000 ft.lbf (4750 daN·m)	50,000 ft.lbf (6780 daN·m)
Operating Limits			
Temperature Range	32 to 302˚F (0 to 150˚C)		
Maximum Pressure	25,000 psi (172 MPa)		
Maximum Mass Flow Rate	5,000 lbm/min (2270 kg/min)	10,000 lbm/min (4540 kg/min)	20,000 lbm/min (9070 kg/min)
Maximum Sand Content	2%		
Maximum Rotary Speed	400 RPM		
Maximum WOB	25,000 lbf (11 000 daN)	65,000 lbf (29 000 daN)	85,000 lbf (38 000 daN)
Vibration	Refer to Sperry Drilling Downhole Tools Technical Specifications. (Available on request.)		

*Effective collar ID for hydraulics calculations.

BaseStar® Service Technical Specifications continued

Measurement Specifications	4.75 inch	6.75 inch	8.00 inch
Gamma Ray			
Detector Type	Scintillation Crystal (x2)		
Measurement Range	0 to 1000 API		
Measurement Precision*	±1.8 API @ 100 API	±2.4 API @ 100 API	
Real-Time Gamma Image	4 or 16 (compressed) sectors		
Recorded Gamma Image	16 sectors		
Measure Point from Bottom of Tool	2.69 ft (0.82 m)		2.99 ft (0.91 m)
WOB/TOB			
Weight Operating Range	30,000 lbf (13 300 daN)	65,000 lbf (29 000 daN)	85,000 lbf (38,000 daN)
Weight Resolution	1,000 lbf		
Torque Operating Range	10,000 lbf.ft (1360 daN.m)	35,000 lbf.ft (4750 daN.m)	50,000 lbf.ft (6780 daN.m)
Torque Resolution	200 lbf.ft (27 daN·m)		
Measure Point from Bottom of Tool	5.70 ft (1.74 m)		6.12 ft (1.87 m)
Pressure While Drilling			
Detector Type	Quartzdyne Transducer		
Measurement Range	0 to 30,000 psi (0 to 206.8 MPa)		
Measurement Accuracy	0.1% at Full Scale		
Measure Point from Bottom of Tool	8.03 ft (2.45 m)		8.51 ft (2.59 m)
Vibration			
Peak Accelerations	0-105 g (3 axis)		
Average Accelerations	0-25 g (3 axis)		
Burst Data Sampling Rate	1,000 Hz		
Rotary Speed	±0-500 RPM		
Measure Point from Bottom of Tool	9.13 ft (2.78 m)		9.61 ft (2.93)
Directional			
Azimuth Accuracy	±1°		
Inclination Accuracy	±0.1°		
Toolface Resolution	±2.8°		
Measure Point from Bottom of Tool	10.28 ft (3.13 m)		10.76 ft (3.28 m)

* Effective collar ID for hydraulics calculations.
**Specifications are for a 30-second interval.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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