

# Cub Creek Energy, LLC

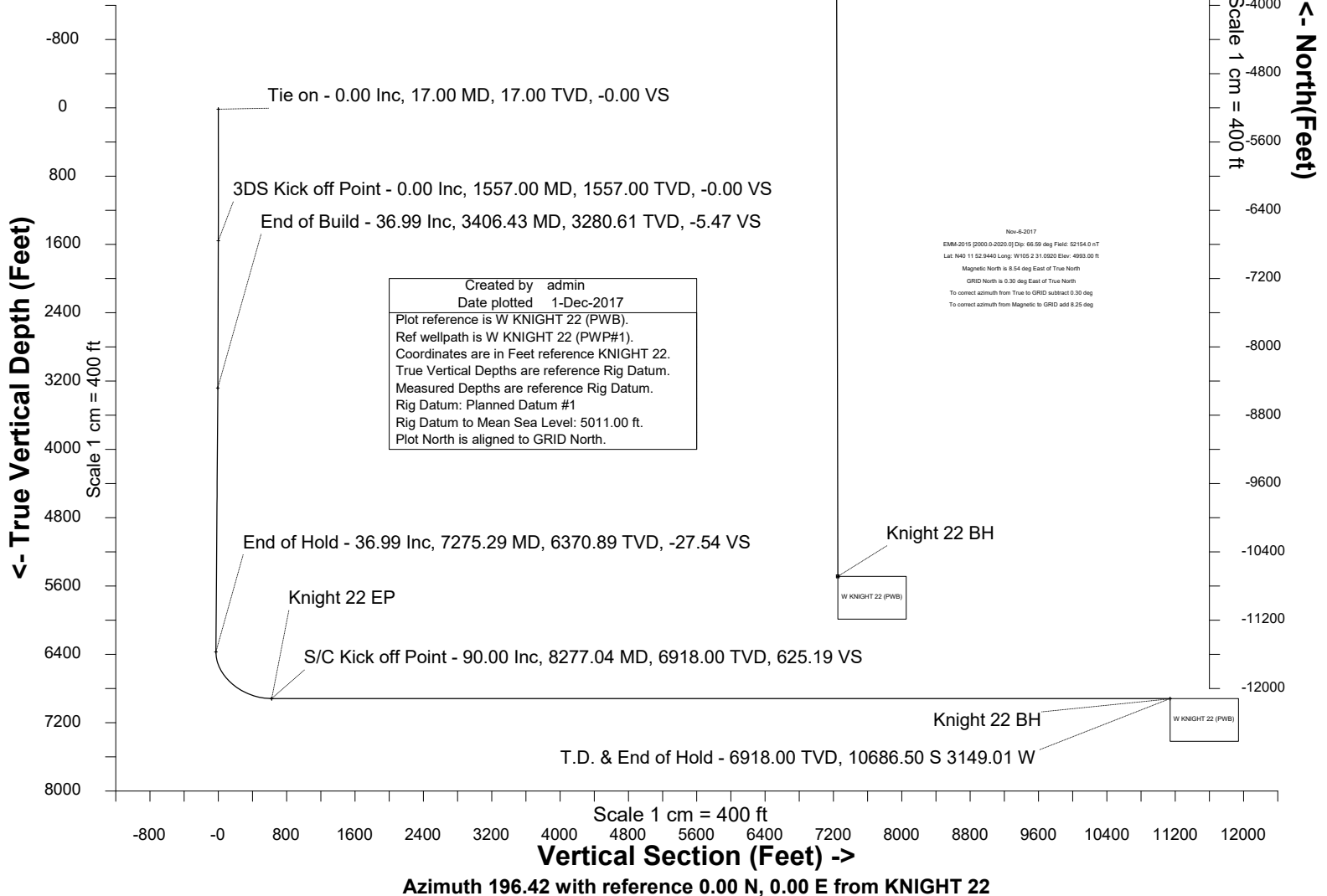
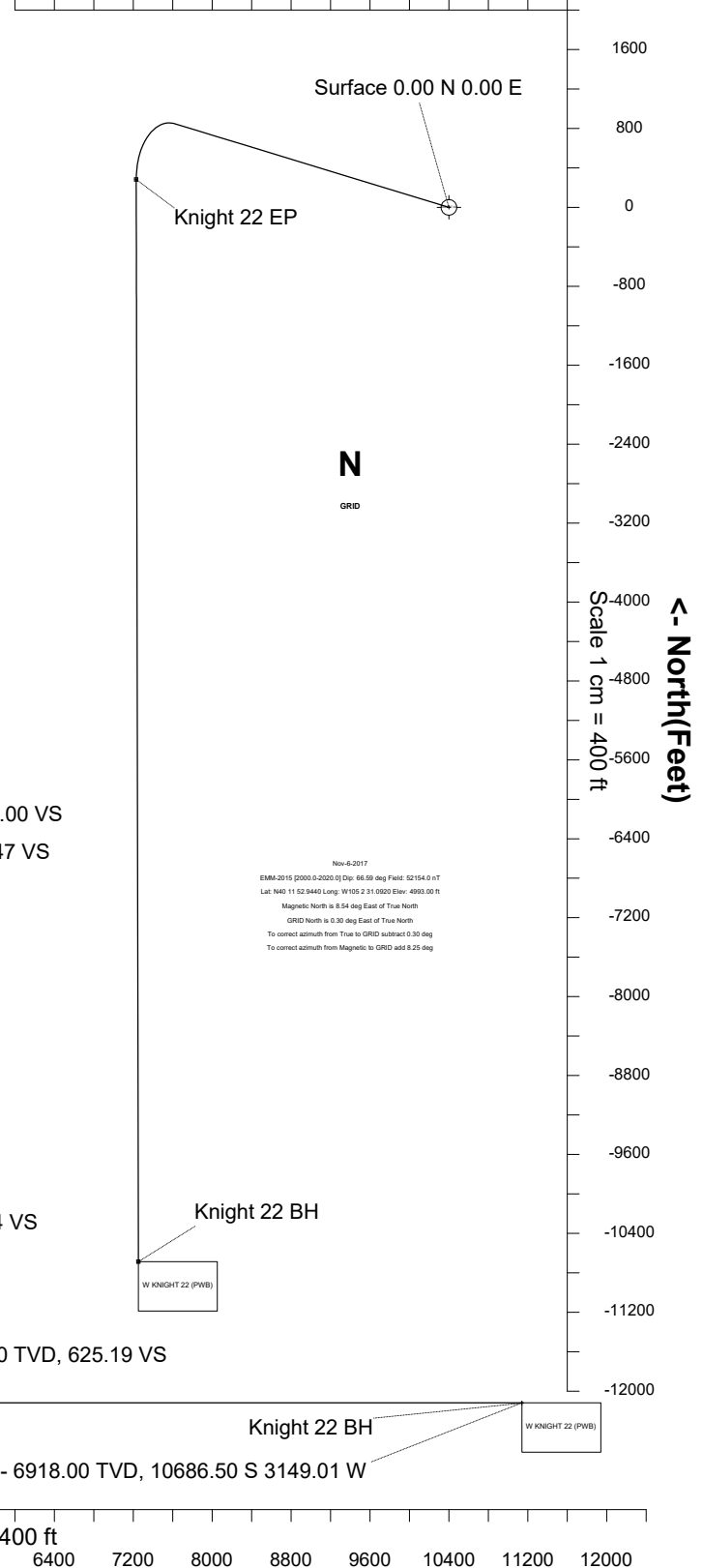
<b>Location</b>	<b>Weld County, CO</b>	<b>Slot</b>	<b>KNIGHT 22</b>
<b>Field</b>	<b>WATTENBERG</b>	<b>Well</b>	<b>W KNIGHT 22</b>
<b>Installation</b>	<b>Knight Pad</b>	<b>Wellbore</b>	<b>W KNIGHT 22 (PWB)</b>

## WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	17.00	0.00	0.00	17.00	S 0.00	W 0.00		-0.00
KOP	1557.00	0.00	286.96	1557.00	S 0.00	W 0.00	0.00	-0.00
End of Build	3406.43	36.99	286.96	3280.61	N 168.19	W 551.44	2.00	-5.47
End of Hold	7275.29	36.99	286.96	6370.89	N 847.28	W 2777.90	0.00	-27.54
Target Knight 22 EP	8277.04	90.00	179.89	6918.00	N 282.56	W 3170.72	10.00	625.19
T.D. & Target Kni... BH	19246.12	90.00	179.89	6918.00	S 10686.50	W 3149.01	0.00	11140.81

East (Feet) ->

-4000 -3200 -2400 -1600 -800 0 800  
Scale 1 cm = 400 ft





SYSDRILL  
Well Design Combined Report  
Wellbore: W KNIGHT 22 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
KNIGHT 22	40.19796000	-105.04205500	1315289.6373	3127921.9559	29.27S	23.59W	0.00

Declination		
Date	Source	Time
Nov-6-2017	EMM-2015 [2000.0-2020.0]	14:52

Installation Details						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Knight Pad	40.19804000	-105.04197000	1315318.9022	3127945.5490	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Summary Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Northing	Easting
17.00	0.00	0.000	17.00	0.00N	0.00E		0.00	1315289.64	3127921.96
1557.00	0.00	286.960	1557.00	0.00N	0.00E	==>	0.00	1315289.64	3127921.96
3406.43	36.99	286.960	3280.61	168.19N	551.44W	2.00	-5.47	1315457.82	3127370.54
7275.29	36.99	286.960	6370.89	847.28N	2777.90W	==>	-27.54	1316136.88	3125144.18
8277.04	90.00	179.890	6918.00	282.56N	3170.72W	10.00	625.19	1315572.18	3124751.38
19246.12	90.00	179.890	6918.00	10686.50S	3149.01W	==>	11140.81	1304603.61	3124773.08

Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
0.00	0.00	0.000	0.00	0.00N	0.00E		0.00	Rig Datum
17.00	0.00	0.000	17.00	0.00N	0.00E	==>	0.00	Slot Datum
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	
1000.00	0.00	0.000	1000.00	0.00N	0.00E	==>	0.00	
1100.00	0.00	0.000	1100.00	0.00N	0.00E	==>	0.00	
1200.00	0.00	0.000	1200.00	0.00N	0.00E	==>	0.00	
1300.00	0.00	0.000	1300.00	0.00N	0.00E	==>	0.00	
1400.00	0.00	0.000	1400.00	0.00N	0.00E	==>	0.00	
1500.00	0.00	0.000	1500.00	0.00N	0.00E	==>	0.00	
1600.00	0.86	286.960	1600.00	0.09N	0.31W	2.00	-0.00	
1700.00	2.86	286.960	1699.94	1.04N	3.41W	2.00	-0.03	
1800.00	4.86	286.960	1799.71	3.00N	9.85W	2.00	-0.10	
1900.00	6.86	286.960	1899.18	5.98N	19.62W	2.00	-0.19	
2000.00	8.86	286.960	1998.24	9.97N	32.70W	2.00	-0.32	
2100.00	10.86	286.960	2096.75	14.97N	49.08W	2.00	-0.49	
2200.00	12.86	286.960	2194.61	20.96N	68.73W	2.00	-0.68	
2300.00	14.86	286.960	2291.70	27.95N	91.64W	2.00	-0.91	
2400.00	16.86	286.960	2387.89	35.92N	117.78W	2.00	-1.17	
2500.00	18.86	286.960	2483.06	44.87N	147.12W	2.00	-1.46	
2600.00	20.86	286.960	2577.11	54.78N	179.61W	2.00	-1.78	
2700.00	22.86	286.960	2669.92	65.64N	215.22W	2.00	-2.13	
2800.00	24.86	286.960	2761.36	77.44N	253.91W	2.00	-2.52	
2900.00	26.86	286.960	2851.35	90.17N	295.63W	2.00	-2.93	
3000.00	28.86	286.960	2939.75	103.80N	340.32W	2.00	-3.37	
3100.00	30.86	286.960	3026.47	118.33N	387.94W	2.00	-3.85	

All data is in Feet unless otherwise stated  
Coordinates are from Slot MD's are from Rig ( Planned Datum #1 5011.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 196.420 degrees  
Bottom hole distance is 11140.81 Feet on azimuth 196.42 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Microsoft  
Date Printed: 1-Dec-2017



