

Cub Creek Energy, LLC

Location	Weld County, CO	Slot	KNIGHT 10
Field	WATTENBERG	Well	W KNIGHT 10
Installation	Knight Pad	Wellbore	W KNIGHT 10 (PWB)

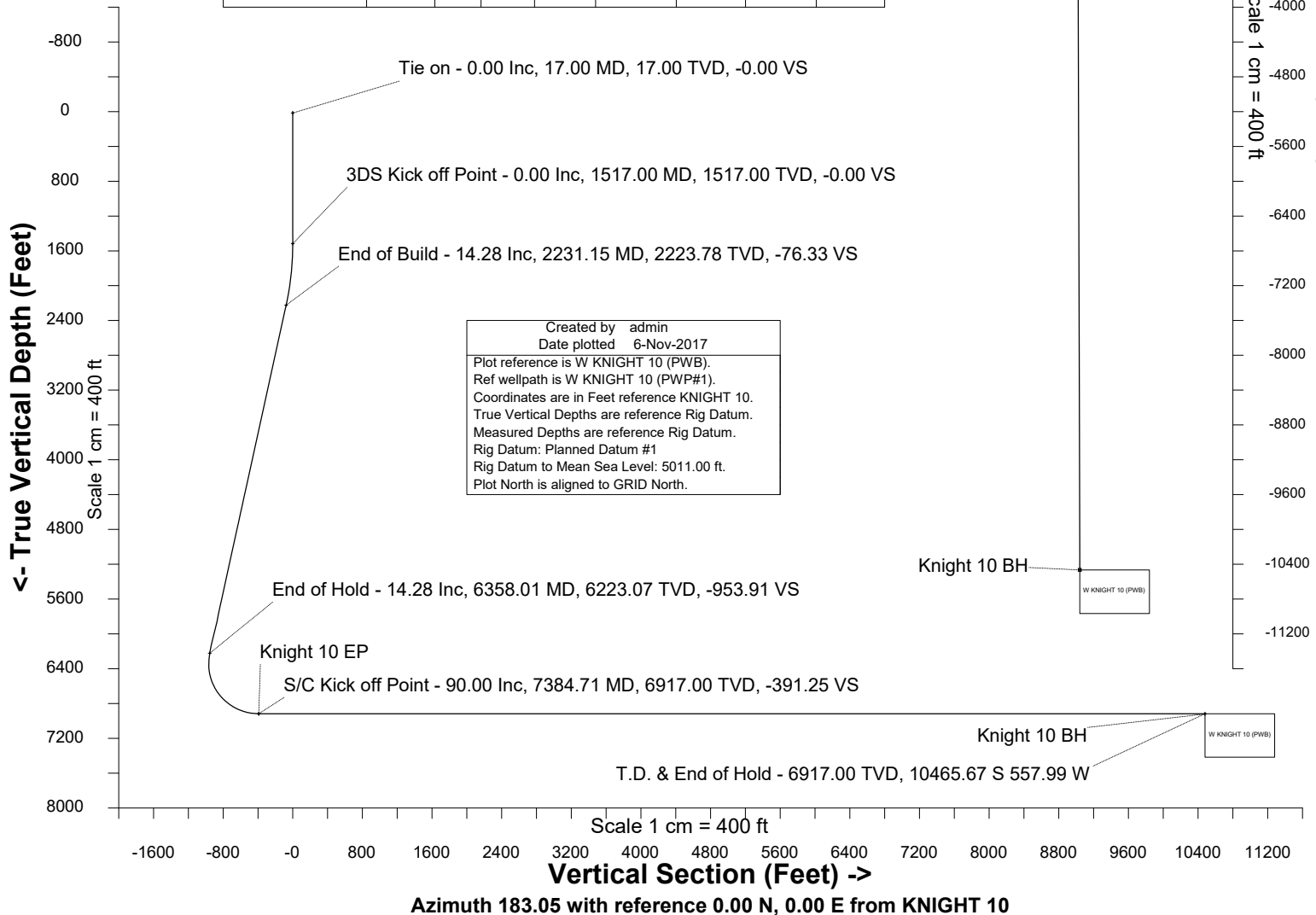
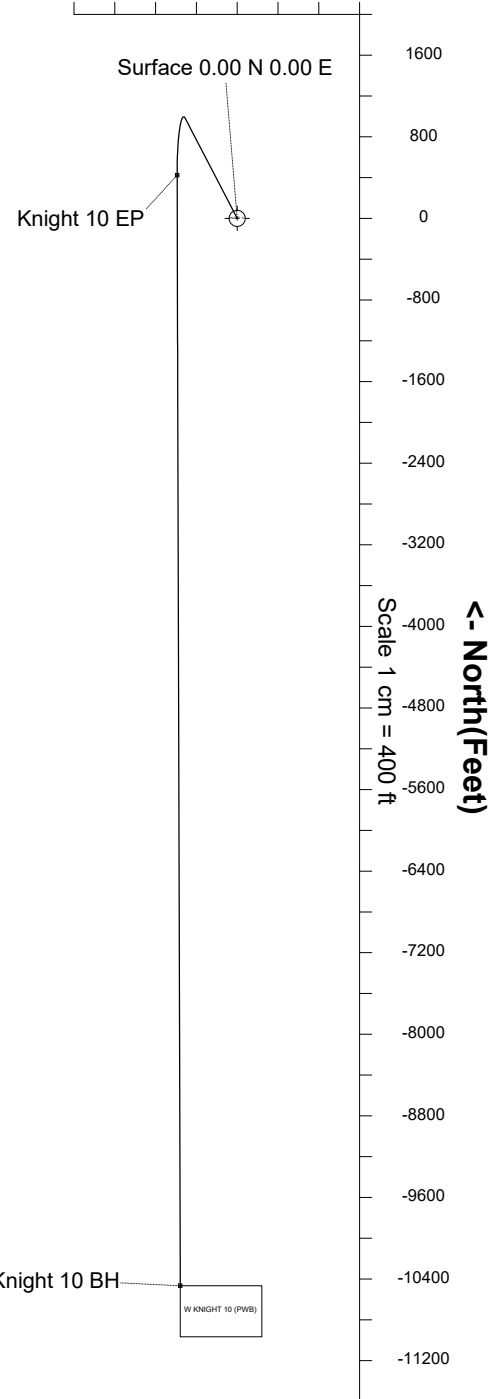
WELL PROFILE DATA

