



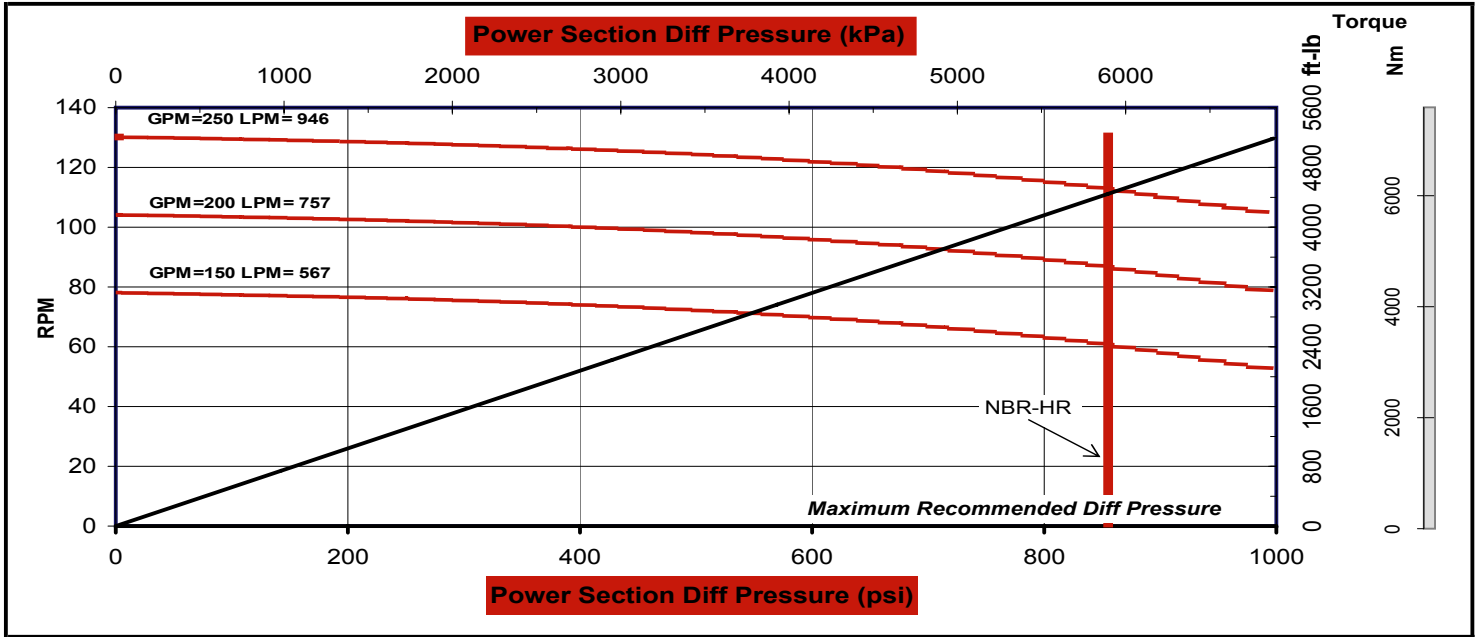
**Discovery
Downhole
Services, Inc.**

Ph: 307-232-1234
Fax: 307-232-1238

**SHORT SUPERHAWK 475 – 7:8 Profile
3.8 Stage HR - 4 3/4" O.D.**

GENERAL DATA			
BIT SIZES	6" thru 7 7/8"	MAX. WOB – (w/flow)	28,750 lbs
BIT CONNECTION	3 ½ REG	OPTIMUM WOB - (w/flow)	14,500 Lbs
TOP CONNECTION	3 ½ IF	MAX. WOB – (w/o flow)	129,000 lbs
TORQUE - CONNECTIONS	8,500 ft-lb	MAX. BIT PULL – (w/damage)	190,000 lbs
TORQUE - ABH	9,000 ft-lb	MAX BODY PULL – (w/damage)	403,000 lbs

PHYSICAL PROPERTIES	
BIT TO BEND LENGTH (ABH)	51.45 in.
BIT TO BEND LENGTH (FIXED)	37.63 in.
NOMINAL LENGTH	267.38 in.
WEIGHT	1,050 lbs
PERFORMANCE DATA	
FLOW RANGE	150 - 250 gpm
SPEED RANGE	78 - 140 rpm
SPEED RATIO	.521 rev/gal
MAX. DIFFERENTIAL PRESSURE	860 psi
TORQUE RATIO	5.20 ft-lb/psi
TORQUE AT MAX DIFFERENTIAL	4,450 ft-lbs
STALL TORQUE	6,670 ft-lbs



CALCULATED BUILD UP RATES – DEGREES / 100 ft.* (FIXED)								
Angle (Deg)	Hole Size (in) – Slick Sleeve				Hole Size (in) - Stabilized			
	6"	6 1/8"	6 3/4"	7 7/8"	6"	6 1/8"	6 3/4"	7 7/8"
0.25	3.5	3.3	1.8		2.1	2.3	2.9	4.0
0.50	5.2	5.0	3.5		4.1	4.3	4.9	6.0
0.75	6.9	6.7	5.2	2.6	6.2	6.3	6.9	8.0
1.00	8.7	8.4	6.9	4.3	8.2	8.3	8.9	10.0
1.25	10.4	10.1	8.6	6.0	10.2	10.3	10.9	12.1
1.50	12.1	11.8	10.3	7.7	12.2	12.3	12.9	14.1
1.75	13.8	13.5	12.0	9.4	14.2	14.3	15.0	16.1
2.00	15.5	15.2	13.7	11.1	16.2	16.3	17.0	18.1
2.25	17.2	16.9	15.4	12.8	18.2	18.4	19.0	20.1
2.50	18.9	18.6	17.1	14.5	20.2	20.4	21.0	22.1
2.75	20.6	20.3	18.8	16.2	22.3	22.4	23.0	24.1
3.00	22.3	22.0	20.5	17.9	24.3	24.4	25.0	26.2

CALCULATED BUILD UP RATES – DEGREES / 100 ft.* (ABH)								
Angle (Deg)	Hole Size (in) – Slick Sleeve				Hole Size (in) - Stabilized			
	6"	6 1/8"	6 3/4"	7 7/8"	6"	6 1/8"	6 3/4"	7 7/8"
0.25	1.4	1.3			2.0	2.1	2.8	3.9
0.50	3.1	3.0	2.2		3.9	4.0	4.7	5.8
0.75	4.8	4.7	3.9	2.4	5.8	5.9	6.5	7.7
1.00	6.5	6.4	5.6	4.1	7.7	7.8	8.4	9.6
1.25	8.2	8.1	7.3	5.8	9.6	9.7	10.3	11.5
1.50	9.9	9.8	9.0	7.5	11.5	11.6	12.2	13.3
1.75	11.6	11.5	10.7	9.2	13.4	13.5	14.1	15.2
2.00	13.3	13.2	12.4	10.9	15.3	15.4	16.0	17.1
2.25	15.0	14.9	14.1	12.6	17.1	17.3	17.9	19.0
2.50	16.7	16.6	15.8	14.3	19.0	19.2	19.8	20.9
2.75	18.4	18.3	17.5	16.0	20.9	21.1	21.7	22.8
3.00	20.1	20.0	19.2	17.7	22.8	22.9	23.6	24.7

* Actual Build Up Rates subject to varying factors; including formation, weight on bit.