NEOSTEER CL
Curve and lateral at-bit steerable system

The NeoSteer CL™ curve and lateral at-bit steerable system (ABSS) is specifically designed to enable drilling the curve and lateral in a faster single run where other methods require multiple trips. It achieves high build rates, increases on-bottom drilling speed, and extends lateral lengths. Especially where vertical, curve, and lateral sections are the same hole size, the NeoSteer CL ABSS not only reduces NPT by eliminating the need to change out the BHA for every section, it also lowers CO_2 emissions.

The NeoSteer CL ABSS includes comprehensive six-axis continuous inclination and azimuth measurements. The multiaxial component enables automatic hold inclination and azimuth (HIA) measurements for precise well positioning. This feature, along with self-steering capabilities, helps provide smooth tangents with minimized tortuosity. Near-bit extended-range gamma ray measurements provide additional well positioning data for improved real- time decision making.

FEATURES

- Application-specific SLB PDC bit design
- Nonmagnetic steering unit body
- Dual hydraulically activated pistons
- Inclination and azimuth closed loops to provide advanced automated tangent control
- Proprietary high-endurance-strength connector
- Near-bit measurements, including
  - Inclination
  - Azimuth
  - Gamma ray
  - Azimuthal gamma ray High-definition (HD) surveying

BENEFITS

- Achieves high build rates and long lateral length requirements
- Enables single-run drilling of vertical, curve, and lateral sections with a single BHA
- Increases leverage of force applied to bit by placing pistons with the cutting structure
- Improves control and reaction time
- Gets to TD quicker by avoiding the postcurve trip
- Drills the curve and lateral sections with one BHA
- Provides increased reservoir exposure
- Attains a high build rate with effective geosteering
- Delivers a high-quality wellbore
- Streamlines completion with straight laterals

NeoSteer CL Specifications	
Specifications	**NeoSteer CL ABSS**
Nominal OD (API)	6 3/4 in
Hole size	8 1/2 in
Overall length	13.92 ft [4.24 m]
Weight of assembly in air	1,464 lbm [664 kg]
Max. collar dogleg	sliding 16°/100 ft [16°/30 m] rotating 15°/100 ft [15°/30 m]
Max. operating torque *	16,000 ft.lbf [21,700 N.m]
Max. weight on bit	As per cutting structure specifications
Max. lost circulation material	1.5 lbm/galUS [179.74 kg/m^3] medium nut plug
Flow range **	210–970 galUS/min [794–3,671 L/min]
Lateral vibrations	Shock level ‡ (greater than 10 counts/s above 50-gn threshold), 30-min limit
Stick/slip	±100% mean rotational speed, 30-min limit
Max. rotational speed	350 rpm
Max. temperature †	302 degF [150 degC]
Max. hydrostatic pressure	20,000 psi [138 MPa]
Recommended pressure drop across bit	300–1,200 psi [2,068–8,274 kPa]
Mud sand content	1% by volume
Rotary connections	-
Collar upper connection	41⁄2 IF box
Bit box	Bit cutting structure is incorporated into the tool
Sensors	-

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Bit face to gamma ray ‡	6.23 ft [1.89 m]
Bit face to accelerometers ‡	7.16 ft [2.18 m]
Bit face to magnetometers ‡	9.25 ft [2.82 m]
Inclination accuracy	0.11 (at 1 sigma level)
Azimuth accuracy	1.8 at 90° inclination (at 1 sigma level)
Gamma ray accuracy, azimuth 4-quadrant	±5% (30-s averaging window)
Shock detector threshold, radial	50 gn ±5 gn (±500 gn max. peak)

Engineered BHA and bit design is required to deliver optimal system performance. Configurable with autonomous solutions.
Reference point for the pistons is the welded connection between the bit and tool body.

* Depending on weight on bit.

** Depending on mud weight values.

† Optional 350 degF [175 degC] available.

‡ Measurements will vary slightly depending upon the cutting structure used.