SYSDRILL  
Well Design Combined Report  
Wellbore: W KNIGHT 22 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
3200.00	32.86	286.960	3111.40	133.72N	438.43W	2.00	-4.35	
3300.00	34.86	286.960	3194.44	149.98N	491.72W	2.00	-4.88	
3400.00	36.86	286.960	3275.48	167.07N	547.75W	2.00	-5.43	
3500.00	36.99	286.960	3355.36	184.62N	605.29W	==>	-6.00	
3600.00	36.99	286.960	3435.23	202.17N	662.84W	==>	-6.57	
3700.00	36.99	286.960	3515.11	219.72N	720.39W	==>	-7.14	
3800.00	36.99	286.960	3594.98	237.28N	777.94W	==>	-7.71	
3900.00	36.99	286.960	3674.86	254.83N	835.48W	==>	-8.28	
4000.00	36.99	286.960	3754.74	272.38N	893.03W	==>	-8.85	
4100.00	36.99	286.960	3834.61	289.93N	950.58W	==>	-9.42	
4200.00	36.99	286.960	3914.49	307.49N	1008.13W	==>	-10.00	
4300.00	36.99	286.960	3994.36	325.04N	1065.68W	==>	-10.57	
4400.00	36.99	286.960	4074.24	342.59N	1123.23W	==>	-11.14	
4500.00	36.99	286.960	4154.11	360.15N	1180.77W	==>	-11.71	
4600.00	36.99	286.960	4233.99	377.70N	1238.32W	==>	-12.28	
4700.00	36.99	286.960	4313.86	395.25N	1295.87W	==>	-12.85	
4800.00	36.99	286.960	4393.74	412.80N	1353.42W	==>	-13.42	
4900.00	36.99	286.960	4473.62	430.36N	1410.97W	==>	-13.99	
5000.00	36.99	286.960	4553.49	447.91N	1468.51W	==>	-14.56	
5100.00	36.99	286.960	4633.37	465.46N	1526.06W	==>	-15.13	
5200.00	36.99	286.960	4713.24	483.01N	1583.61W	==>	-15.70	
5300.00	36.99	286.960	4793.12	500.57N	1641.16W	==>	-16.27	
5400.00	36.99	286.960	4872.99	518.12N	1698.71W	==>	-16.84	
5500.00	36.99	286.960	4952.87	535.67N	1756.25W	==>	-17.41	
5600.00	36.99	286.960	5032.75	553.22N	1813.80W	==>	-17.98	
5700.00	36.99	286.960	5112.62	570.78N	1871.35W	==>	-18.55	
5800.00	36.99	286.960	5192.50	588.33N	1928.90W	==>	-19.12	
5900.00	36.99	286.960	5272.37	605.88N	1986.45W	==>	-19.69	
6000.00	36.99	286.960	5352.25	623.44N	2044.00W	==>	-20.27	
6100.00	36.99	286.960	5432.12	640.99N	2101.54W	==>	-20.84	
6200.00	36.99	286.960	5512.00	658.54N	2159.09W	==>	-21.41	
6300.00	36.99	286.960	5591.87	676.09N	2216.64W	==>	-21.98	
6400.00	36.99	286.960	5671.75	693.65N	2274.19W	==>	-22.55	
6500.00	36.99	286.960	5751.63	711.20N	2331.74W	==>	-23.12	
6600.00	36.99	286.960	5831.50	728.75N	2389.28W	==>	-23.69	
6700.00	36.99	286.960	5911.38	746.30N	2446.83W	==>	-24.26	
6800.00	36.99	286.960	5991.25	763.86N	2504.38W	==>	-24.83	
6900.00	36.99	286.960	6071.13	781.41N	2561.93W	==>	-25.40	
7000.00	36.99	286.960	6151.00	798.96N	2619.48W	==>	-25.97	
7100.00	36.99	286.960	6230.88	816.51N	2677.03W	==>	-26.54	
7200.00	36.99	286.960	6310.75	834.07N	2734.57W	==>	-27.11	
7300.00	36.47	282.920	6390.70	851.09N	2792.17W	10.00	-27.16	
7400.00	35.82	265.960	6471.66	855.69N	2850.47W	10.00	-15.09	
7500.00	37.54	249.430	6552.05	842.89N	2908.33W	10.00	13.54	
7600.00	41.34	234.830	6629.44	813.09N	2964.00W	10.00	57.86	
7700.00	46.69	222.640	6701.46	767.19N	3015.76W	10.00	116.52	
7800.00	53.11	212.600	6765.94	706.58N	3062.07W	10.00	187.75	
7900.00	60.24	204.190	6820.91	633.11N	3101.50W	10.00	269.37	
8000.00	67.83	196.940	6864.70	549.00N	3132.87W	10.00	358.91	
8100.00	75.71	190.450	6895.98	456.83N	3155.21W	10.00	453.64	
8200.00	83.75	184.410	6913.80	359.37N	3167.85W	10.00	550.69	
8300.00	90.00	179.890	6918.00	259.60N	3170.68W	==>	647.20	
8400.00	90.00	179.890	6918.00	159.60N	3170.48W	==>	743.06	
8500.00	90.00	179.890	6918.00	59.60N	3170.28W	==>	838.93	
8600.00	90.00	179.890	6918.00	40.40S	3170.08W	==>	934.80	
8700.00	90.00	179.890	6918.00	140.40S	3169.88W	==>	1030.66	
8800.00	90.00	179.890	6918.00	240.40S	3169.69W	==>	1126.53	
8900.00	90.00	179.890	6918.00	340.40S	3169.49W	==>	1222.39	
9000.00	90.00	179.890	6918.00	440.40S	3169.29W	==>	1318.26	

