

# Cub Creek Energy, LLC

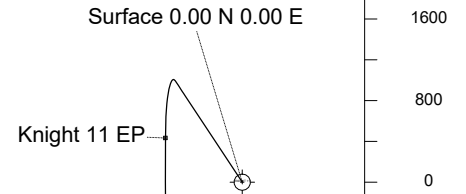
Location	Weld County, CO	Slot	KNIGHT 11
Field	WATTENBERG	Well	W KNIGHT 11
Installation	Knight Pad	Wellbore	W KNIGHT 11 (PWB)

## 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	326.54	1517.00	S 0.00	W 0.00	0.00	-0.00
End of Build	2249.21	14.64	326.54	2241.27	N 77.64	W 51.32	2.00	-73.92
End of Hold	6592.03	14.64	326.54	6443.01	N 993.58	W 656.72	0.00	-945.93
Target Knight 11 EP	7614.02	90.00	179.84	7130.00	N 433.28	W 753.70	10.00	-380.28
T.D. & Target Kni... BH	18506.58	90.00	179.84	7130.00	S 10459.23	W 722.92	0.00	10484.18

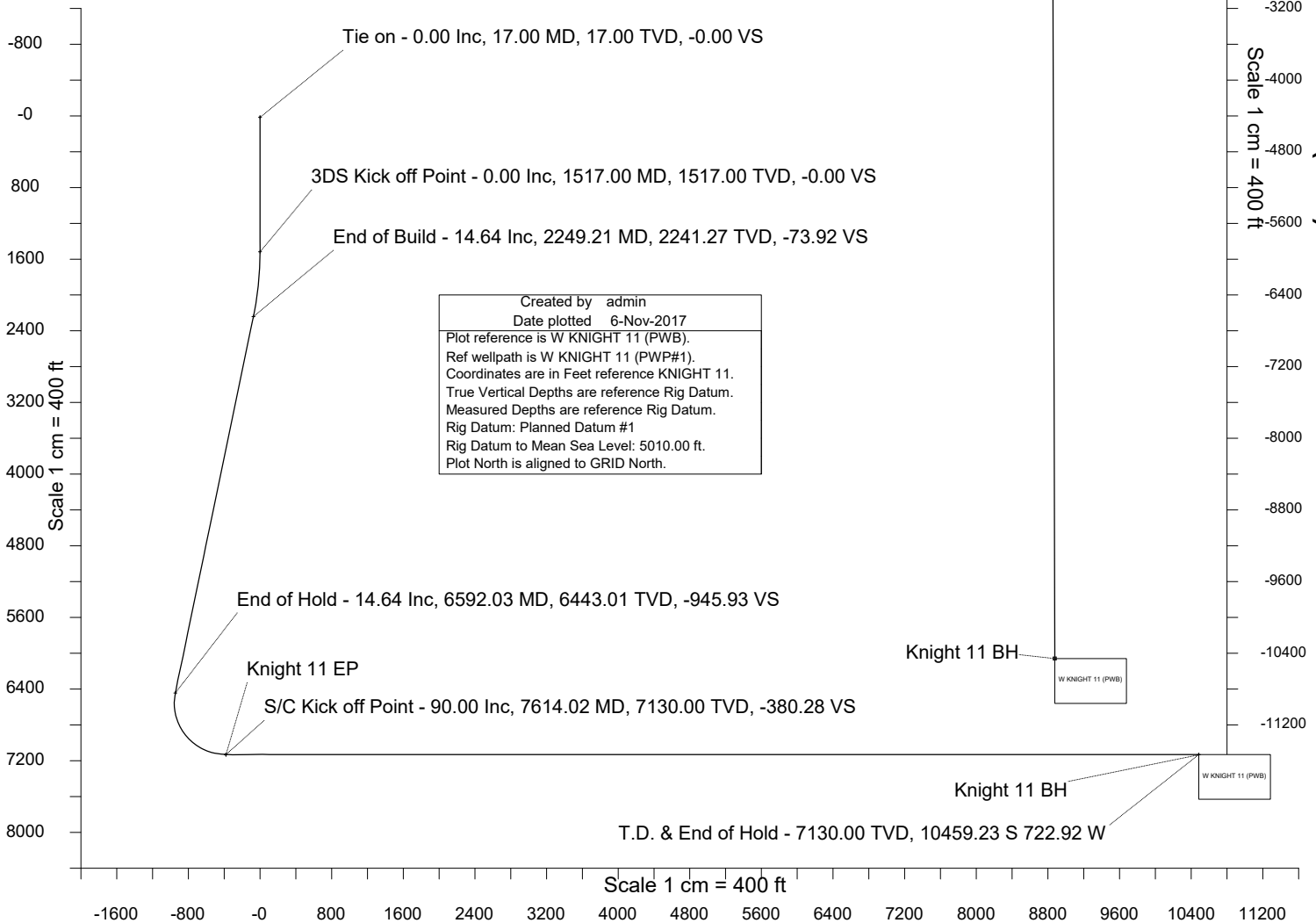
East (Feet) ->

-1600 -800 0 800  
Scale 1 cm = 400 ft



<- North(Feet)  
Scale 1 cm = 400 ft

<- True Vertical Depth (Feet)  
Scale 1 cm = 400 ft



Created by admin  
Date plotted 6-Nov-2017  
Plot reference is W KNIGHT 11 (PWB).  
Ref wellpath is W KNIGHT 11 (PWP#1).  
Coordinates are in Feet reference KNIGHT 11.  
True Vertical Depths are reference Rig Datum.  
Measured Depths are reference Rig Datum.  
Rig Datum: Planned Datum #1  
Rig Datum to Mean Sea Level: 5010.00 ft.  
Plot North is aligned to GRID North.



SYSDRILL  
Well Design Combined Report  
Wellbore: W KNIGHT 11 (PWB)



### Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
KNIGHT 11	40.19763000	-105.04197000	1315169.5482	3127946.3204	149.36S	0.77E	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	1315169.55	3127946.32
