

# Cub Creek Energy, LLC

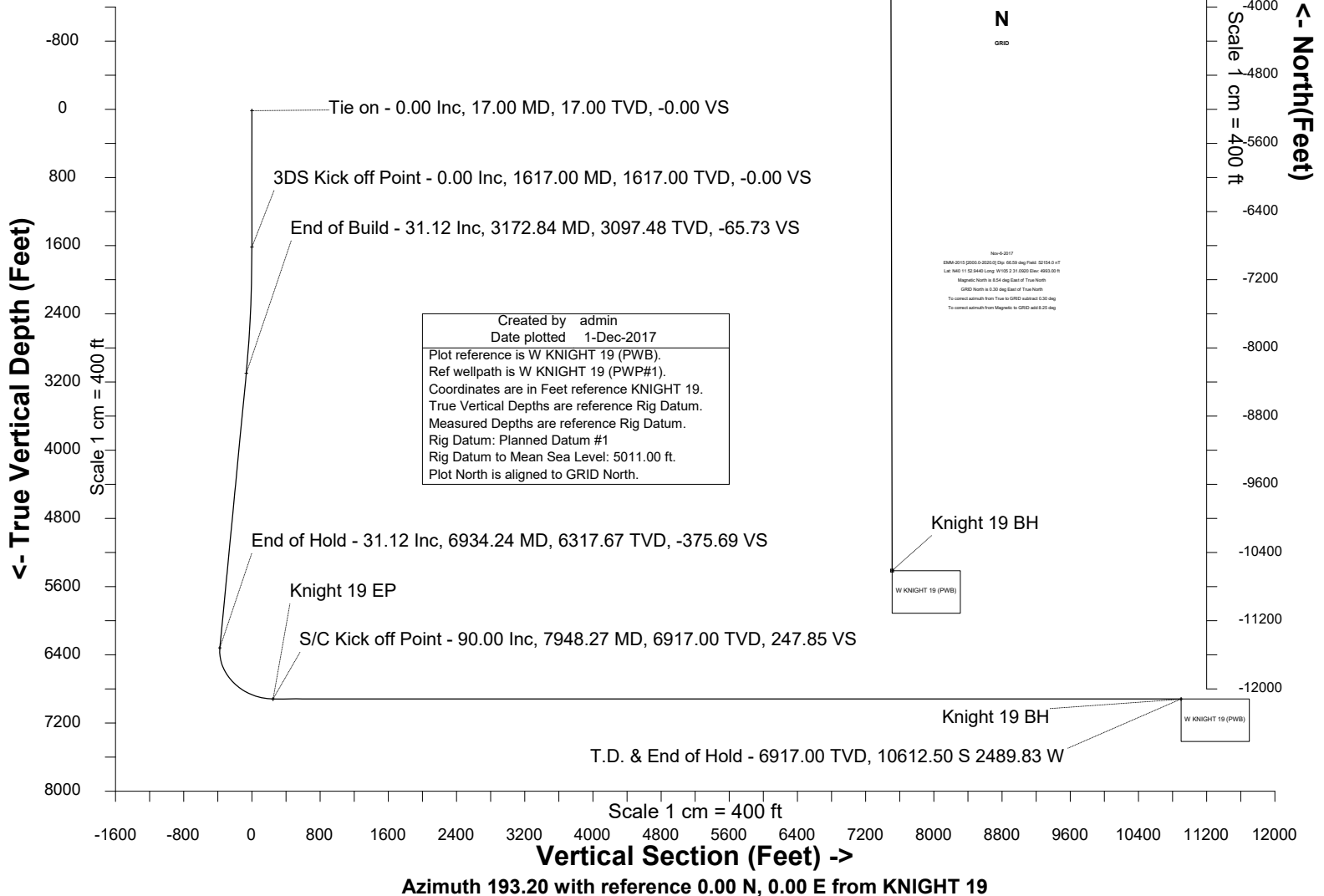
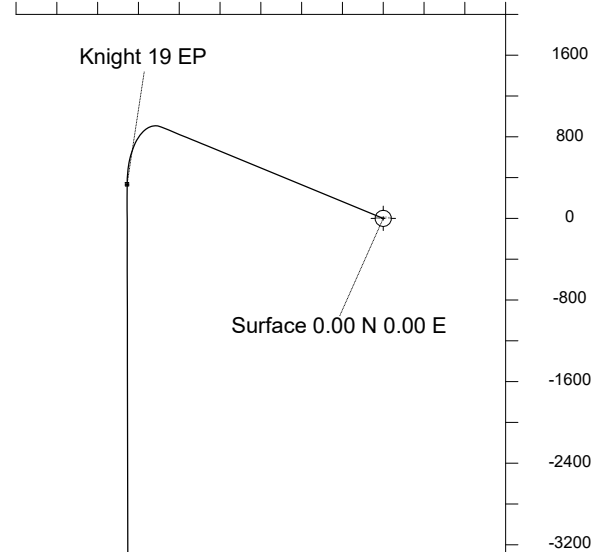
<b>Location</b>	<b>Weld County, CO</b>	<b>Slot</b>	<b>KNIGHT 19</b>
<b>Field</b>	<b>WATTENBERG</b>	<b>Well</b>	<b>W KNIGHT 19</b>
<b>Installation</b>	<b>Knight Pad</b>	<b>Wellbore</b>	<b>W KNIGHT 19 (PWB)</b>