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	1517.00	0.00	332.59	1517.00	S 0.00	W 0.00	0.00	-0.00
End of Build	2231.15	14.28	332.59	2223.78	N 78.61	W 40.77	2.00	-76.33
End of Hold	6358.01	14.28	332.59	6223.07	N 982.43	W 509.52	0.00	-953.91
Target Knight 10 EP	7384.71	90.00	179.84	6917.00	N 423.20	W 588.83	10.00	-391.25
T.D. & Target Kni... BH	18273.62	90.00	179.84	6917.00	S 10465.67	W 557.99	0.00	10480.53

East (Feet) ->

-1600 -800 -0 800

Scale 1 cm = 400 ft



Nov-6-2017
 EMMA-2015 [2000.0-2000.0] Dip: 66.59 deg Field: 52154.0 nT
 Lat: N40 11 52.9440 Long: W105 2 31.0000 Elev: 4993.00 ft
 Magnetic North is 8.54 deg East of True North
 GRID North is 0.30 deg East of True North
 To correct azimuth from True to GRID subtract 0.30 deg
 To correct azimuth from Magnetic to GRID add 8.25 deg

Created by admin
 Date plotted 6-Nov-2017
 Plot reference is W KNIGHT 10 (PWB).
 Ref wellpath is W KNIGHT 10 (PWP#1).
 Coordinates are in Feet reference KNIGHT 10.
 True Vertical Depths are reference Rig Datum.
 Measured Depths are reference Rig Datum.
 Rig Datum: Planned Datum #1
 Rig Datum to Mean Sea Level: 5011.00 ft.
 Plot North is aligned to GRID North.