1517.00	0.00	326.540	1517.00	0.00N	0.00E	==>	0.00	1315169.55	3127946.32
2249.21	14.64	326.540	2241.27	77.64N	51.32W	2.00	-73.92	1315247.18	3127895.01
6592.03	14.64	326.540	6443.01	993.58N	656.72W	==>	-945.93	1316163.08	3127289.63
7614.02	90.00	179.840	7130.00	433.28N	753.70W	10.00	-380.28	1315602.81	3127192.66
18506.58	90.00	179.840	7130.00	10459.23S	722.92W	==>	10484.18	1304710.79	3127223.44

### 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	326.540	1599.99	1.00N	0.66W	2.00	-0.95	
1700.00	3.66	326.540	1699.88	4.87N	3.22W	2.00	-4.64	
1800.00	5.66	326.540	1799.54	11.65N	7.70W	2.00	-11.09	
1900.00	7.66	326.540	1898.86	21.33N	14.10W	2.00	-20.30	
2000.00	9.66	326.540	1997.71	33.89N	22.40W	2.00	-32.26	
2100.00	11.66	326.540	2095.98	49.32N	32.60W	2.00	-46.95	
2200.00	13.66	326.540	2193.55	67.60N	44.68W	2.00	-64.36	
2300.00	14.64	326.540	2290.40	88.35N	58.40W	==>	-84.11	
2400.00	14.64	326.540	2387.16	109.44N	72.34W	==>	-104.19	
2500.00	14.64	326.540	2483.91	130.53N	86.28W	==>	-124.27	
2600.00	14.64	326.540	2580.66	151.62N	100.22W	==>	-144.35	
2700.00	14.64	326.540	2677.41	172.71N	114.16W	==>	-164.43	
2800.00	14.64	326.540	2774.16	193.80N	128.10W	==>	-184.51	
2900.00	14.64	326.540	2870.91	214.90N	142.04W	==>	-204.59	
3000.00	14.64	326.540	2967.66	235.99N	155.98W	==>	-224.67	
3100.00	14.64	326.540	3064.42	257.08N	169.92W	==>	-244.75	