## 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	1617.00	0.00	292.38	1617.00	S 0.00	W 0.00	0.00	-0.00
End of Build	3172.84	31.12	292.38	3097.48	N 156.94	W 381.15	2.00	-65.73
End of Hold	6934.24	31.12	292.38	6317.67	N 897.02	W 2178.59	0.00	-375.69
Target Knight 19 EP	7948.27	90.00	179.89	6917.00	N 334.70	W 2511.72	10.00	247.85
T.D. & Target Kni... BH	18895.49	90.00	179.89	6917.00	S 10612.50	W 2489.83	0.00	10900.66

East (Feet) ->

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





SYSDRILL  
Well Design Combined Report  
Wellbore: W KNIGHT 19 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
KNIGHT 19	40.19783600	-105.04205500	1315244.4668	3127922.1892	74.44S	23.36W	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	1315244.47	3127922.19
1617.00	0.00	292.380	1617.00	0.00N	0.00E	==>	0.00	1315244.47	3127922.19
3172.84	31.12	292.380	3097.48	156.94N	381.15W	2.00	-65.73	1315401.40	3127541.05
6934.24	31.12	292.380	6317.67	897.02N	2178.59W	==>	-375.69	1316141.44	3125743.70
7948.27	90.00	179.890	6917.00	334.70N	2511.72W	10.00	247.85	1315579.15	3125410.58
18895.49	90.00	179.890	6917.00	10612.50S	2489.83W	==>	10900.66	1304632.44	3125432.47

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	0.00	0.000	1600.00	0.00N	0.00E	==>	0.00	
1700.00	1.66	292.380	1699.99	0.46N	1.11W	2.00	-0.19	
1800.00	3.66	292.380	1799.88	2.22N	5.40W	2.00	-0.93	
1900.00	5.66	292.380	1899.54	5.32N	12.91W	2.00	-2.23	
2000.00	7.66	292.380	1998.86	9.73N	23.64W	2.00	-4.08	
2100.00	9.66	292.380	2097.71	15.47N	37.56W	2.00	-6.48	
2200.00	11.66	292.380	2195.98	22.51N	54.66W	2.00	-9.43	
2300.00	13.66	292.380	2293.55	30.85N	74.93W	2.00	-12.92	
2400.00	15.66	292.380	2390.29	40.49N	98.33W	2.00	-16.96	
2500.00	17.66	292.380	2486.09	51.40N	124.84W	2.00	-21.53	
2600.00	19.66	292.380	2580.82	63.58N	154.42W	2.00	-26.63	
2700.00	21.66	292.380	2674.39	77.02N	187.05W	2.00	-32.26	
2800.00	23.66	292.380	2766.66	91.68N	222.67W	2.00	-38.40	
2900.00	25.66	292.380	2857.54	107.57N	261.25W	2.00	-45.05	
3000.00	27.66	292.380	2946.90	124.65N	302.74W	2.00	-52.21	
3100.00	29.66	292.380	3034.65	142.91N	347.08W	2.00	-59.85	