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Vertical Section is from 0.00N 0.00E on azimuth 196.420 degrees  
Bottom hole distance is 11140.81 Feet on azimuth 196.42 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Microsoft  
Date Printed: 1-Dec-2017



SYSDRILL  
Well Design Combined Report  
Wellbore: W KNIGHT 22 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
9100.00	90.00	179.890	6918.00	540.40S	3169.09W	==>	1414.13	
9200.00	90.00	179.890	6918.00	640.40S	3168.89W	==>	1509.99	
9300.00	90.00	179.890	6918.00	740.40S	3168.70W	==>	1605.86	
9400.00	90.00	179.890	6918.00	840.40S	3168.50W	==>	1701.72	
9500.00	90.00	179.890	6918.00	940.40S	3168.30W	==>	1797.59	
9600.00	90.00	179.890	6918.00	1040.40S	3168.10W	==>	1893.46	
9700.00	90.00	179.890	6918.00	1140.40S	3167.91W	==>	1989.32	
9800.00	90.00	179.890	6918.00	1240.40S	3167.71W	==>	2085.19	
9900.00	90.00	179.890	6918.00	1340.40S	3167.51W	==>	2181.05	
10000.00	90.00	179.890	6918.00	1440.40S	3167.31W	==>	2276.92	
10100.00	90.00	179.890	6918.00	1540.40S	3167.11W	==>	2372.79	
10200.00	90.00	179.890	6918.00	1640.40S	3166.92W	==>	2468.65	
10300.00	90.00	179.890	6918.00	1740.40S	3166.72W	==>	2564.52	
10400.00	90.00	179.890	6918.00	1840.40S	3166.52W	==>	2660.38	
10500.00	90.00	179.890	6918.00	1940.40S	3166.32W	==>	2756.25	
10600.00	90.00	179.890	6918.00	2040.40S	3166.12W	==>	2852.12	
10700.00	90.00	179.890	6918.00	2140.40S	3165.93W	==>	2947.98	
10800.00	90.00	179.890	6918.00	2240.40S	3165.73W	==>	3043.85	
10900.00	90.00	179.890	6918.00	2340.40S	3165.53W	==>	3139.71	
11000.00	90.00	179.890	6918.00	2440.40S	3165.33W	==>	3235.58	
11100.00	90.00	179.890	6918.00	2540.40S	3165.13W	==>	3331.45	
11200.00	90.00	179.890	6918.00	2640.40S	3164.94W	==>	3427.31	
11300.00	90.00	179.890	6918.00	2740.40S	3164.74W	==>	3523.18	
11400.00	90.00	179.890	6918.00	2840.40S	3164.54W	==>	3619.04	
11500.00	90.00	179.890	6918.00	2940.40S	3164.34W	==>	3714.91	
11600.00	90.00	179.890	6918.00	3040.39S	3164.15W	==>	3810.78	
11700.00	90.00	179.890	6918.00	3140.39S	3163.95W	==>	3906.64	