All data is in Feet unless otherwise stated  
Coordinates are from Slot MD's are from Rig ( Planned Datum #1 5010.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 183.950 degrees  
Bottom hole distance is 10484.18 Feet on azimuth 183.95 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 11 (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	14.64	326.540	3161.17	278.17N	183.86W	==>	-264.83	
3300.00	14.64	326.540	3257.92	299.26N	197.80W	==>	-284.91	
3400.00	14.64	326.540	3354.67	320.35N	211.74W	==>	-304.99	
3500.00	14.64	326.540	3451.42	341.44N	225.68W	==>	-325.07	
3600.00	14.64	326.540	3548.17	362.53N	239.62W	==>	-345.15	
3700.00	14.64	326.540	3644.92	383.62N	253.56W	==>	-365.23	
3800.00	14.64	326.540	3741.68	404.71N	267.50W	==>	-385.31	
3900.00	14.64	326.540	3838.43	425.81N	281.44W	==>	-405.39	
4000.00	14.64	326.540	3935.18	446.90N	295.38W	==>	-425.46	
4100.00	14.64	326.540	4031.93	467.99N	309.32W	==>	-445.54	
4200.00	14.64	326.540	4128.68	489.08N	323.26W	==>	-465.62	
4300.00	14.64	326.540	4225.43	510.17N	337.20W	==>	-485.70	
4400.00	14.64	326.540	4322.18	531.26N	351.14W	==>	-505.78	
4500.00	14.64	326.540	4418.94	552.35N	365.08W	==>	-525.86	
4600.00	14.64	326.540	4515.69	573.44N	379.02W	==>	-545.94	
4700.00	14.64	326.540	4612.44	594.53N	392.96W	==>	-566.02	
4800.00	14.64	326.540	4709.19	615.62N	406.90W	==>	-586.10	
4900.00	14.64	326.540	4805.94	636.71N	420.84W	==>	-606.18	
5000.00	14.64	326.540	4902.69	657.81N	434.78W	==>	-626.26	
5100.00	14.64	326.540	4999.44	678.90N	448.73W	==>	-646.34	
5200.00	14.64	326.540	5096.20	699.99N	462.67W	==>	-666.42	
5300.00	14.64	326.540	5192.95	721.08N	476.61W	==>	-686.50	
5400.00	14.64	326.540	5289.70	742.17N	490.55W	==>	-706.58	
5500.00	14.64	326.540	5386.45	763.26N	504.49W	==>	-726.66	
5600.00	14.64	326.540	5483.20	784.35N	518.43W	==>	-746.74	
5700.00	14.64	326.540	5579.95	805.44N	532.37W	==>	-766.82	
5800.00	14.64	326.540	5676.70	826.53N	546.31W	==>	-786.90	
5900.00	14.64	326.540	5773.46	847.62N	560.25W	==>	-806.98	
6000.00	14.64	326.540	5870.21	868.71N	574.19W	==>	-827.06	
6100.00	14.64	326.540	5966.96	889.81N	588.13W	==>	-847.13	
6200.00	14.64	326.540	6063.71	910.90N	602.07W	==>	-867.21	
6300.00	14.64	326.540	6160.46	931.99N	616.01W	==>	-887.29	
6400.00	14.64	326.540	6257.21	953.08N	629.95W	==>	-907.37	
6500.00	14.64	326.540	6353.96	974.17N	643.89W	==>	-927.45	
6600.00	13.99	324.690	6450.73	995.21N	657.83W	10.00	-947.48	
6700.00	8.28	279.620	6548.97	1006.30N	671.96W	10.00	-957.57	
6800.00	11.84	223.040	6647.64	1000.00N	686.10W	10.00	-950.31	
6900.00	20.25	202.720	6743.73	976.48N	699.81W	10.00	-925.90	
7000.00	29.65	194.440	6834.32	936.46N	712.70W	10.00	-885.09	
7100.00	39.32	189.930	6916.67	881.16N	724.36W	10.00	-829.12	
7200.00	49.11	186.980	6988.26	812.26N	734.43W	10.00	-759.68	
7300.00	58.95	184.790	7046.93	731.85N	742.62W	10.00	-678.90	
7400.00	68.83	183.020	7090.89	642.38N	748.68W	10.00	-589.22	
7500.00	78.71	181.480	7118.81	546.56N	752.41W	10.00	-493.38	
7600.00	88.61	180.040	7129.83	447.30N	753.71W	10.00	-394.27	
7700.00	90.00	179.840	7130.00	347.31N	753.45W	==>	-294.53	
7800.00	90.00	179.840	7130.00	247.31N	753.17W	==>	-194.78	
7900.00	90.00	179.840	7130.00	147.31N	752.89W	==>	-95.04	
8000.00	90.00	179.840	7130.00	47.31N	752.61W	==>	4.70	
8100.00	90.00	179.840	7130.00	52.69S	752.32W	==>	104.44	
8200.00	90.00	179.840	7130.00	152.69S	752.04W	==>	204.19	
8300.00	90.00	179.840	7130.00	252.69S	751.76W	==>	303.93	
8400.00	90.00	179.840	7130.00	352.69S	751.48W	==>	403.67	
8500.00	90.00	179.840	7130.00	452.69S	751.19W	==>	503.41	
8600.00	90.00	179.840	7130.00	552.69S	750.91W	==>	603.15	
8700.00	90.00	179.840	7130.00	652.69S	750.63W	==>	702.90	
8800.00	90.00	179.840	7130.00	752.69S	750.35W	==>	802.64	
8900.00	90.00	179.840	7130.00	852.69S	750.06W	==>	902.38	
9000.00	90.00	179.840	7130.00	952.69S	749.78W	==>	1002.12	