SYSDRILL
Well Design Combined Report
Wellbore: W KNIGHT 10 (PWB)



Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
KNIGHT 10	40.19767000	-105.04197000	1315184.1193	3127946.2452	134.79S	0.70E	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	1315184.12	3127946.25
1517.00	0.00	332.590	1517.00	0.00N	0.00E	==>	0.00	1315184.12	3127946.25
2231.15	14.28	332.590	2223.78	78.61N	40.77W	2.00	-76.33	1315262.73	3127905.48
6358.01	14.28	332.590	6223.07	982.43N	509.52W	==>	-953.91	1316166.51	3127436.75
7384.71	90.00	179.840	6917.00	423.20N	588.83W	10.00	-391.25	1315607.30	3127357.44
18273.62	90.00	179.840	6917.00	10465.67S	557.99W	==>	10480.53	1304718.92	3127388.28

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	1.66	332.590	1599.99	1.07N	0.55W	2.00	-1.04	
1700.00	3.66	332.590	1699.88	5.19N	2.69W	2.00	-5.04	
1800.00	5.66	332.590	1799.54	12.40N	6.43W	2.00	-12.04	
1900.00	7.66	332.590	1898.86	22.69N	11.77W	2.00	-22.03	
2000.00	9.66	332.590	1997.71	36.06N	18.70W	2.00	-35.01	
2100.00	11.66	332.590	2095.98	52.48N	27.22W	2.00	-50.96	
2200.00	13.66	332.590	2193.55	71.93N	37.31W	2.00	-69.85	
2300.00	14.28	332.590	2290.50	93.69N	48.59W	==>	-90.97	
2400.00	14.28	332.590	2387.41	115.59N	59.95W	==>	-112.23	
2500.00	14.28	332.590	2484.32	137.49N	71.31W	==>	-133.50	
2600.00	14.28	332.590	2581.22	159.39N	82.67W	==>	-154.76	
2700.00	14.28	332.590	2678.13	181.29N	94.02W	==>	-176.03	
2800.00	14.28	332.590	2775.04	203.19N	105.38W	==>	-197.30	
2900.00	14.28	332.590	2871.95	225.10N	116.74W	==>	-218.56	
3000.00	14.28	332.590	2968.86	247.00N	128.10W	==>	-239.83	
3100.00	14.28	332.590	3065.77	268.90N	139.46W	==>	-261.09	