11800.00	90.00	179.890	6918.00	3240.39S	3163.75W	==>	4002.51	
11900.00	90.00	179.890	6918.00	3340.39S	3163.55W	==>	4098.37	
12000.00	90.00	179.890	6918.00	3440.39S	3163.35W	==>	4194.24	
12100.00	90.00	179.890	6918.00	3540.39S	3163.16W	==>	4290.11	
12200.00	90.00	179.890	6918.00	3640.39S	3162.96W	==>	4385.97	
12300.00	90.00	179.890	6918.00	3740.39S	3162.76W	==>	4481.84	
12400.00	90.00	179.890	6918.00	3840.39S	3162.56W	==>	4577.70	
12500.00	90.00	179.890	6918.00	3940.39S	3162.36W	==>	4673.57	
12600.00	90.00	179.890	6918.00	4040.39S	3162.17W	==>	4769.44	
12700.00	90.00	179.890	6918.00	4140.39S	3161.97W	==>	4865.30	
12800.00	90.00	179.890	6918.00	4240.39S	3161.77W	==>	4961.17	
12900.00	90.00	179.890	6918.00	4340.39S	3161.57W	==>	5057.03	
13000.00	90.00	179.890	6918.00	4440.39S	3161.37W	==>	5152.90	
13100.00	90.00	179.890	6918.00	4540.39S	3161.18W	==>	5248.77	
13200.00	90.00	179.890	6918.00	4640.39S	3160.98W	==>	5344.63	
13300.00	90.00	179.890	6918.00	4740.39S	3160.78W	==>	5440.50	
13400.00	90.00	179.890	6918.00	4840.39S	3160.58W	==>	5536.36	
13500.00	90.00	179.890	6918.00	4940.39S	3160.39W	==>	5632.23	
13600.00	90.00	179.890	6918.00	5040.39S	3160.19W	==>	5728.10	
13700.00	90.00	179.890	6918.00	5140.39S	3159.99W	==>	5823.96	
13800.00	90.00	179.890	6918.00	5240.39S	3159.79W	==>	5919.83	
13900.00	90.00	179.890	6918.00	5340.39S	3159.59W	==>	6015.69	
14000.00	90.00	179.890	6918.00	5440.39S	3159.40W	==>	6111.56	
14100.00	90.00	179.890	6918.00	5540.39S	3159.20W	==>	6207.43	
14200.00	90.00	179.890	6918.00	5640.39S	3159.00W	==>	6303.29	
14300.00	90.00	179.890	6918.00	5740.39S	3158.80W	==>	6399.16	
14400.00	90.00	179.890	6918.00	5840.39S	3158.60W	==>	6495.02	
14500.00	90.00	179.890	6918.00	5940.39S	3158.41W	==>	6590.89	
14600.00	90.00	179.890	6918.00	6040.39S	3158.21W	==>	6686.76	
14700.00	90.00	179.890	6918.00	6140.39S	3158.01W	==>	6782.62	
14800.00	90.00	179.890	6918.00	6240.39S	3157.81W	==>	6878.49	
14900.00	90.00	179.890	6918.00	6340.39S	3157.61W	==>	6974.35	

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Well Design Combined Report  
Wellbore: W KNIGHT 22 (PWB)