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 5010.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 183.950 degrees  
Bottom hole distance is 10484.18 Feet on azimuth 183.95 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 11 (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	7130.00	1052.69S	749.50W	==>	1101.86	
9200.00	90.00	179.840	7130.00	1152.69S	749.22W	==>	1201.61	
9300.00	90.00	179.840	7130.00	1252.69S	748.93W	==>	1301.35	
9400.00	90.00	179.840	7130.00	1352.69S	748.65W	==>	1401.09	
9500.00	90.00	179.840	7130.00	1452.69S	748.37W	==>	1500.83	
9600.00	90.00	179.840	7130.00	1552.69S	748.09W	==>	1600.57	
9700.00	90.00	179.840	7130.00	1652.69S	747.80W	==>	1700.32	
9800.00	90.00	179.840	7130.00	1752.69S	747.52W	==>	1800.06	
9900.00	90.00	179.840	7130.00	1852.69S	747.24W	==>	1899.80	
10000.00	90.00	179.840	7130.00	1952.69S	746.96W	==>	1999.54	
10100.00	90.00	179.840	7130.00	2052.69S	746.67W	==>	2099.29	
10200.00	90.00	179.840	7130.00	2152.68S	746.39W	==>	2199.03	
10300.00	90.00	179.840	7130.00	2252.68S	746.11W	==>	2298.77	
10400.00	90.00	179.840	7130.00	2352.68S	745.83W	==>	2398.51	
10500.00	90.00	179.840	7130.00	2452.68S	745.54W	==>	2498.25	
10600.00	90.00	179.840	7130.00	2552.68S	745.26W	==>	2598.00	
10700.00	90.00	179.840	7130.00	2652.68S	744.98W	==>	2697.74	
10800.00	90.00	179.840	7130.00	2752.68S	744.69W	==>	2797.48	
10900.00	90.00	179.840	7130.00	2852.68S	744.41W	==>	2897.22	
11000.00	90.00	179.840	7130.00	2952.68S	744.13W	==>	2996.96	
11100.00	90.00	179.840	7130.00	3052.68S	743.85W	==>	3096.71	
11200.00	90.00	179.840	7130.00	3152.68S	743.56W	==>	3196.45	
11300.00	90.00	179.840	7130.00	3252.68S	743.28W	==>	3296.19	
11400.00	90.00	179.840	7130.00	3352.68S	743.00W	==>	3395.93	
11500.00	90.00	179.840	7130.00	3452.68S	742.72W	==>	3495.67	
11600.00	90.00	179.840	7130.00	3552.68S	742.43W	==>	3595.42	
11700.00	90.00	179.840	7130.00	3652.68S	742.15W	==>	3695.16	