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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 183.050 degrees
Bottom hole distance is 10480.53 Feet on azimuth 183.05 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 10 (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	14.28	332.590	3162.68	290.80N	150.82W	==>	-282.36	
3300.00	14.28	332.590	3259.59	312.70N	162.18W	==>	-303.62	
3400.00	14.28	332.590	3356.50	334.60N	173.53W	==>	-324.89	
3500.00	14.28	332.590	3453.40	356.50N	184.89W	==>	-346.15	
3600.00	14.28	332.590	3550.31	378.40N	196.25W	==>	-367.42	
3700.00	14.28	332.590	3647.22	400.30N	207.61W	==>	-388.68	
3800.00	14.28	332.590	3744.13	422.20N	218.97W	==>	-409.95	
3900.00	14.28	332.590	3841.04	444.11N	230.33W	==>	-431.21	
4000.00	14.28	332.590	3937.95	466.01N	241.69W	==>	-452.48	
4100.00	14.28	332.590	4034.86	487.91N	253.04W	==>	-473.74	
4200.00	14.28	332.590	4131.77	509.81N	264.40W	==>	-495.01	
4300.00	14.28	332.590	4228.68	531.71N	275.76W	==>	-516.27	
4400.00	14.28	332.590	4325.58	553.61N	287.12W	==>	-537.54	
4500.00	14.28	332.590	4422.49	575.51N	298.48W	==>	-558.80	
4600.00	14.28	332.590	4519.40	597.41N	309.84W	==>	-580.07	
4700.00	14.28	332.590	4616.31	619.31N	321.19W	==>	-601.33	
4800.00	14.28	332.590	4713.22	641.21N	332.55W	==>	-622.60	
4900.00	14.28	332.590	4810.13	663.12N	343.91W	==>	-643.86	
5000.00	14.28	332.590	4907.04	685.02N	355.27W	==>	-665.13	
5100.00	14.28	332.590	5003.95	706.92N	366.63W	==>	-686.39	
5200.00	14.28	332.590	5100.86	728.82N	377.99W	==>	-707.66	
5300.00	14.28	332.590	5197.76	750.72N	389.35W	==>	-728.93	
5400.00	14.28	332.590	5294.67	772.62N	400.70W	==>	-750.19	
5500.00	14.28	332.590	5391.58	794.52N	412.06W	==>	-771.46	
5600.00	14.28	332.590	5488.49	816.42N	423.42W	==>	-792.72	
5700.00	14.28	332.590	5585.40	838.32N	434.78W	==>	-813.99	
5800.00	14.28	332.590	5682.31	860.22N	446.14W	==>	-835.25	
5900.00	14.28	332.590	5779.22	882.13N	457.50W	==>	-856.52	
6000.00	14.28	332.590	5876.13	904.03N	468.86W	==>	-877.78	
6100.00	14.28	332.590	5973.04	925.93N	480.21W	==>	-899.05	
6200.00	14.28	332.590	6069.94	947.83N	491.57W	==>	-920.31	
6300.00	14.28	332.590	6166.85	969.73N	502.93W	==>	-941.58	
6400.00	10.75	321.980	6264.06	990.12N	514.32W	10.00	-961.33	
6500.00	6.82	256.860	6363.08	996.14N	525.88W	10.00	-966.72	
6600.00	13.29	209.420	6461.64	984.75N	537.34W	10.00	-954.74	
6700.00	22.49	196.190	6556.74	956.30N	548.34W	10.00	-925.75	
6800.00	32.15	190.530	6645.50	911.66N	558.56W	10.00	-880.63	
6900.00	41.96	187.290	6725.21	852.19N	567.69W	10.00	-820.76	
7000.00	51.83	185.090	6793.46	779.69N	575.44W	10.00	-747.95	
7100.00	61.74	183.430	6848.17	696.36N	581.58W	10.00	-664.41	
7200.00	71.66	182.050	6887.68	604.74N	585.92W	10.00	-572.69	
7300.00	81.59	180.830	6910.79	507.61N	588.34W	10.00	-475.56	
7400.00	90.00	179.840	6917.00	407.91N	588.78W	==>	-375.99	
7500.00	90.00	179.840	6917.00	307.91N	588.50W	==>	-276.14	
7600.00	90.00	179.840	6917.00	207.91N	588.22W	==>	-176.30	
7700.00	90.00	179.840	6917.00	107.91N	587.93W	==>	-76.46	
7800.00	90.00	179.840	6917.00	7.91N	587.65W	==>	23.38	
7900.00	90.00	179.840	6917.00	92.09S	587.37W	==>	123.23	
8000.00	90.00	179.840	6917.00	192.09S	587.08W	==>	223.07	
8100.00	90.00	179.840	6917.00	292.08S	586.80W	==>	322.91	
8200.00	90.00	179.840	6917.00	392.08S	586.52W	==>	422.75	
8300.00	90.00	179.840	6917.00	492.08S	586.24W	==>	522.60	
8400.00	90.00	179.840	6917.00	592.08S	585.95W	==>	622.44	
8500.00	90.00	179.840	6917.00	692.08S	585.67W	==>	722.28	
8600.00	90.00	179.840	6917.00	792.08S	585.39W	==>	822.13	
8700.00	90.00	179.840	6917.00	892.08S	585.10W	==>	921.97	
8800.00	90.00	179.840	6917.00	992.08S	584.82W	==>	1021.81	
8900.00	90.00	179.840	6917.00	1092.08S	584.54W	==>	1121.65	
9000.00	90.00	179.840	6917.00	1192.08S	584.25W	==>	1221.50	

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Vertical Section is from 0.00N 0.00E on azimuth 183.050 degrees
Bottom hole distance is 10480.53 Feet on azimuth 183.05 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Microsoft
Date Printed: 1-Dec-2017



