PowerDrive X6

Rotary Steerable System

APPLICATIONS

- Onshore and offshore drilling
- Elimination of sliding

BENEFITS

- Optimized well placement
- Increased wellbore smoothness and decreased tortuosity
- Prolonged life of well for further interventions

FEATURES

- 5 1/2-in to 28-in borehole size coverage
- Geostopping with near-bit gamma ray package
- Dual impeller control
- Chassis-mounted resilient electronics
- Optional hybrid configuration

PowerDrive X6* RSS is part of the PowerDrive* RSS family of fully rotating steerable systems that minimize the risk of sticking. The entire family has a complete direction and inclination sensor package close to the bit for precise well placement and independently generates power for 3D steering and control.

In any drilling environment, the PowerDrive RSS family delivers the power required to place wells accurately with superior borehole quality while ensuring maximum drilling efficiency.

MAXIMIZED RECOVERY AND RELIABILITY

The PowerDrive X6 RSS maximizes each well's productive potential, putting wells in the best place in less time. Because it delivers smoother wellbores, postdrilling operations such as running casing and wireline logging are simplified.

HIGHER EFFICIENCY AND GREATER ACCURACY THAN MOTORS

In applications where RSSs were not previously viable, a fully rotating steering system is now available with the PowerDrive X6 RSS. It delivers 3D well profiles and drills high-angle wells more efficiently compared with positive displacement motors. Near-bit measurements, available in real time, ensure accurate, productive drilling and wellbore placement.

INCREASED CONFIDENCE FROM FULL DIRECTIONAL CONTROL

The PowerDrive X6 RSS is designed for full directional control while rotating the drillstring. Efficient downlink systems and automatic inclination hold provide a smooth tangent section and improve true vertical depth accuracy in the horizontal section-critical for maximizing recoverable reserves and the well's production potential. A triaxial sensor package facilitates fast, responsive directional control in either automatic or manual operation mode. Optional

near-bit azimuthal gamma ray sensor enables fast response to formation changes.

SPECIFICATIONS		PowerDrive X6 475 RSS	PowerDrive X6 675 RSS	PowerDrive X6 825 RSS	PowerDrive X6 900 RSS	PowerDrive X6 1100 RSS
Mechanical	Nominal OD, in	4 3/4	6 3/4	8 1/4	9	11
	Overall length, ft	13.65	13.47	13.84	13.84	15.22
	Dogleg severity (DLS) capability, °/100 ft †	10	8	6	5	2
	Hole sizes, in	5 1/2 - 6 3/4	7 7/8 - 9 7/8	10 5/8 - 11 5/8	12 - 18 1/2	20 - 28
	Bit speed, rpm	0 - 220	0 - 220	0 - 220	0 - 220	0 - 125
	Maximum weight on bit, lbf ‡	31,000	180,000	270,000	370,000	225,000
	Maximum torque on bit, ft.lbf §	9,000	18,500	45,000	45,000	70,000
	Maximum overpull, lbf	340,000	1,100,000	1,100,000	1,800,000	2,500,000
	Passthrough (DLS sliding), °	30	16	12	10	4
	Bit connection (box)	3 1/2 Reg	4 1/2 Reg or 6 5/8 Reg	6 5/8 Reg	6 5/8 Reg or 7 5/8 Reg	7 5/8 Reg
Hydraulics §§	Flow range, galUS/min ††	170 - 310	210 - 970	280 - 2,000	280 - 2,000	280 - 2,000
	Maximum mud density, lbm/galUS	24	24	24	24	24
	Maximum sand content, %	1	1	1	1	1
	Lost circulation material (LCM), lbm/bbl §§	35	50	50	50	50
	Acidity level, pH	9.5 - 12	9.5 - 12	9.5 - 12	9.5 - 12	9.5 - 12
	Oxygen, ppm	1	1	1	1	1
Pressure, temperature and shock	Maximum temperature, degF	302	302	302	302	302
	Maximum pressure, psi	20,000	20,000	20,000	20,000	20,000
	Maximum cumulative shock count, count	200,000 > 50 gn	200,000 > 50 gn	200,000 > 50 gn	200,000 > 50 gn	200,000 > 50 gn
	Maximum peak shock, gn	250	250	250	250	250
Mesurements §§§	Inclination offset to tool bottom, ft	6.76	7.13	7.60	7.70	9
	Azimuth offset to tool bottom, ft	8.86	9.33	9.80	9.90	11.20
	Azimuthal gamma ray	Four bin	Four bin	Four bin	Four bin	Four bin
	Average gamma ray	Yes	Yes	Yes	Yes	Yes
	Gamma ray offset to tool bottom, ft	5.86	6.33	6.80	6.90	8.20
	Vibration range (axial), gn	0 - 35	0 - 35	0 - 35	0 - 35	0 - 35
	Vibration range (radial), gn	0 - 75	0 - 75	0 - 75	0 - 75	0 - 75
	Shock range, gn	625	625	625	625	625
	Shock and vibration axis	Triaxial	Triaxial	Triaxial	Triaxial	Triaxial
	Magnetic field cone of exclusion	None	None	None	None	None
Specifics	Automated loop	Inclination	Inclination	Inclination	Inclination	Inclination
	Downlinking method	Flow	Flow	Flow	Flow	Flow

† Value dependent on application-bit. BHA, parameters, formation type, etc.
‡ Maximum at 0-ft.lbf torque on bit; bit recommendations should be considered.
§ Maximum at 0-lbf weight on bit.
†† Dependent on mud density.
‡‡ Special configuration available for silicate muds. §§ Depends on the type of LCM.
††† Sensor offsets and tool weight vary depending on hole size configuration.