11800.00	90.00	179.840	7130.00	3752.68S	741.87W	==>	3794.90	
11900.00	90.00	179.840	7130.00	3852.68S	741.59W	==>	3894.64	
12000.00	90.00	179.840	7130.00	3952.68S	741.30W	==>	3994.39	
12100.00	90.00	179.840	7130.00	4052.68S	741.02W	==>	4094.13	
12200.00	90.00	179.840	7130.00	4152.68S	740.74W	==>	4193.87	
12300.00	90.00	179.840	7130.00	4252.68S	740.46W	==>	4293.61	
12400.00	90.00	179.840	7130.00	4352.68S	740.17W	==>	4393.35	
12500.00	90.00	179.840	7130.00	4452.68S	739.89W	==>	4493.10	
12600.00	90.00	179.840	7130.00	4552.68S	739.61W	==>	4592.84	
12700.00	90.00	179.840	7130.00	4652.67S	739.33W	==>	4692.58	
12800.00	90.00	179.840	7130.00	4752.67S	739.04W	==>	4792.32	
12900.00	90.00	179.840	7130.00	4852.67S	738.76W	==>	4892.06	
13000.00	90.00	179.840	7130.00	4952.67S	738.48W	==>	4991.81	
13100.00	90.00	179.840	7130.00	5052.67S	738.20W	==>	5091.55	
13200.00	90.00	179.840	7130.00	5152.67S	737.91W	==>	5191.29	
13300.00	90.00	179.840	7130.00	5252.67S	737.63W	==>	5291.03	
13400.00	90.00	179.840	7130.00	5352.67S	737.35W	==>	5390.77	
13500.00	90.00	179.840	7130.00	5452.67S	737.07W	==>	5490.52	
13600.00	90.00	179.840	7130.00	5552.67S	736.78W	==>	5590.26	
13700.00	90.00	179.840	7130.00	5652.67S	736.50W	==>	5690.00	
13800.00	90.00	179.840	7130.00	5752.67S	736.22W	==>	5789.74	
13900.00	90.00	179.840	7130.00	5852.67S	735.93W	==>	5889.49	
14000.00	90.00	179.840	7130.00	5952.67S	735.65W	==>	5989.23	
14100.00	90.00	179.840	7130.00	6052.67S	735.37W	==>	6088.97	
14200.00	90.00	179.840	7130.00	6152.67S	735.09W	==>	6188.71	
14300.00	90.00	179.840	7130.00	6252.67S	734.80W	==>	6288.45	
14400.00	90.00	179.840	7130.00	6352.67S	734.52W	==>	6388.20	
14500.00	90.00	179.840	7130.00	6452.67S	734.24W	==>	6487.94	
14600.00	90.00	179.840	7130.00	6552.67S	733.96W	==>	6587.68	
14700.00	90.00	179.840	7130.00	6652.67S	733.67W	==>	6687.42	
14800.00	90.00	179.840	7130.00	6752.67S	733.39W	==>	6787.16	
14900.00	90.00	179.840	7130.00	6852.67S	733.11W	==>	6886.91	