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Well Design Combined Report
Wellbore: W KNIGHT 10 (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	179.840	6917.00	1292.08S	583.97W	==>	1321.34	
9200.00	90.00	179.840	6917.00	1392.08S	583.69W	==>	1421.18	
9300.00	90.00	179.840	6917.00	1492.08S	583.40W	==>	1521.02	
9400.00	90.00	179.840	6917.00	1592.08S	583.12W	==>	1620.87	
9500.00	90.00	179.840	6917.00	1692.08S	582.84W	==>	1720.71	
9600.00	90.00	179.840	6917.00	1792.08S	582.55W	==>	1820.55	
9700.00	90.00	179.840	6917.00	1892.08S	582.27W	==>	1920.40	
9800.00	90.00	179.840	6917.00	1992.08S	581.99W	==>	2020.24	
9900.00	90.00	179.840	6917.00	2092.08S	581.70W	==>	2120.08	
10000.00	90.00	179.840	6917.00	2192.08S	581.42W	==>	2219.92	
10100.00	90.00	179.840	6917.00	2292.08S	581.14W	==>	2319.77	
10200.00	90.00	179.840	6917.00	2392.08S	580.86W	==>	2419.61	
10300.00	90.00	179.840	6917.00	2492.08S	580.57W	==>	2519.45	
10400.00	90.00	179.840	6917.00	2592.08S	580.29W	==>	2619.29	
10500.00	90.00	179.840	6917.00	2692.08S	580.01W	==>	2719.14	
10600.00	90.00	179.840	6917.00	2792.07S	579.72W	==>	2818.98	
10700.00	90.00	179.840	6917.00	2892.07S	579.44W	==>	2918.82	
10800.00	90.00	179.840	6917.00	2992.07S	579.16W	==>	3018.66	
10900.00	90.00	179.840	6917.00	3092.07S	578.87W	==>	3118.51	
11000.00	90.00	179.840	6917.00	3192.07S	578.59W	==>	3218.35	
11100.00	90.00	179.840	6917.00	3292.07S	578.31W	==>	3318.19	
11200.00	90.00	179.840	6917.00	3392.07S	578.02W	==>	3418.04	
11300.00	90.00	179.840	6917.00	3492.07S	577.74W	==>	3517.88	
11400.00	90.00	179.840	6917.00	3592.07S	577.46W	==>	3617.72	
11500.00	90.00	179.840	6917.00	3692.07S	577.17W	==>	3717.56	
11600.00	90.00	179.840	6917.00	3792.07S	576.89W	==>	3817.41	
11700.00	90.00	179.840	6917.00	3892.07S	576.61W	==>	3917.25	
11800.00	90.00	179.840	6917.00	3992.07S	576.32W	==>	4017.09	
11900.00	90.00	179.840	6917.00	4092.07S	576.04W	==>	4116.93	
12000.00	90.00	179.840	6917.00	4192.07S	575.76W	==>	4216.78	
12100.00	90.00	179.840	6917.00	4292.07S	575.48W	==>	4316.62	
12200.00	90.00	179.840	6917.00	4392.07S	575.19W	==>	4416.46	
12300.00	90.00	179.840	6917.00	4492.07S	574.91W	==>	4516.31	
12400.00	90.00	179.840	6917.00	4592.07S	574.63W	==>	4616.15	
12500.00	90.00	179.840	6917.00	4692.07S	574.34W	==>	4715.99	
12600.00	90.00	179.840	6917.00	4792.07S	574.06W	==>	4815.83	
12700.00	90.00	179.840	6917.00	4892.07S	573.78W	==>	4915.68	
12800.00	90.00	179.840	6917.00	4992.07S	573.49W	==>	5015.52	
12900.00	90.00	179.840	6917.00	5092.07S	573.21W	==>	5115.36	
13000.00	90.00	179.840	6917.00	5192.06S	572.93W	==>	5215.20	
13100.00	90.00	179.840	6917.00	5292.06S	572.64W	==>	5315.05	
13200.00	90.00	179.840	6917.00	5392.06S	572.36W	==>	5414.89	
13300.00	90.00	179.840	6917.00	5492.06S	572.08W	==>	5514.73	
13400.00	90.00	179.840	6917.00	5592.06S	571.79W	==>	5614.57	
13500.00	90.00	179.840	6917.00	5692.06S	571.51W	==>	5714.42	
13600.00	90.00	179.840	6917.00	5792.06S	571.23W	==>	5814.26	
13700.00	90.00	179.840	6917.00	5892.06S	570.94W	==>	5914.10	
13800.00	90.00	179.840	6917.00	5992.06S	570.66W	==>	6013.95	
13900.00	90.00	179.840	6917.00	6092.06S	570.38W	==>	6113.79	
14000.00	90.00	179.840	6917.00	6192.06S	570.09W	==>	6213.63	
14100.00	90.00	179.840	6917.00	6292.06S	569.81W	==>	6313.47	
14200.00	90.00	179.840	6917.00	6392.06S	569.53W	==>	6413.32	
14300.00	90.00	179.840	6917.00	6492.06S	569.25W	==>	6513.16	
14400.00	90.00	179.840	6917.00	6592.06S	568.96W	==>	6613.00	
14500.00	90.00	179.840	6917.00	6692.06S	568.68W	==>	6712.84	
14600.00	90.00	179.840	6917.00	6792.06S	568.40W	==>	6812.69	
14700.00	90.00	179.840	6917.00	6892.06S	568.11W	==>	6912.53	
14800.00	90.00	179.840	6917.00	6992.06S	567.83W	==>	7012.37	
14900.00	90.00	179.840	6917.00	7092.06S	567.55W	==>	7112.22	