Interpolated Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	All Station Comments
15000.00	90.00	179.890	6918.00	6440.39S	3157.42W	==>	7070.22	
15100.00	90.00	179.890	6918.00	6540.39S	3157.22W	==>	7166.09	
15200.00	90.00	179.890	6918.00	6640.39S	3157.02W	==>	7261.95	
15300.00	90.00	179.890	6918.00	6740.39S	3156.82W	==>	7357.82	
15400.00	90.00	179.890	6918.00	6840.39S	3156.63W	==>	7453.68	
15500.00	90.00	179.890	6918.00	6940.39S	3156.43W	==>	7549.55	
15600.00	90.00	179.890	6918.00	7040.39S	3156.23W	==>	7645.42	
15700.00	90.00	179.890	6918.00	7140.39S	3156.03W	==>	7741.28	
15800.00	90.00	179.890	6918.00	7240.39S	3155.83W	==>	7837.15	
15900.00	90.00	179.890	6918.00	7340.39S	3155.64W	==>	7933.01	
16000.00	90.00	179.890	6918.00	7440.39S	3155.44W	==>	8028.88	
16100.00	90.00	179.890	6918.00	7540.39S	3155.24W	==>	8124.75	
16200.00	90.00	179.890	6918.00	7640.39S	3155.04W	==>	8220.61	
16300.00	90.00	179.890	6918.00	7740.39S	3154.84W	==>	8316.48	
16400.00	90.00	179.890	6918.00	7840.39S	3154.65W	==>	8412.34	
16500.00	90.00	179.890	6918.00	7940.39S	3154.45W	==>	8508.21	
16600.00	90.00	179.890	6918.00	8040.39S	3154.25W	==>	8604.08	
16700.00	90.00	179.890	6918.00	8140.38S	3154.05W	==>	8699.94	
16800.00	90.00	179.890	6918.00	8240.38S	3153.85W	==>	8795.81	
16900.00	90.00	179.890	6918.00	8340.38S	3153.66W	==>	8891.67	
17000.00	90.00	179.890	6918.00	8440.38S	3153.46W	==>	8987.54	
17100.00	90.00	179.890	6918.00	8540.38S	3153.26W	==>	9083.41	
17200.00	90.00	179.890	6918.00	8640.38S	3153.06W	==>	9179.27	
17300.00	90.00	179.890	6918.00	8740.38S	3152.87W	==>	9275.14	
17400.00	90.00	179.890	6918.00	8840.38S	3152.67W	==>	9371.00	
17500.00	90.00	179.890	6918.00	8940.38S	3152.47W	==>	9466.87	
17600.00	90.00	179.890	6918.00	9040.38S	3152.27W	==>	9562.74	
17700.00	90.00	179.890	6918.00	9140.38S	3152.07W	==>	9658.60	
17800.00	90.00	179.890	6918.00	9240.38S	3151.88W	==>	9754.47	
17900.00	90.00	179.890	6918.00	9340.38S	3151.68W	==>	9850.33	
18000.00	90.00	179.890	6918.00	9440.38S	3151.48W	==>	9946.20	
18100.00	90.00	179.890	6918.00	9540.38S	3151.28W	==>	10042.07	
18200.00	90.00	179.890	6918.00	9640.38S	3151.08W	==>	10137.93	
18300.00	90.00	179.890	6918.00	9740.38S	3150.89W	==>	10233.80	
18400.00	90.00	179.890	6918.00	9840.38S	3150.69W	==>	10329.66	
18500.00	90.00	179.890	6918.00	9940.38S	3150.49W	==>	10425.53	
18600.00	90.00	179.890	6918.00	10040.38S	3150.29W	==>	10521.40	
18700.00	90.00	179.890	6918.00	10140.38S	3150.09W	==>	10617.26	
18800.00	90.00	179.890	6918.00	10240.38S	3149.90W	==>	10713.13	
18900.00	90.00	179.890	6918.00	10340.38S	3149.70W	==>	10809.00	
19000.00	90.00	179.890	6918.00	10440.38S	3149.50W	==>	10904.86	
19100.00	90.00	179.890	6918.00	10540.38S	3149.30W	==>	11000.73	
19200.00	90.00	179.890	6918.00	10640.38S	3149.11W	==>	11096.59	
19246.12	90.00	179.890	6918.00	10686.50S	3149.01W	==>	11140.81	

All data is in Feet unless otherwise stated  
Coordinates are from Slot MD's are from Rig and TVD's are from Rig ( Planned Datum #1 5011.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 196.420 degrees  
Bottom hole distance is 11140.81 Feet on azimuth 196.42 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Microsoft  
Date Printed: 1-Dec-2017



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
Knight 22 EP	282.56N	3170.72W	6918.00	40.19878000	-105.05340000	1315572.18	3124751.38
Knight 22 BH	10686.50S	3149.01W	6918.00	40.16867000	-105.05352000	1304603.61	3124773.08

Notes