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 5010.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 183.950 degrees  
Bottom hole distance is 10484.18 Feet on azimuth 183.95 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Microsoft  
Date Printed: 1-Dec-2017



SYS DRILL  
Well Design Combined Report  
Wellbore: W KNIGHT 11 (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	179.840	7130.00	6952.67S	732.83W	==>	6986.65	
15100.00	90.00	179.840	7130.00	7052.67S	732.54W	==>	7086.39	
15200.00	90.00	179.840	7130.00	7152.66S	732.26W	==>	7186.13	
15300.00	90.00	179.840	7130.00	7252.66S	731.98W	==>	7285.87	
15400.00	90.00	179.840	7130.00	7352.66S	731.70W	==>	7385.62	
15500.00	90.00	179.840	7130.00	7452.66S	731.41W	==>	7485.36	
15600.00	90.00	179.840	7130.00	7552.66S	731.13W	==>	7585.10	
15700.00	90.00	179.840	7130.00	7652.66S	730.85W	==>	7684.84	
15800.00	90.00	179.840	7130.00	7752.66S	730.57W	==>	7784.59	
15900.00	90.00	179.840	7130.00	7852.66S	730.28W	==>	7884.33	
16000.00	90.00	179.840	7130.00	7952.66S	730.00W	==>	7984.07	
16100.00	90.00	179.840	7130.00	8052.66S	729.72W	==>	8083.81	
16200.00	90.00	179.840	7130.00	8152.66S	729.44W	==>	8183.55	
16300.00	90.00	179.840	7130.00	8252.66S	729.15W	==>	8283.30	
16400.00	90.00	179.840	7130.00	8352.66S	728.87W	==>	8383.04	
16500.00	90.00	179.840	7130.00	8452.66S	728.59W	==>	8482.78	
16600.00	90.00	179.840	7130.00	8552.66S	728.31W	==>	8582.52	
16700.00	90.00	179.840	7130.00	8652.66S	728.02W	==>	8682.26	
16800.00	90.00	179.840	7130.00	8752.66S	727.74W	==>	8782.01	
16900.00	90.00	179.840	7130.00	8852.66S	727.46W	==>	8881.75	
17000.00	90.00	179.840	7130.00	8952.66S	727.17W	==>	8981.49	
17100.00	90.00	179.840	7130.00	9052.66S	726.89W	==>	9081.23	
17200.00	90.00	179.840	7130.00	9152.66S	726.61W	==>	9180.97	
17300.00	90.00	179.840	7130.00	9252.66S	726.33W	==>	9280.72	
17400.00	90.00	179.840	7130.00	9352.66S	726.04W	==>	9380.46	
17500.00	90.00	179.840	7130.00	9452.66S	725.76W	==>	9480.20	
17600.00	90.00	179.840	7130.00	9552.66S	725.48W	==>	9579.94	
17700.00	90.00	179.840	7130.00	9652.65S	725.20W	==>	9679.69	
17800.00	90.00	179.840	7130.00	9752.65S	724.91W	==>	9779.43	
17900.00	90.00	179.840	7130.00	9852.65S	724.63W	==>	9879.17	
18000.00	90.00	179.840	7130.00	9952.65S	724.35W	==>	9978.91	
18100.00	90.00	179.840	7130.00	10052.65S	724.07W	==>	10078.65	
18200.00	90.00	179.840	7130.00	10152.65S	723.78W	==>	10178.40	
18300.00	90.00	179.840	7130.00	10252.65S	723.50W	==>	10278.14	
18400.00	90.00	179.840	7130.00	10352.65S	723.22W	==>	10377.88	
18500.00	90.00	179.840	7130.00	10452.65S	722.94W	==>	10477.62	
18506.58	90.00	179.840	7130.00	10459.23S	722.92W	==>	10484.18	

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 5010.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 183.950 degrees  
Bottom hole distance is 10484.18 Feet on azimuth 183.95 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 11 EP	433.28N	753.70W	7130.00	40.19883000	-105.04466000	1315602.81	3127192.66
Knight 11 BH	10459.23S	722.92W	7130.00	40.16893000	-105.04475000	1304710.79	3127223.44

Notes