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Wellbore: W KNIGHT 10 (PWB)



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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	179.840	6917.00	7192.06S	567.26W	==>	7212.06	
15100.00	90.00	179.840	6917.00	7292.06S	566.98W	==>	7311.90	
15200.00	90.00	179.840	6917.00	7392.06S	566.70W	==>	7411.74	
15300.00	90.00	179.840	6917.00	7492.06S	566.41W	==>	7511.59	
15400.00	90.00	179.840	6917.00	7592.06S	566.13W	==>	7611.43	
15500.00	90.00	179.840	6917.00	7692.05S	565.85W	==>	7711.27	
15600.00	90.00	179.840	6917.00	7792.05S	565.56W	==>	7811.11	
15700.00	90.00	179.840	6917.00	7892.05S	565.28W	==>	7910.96	
15800.00	90.00	179.840	6917.00	7992.05S	565.00W	==>	8010.80	
15900.00	90.00	179.840	6917.00	8092.05S	564.71W	==>	8110.64	
16000.00	90.00	179.840	6917.00	8192.05S	564.43W	==>	8210.48	
16100.00	90.00	179.840	6917.00	8292.05S	564.15W	==>	8310.33	
16200.00	90.00	179.840	6917.00	8392.05S	563.87W	==>	8410.17	
16300.00	90.00	179.840	6917.00	8492.05S	563.58W	==>	8510.01	
16400.00	90.00	179.840	6917.00	8592.05S	563.30W	==>	8609.86	
16500.00	90.00	179.840	6917.00	8692.05S	563.02W	==>	8709.70	
16600.00	90.00	179.840	6917.00	8792.05S	562.73W	==>	8809.54	
16700.00	90.00	179.840	6917.00	8892.05S	562.45W	==>	8909.38	
16800.00	90.00	179.840	6917.00	8992.05S	562.17W	==>	9009.23	
16900.00	90.00	179.840	6917.00	9092.05S	561.88W	==>	9109.07	
17000.00	90.00	179.840	6917.00	9192.05S	561.60W	==>	9208.91	
17100.00	90.00	179.840	6917.00	9292.05S	561.32W	==>	9308.75	
17200.00	90.00	179.840	6917.00	9392.05S	561.03W	==>	9408.60	
17300.00	90.00	179.840	6917.00	9492.05S	560.75W	==>	9508.44	
17400.00	90.00	179.840	6917.00	9592.05S	560.47W	==>	9608.28	
17500.00	90.00	179.840	6917.00	9692.05S	560.18W	==>	9708.13	
17600.00	90.00	179.840	6917.00	9792.05S	559.90W	==>	9807.97	
17700.00	90.00	179.840	6917.00	9892.05S	559.62W	==>	9907.81	
17800.00	90.00	179.840	6917.00	9992.05S	559.33W	==>	10007.65	
17900.00	90.00	179.840	6917.00	10092.05S	559.05W	==>	10107.50	
18000.00	90.00	179.840	6917.00	10192.04S	558.77W	==>	10207.34	
18100.00	90.00	179.840	6917.00	10292.04S	558.49W	==>	10307.18	
18200.00	90.00	179.840	6917.00	10392.04S	558.20W	==>	10407.02	
18273.62	90.00	179.840	6917.00	10465.67S	557.99W	==>	10480.53	

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 183.050 degrees
Bottom hole distance is 10480.53 Feet on azimuth 183.05 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 10 EP	423.20N	588.83W	6917.00	40.19884000	-105.04407000	1315607.30	3127357.44
Knight 10 BH	10465.67S	557.99W	6917.00	40.16895000	-105.04416000	1304718.92	3127388.28

Notes