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 193.200 degrees  
Bottom hole distance is 10900.66 Feet on azimuth 193.20 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 19 (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	31.12	292.380	3120.73	162.28N	394.13W	==>	-67.97	
3300.00	31.12	292.380	3206.34	181.96N	441.92W	==>	-76.21	
3400.00	31.12	292.380	3291.95	201.63N	489.71W	==>	-84.45	
3500.00	31.12	292.380	3377.57	221.31N	537.49W	==>	-92.69	
3600.00	31.12	292.380	3463.18	240.98N	585.28W	==>	-100.93	
3700.00	31.12	292.380	3548.79	260.66N	633.06W	==>	-109.17	
3800.00	31.12	292.380	3634.40	280.34N	680.85W	==>	-117.41	
3900.00	31.12	292.380	3720.01	300.01N	728.64W	==>	-125.65	
4000.00	31.12	292.380	3805.62	319.69N	776.42W	==>	-133.89	
4100.00	31.12	292.380	3891.23	339.36N	824.21W	==>	-142.13	
4200.00	31.12	292.380	3976.85	359.04N	872.00W	==>	-150.37	
4300.00	31.12	292.380	4062.46	378.71N	919.78W	==>	-158.61	
4400.00	31.12	292.380	4148.07	398.39N	967.57W	==>	-166.85	
4500.00	31.12	292.380	4233.68	418.06N	1015.35W	==>	-175.10	
4600.00	31.12	292.380	4319.29	437.74N	1063.14W	==>	-183.34	
4700.00	31.12	292.380	4404.90	457.42N	1110.93W	==>	-191.58	
4800.00	31.12	292.380	4490.52	477.09N	1158.71W	==>	-199.82	
4900.00	31.12	292.380	4576.13	496.77N	1206.50W	==>	-208.06	
5000.00	31.12	292.380	4661.74	516.44N	1254.29W	==>	-216.30	
5100.00	31.12	292.380	4747.35	536.12N	1302.07W	==>	-224.54	
5200.00	31.12	292.380	4832.96	555.79N	1349.86W	==>	-232.78	
5300.00	31.12	292.380	4918.57	575.47N	1397.64W	==>	-241.02	
5400.00	31.12	292.380	5004.18	595.15N	1445.43W	==>	-249.26	
5500.00	31.12	292.380	5089.80	614.82N	1493.22W	==>	-257.50	
5600.00	31.12	292.380	5175.41	634.50N	1541.00W	==>	-265.74	
5700.00	31.12	292.380	5261.02	654.17N	1588.79W	==>	-273.98	
5800.00	31.12	292.380	5346.63	673.85N	1636.58W	==>	-282.22	
5900.00	31.12	292.380	5432.24	693.52N	1684.36W	==>	-290.46	
6000.00	31.12	292.380	5517.85	713.20N	1732.15W	==>	-298.70	
6100.00	31.12	292.380	5603.47	732.88N	1779.93W	==>	-306.95	
6200.00	31.12	292.380	5689.08	752.55N	1827.72W	==>	-315.19	
6300.00	31.12	292.380	5774.69	772.23N	1875.51W	==>	-323.43	
6400.00	31.12	292.380	5860.30	791.90N	1923.29W	==>	-331.67	
6500.00	31.12	292.380	5945.91	811.58N	1971.08W	==>	-339.91	
6600.00	31.12	292.380	6031.52	831.25N	2018.87W	==>	-348.15	
6700.00	31.12	292.380	6117.14	850.93N	2066.65W	==>	-356.39	
6800.00	31.12	292.380	6202.75	870.60N	2114.44W	==>	-364.63	
6900.00	31.12	292.380	6288.36	890.28N	2162.22W	==>	-372.87	
7000.00	29.51	279.720	6374.50	906.23N	2210.30W	10.00	-377.42	
7100.00	29.56	259.360	6461.72	905.83N	2258.94W	10.00	-365.92	
7200.00	32.55	240.780	6547.58	888.10N	2306.79W	10.00	-337.72	
7300.00	37.78	225.910	6629.45	853.56N	2352.38W	10.00	-293.69	
7400.00	44.45	214.540	6704.86	803.28N	2394.34W	10.00	-235.16	
7500.00	52.00	205.720	6771.50	738.78N	2431.38W	10.00	-163.90	
7600.00	60.08	198.610	6827.37	662.02N	2462.38W	10.00	-82.08	
7700.00	68.49	192.580	6870.75	575.33N	2486.41W	10.00	7.80	
7800.00	77.09	187.230	6900.34	481.34N	2502.72W	10.00	103.03	
7900.00	85.79	182.240	6915.23	382.92N	2510.82W	10.00	200.71	
8000.00	90.00	179.890	6917.00	282.97N	2511.61W	==>	298.19	
8100.00	90.00	179.890	6917.00	182.97N	2511.41W	==>	395.50	
8200.00	90.00	179.890	6917.00	82.97N	2511.21W	==>	492.81	
8300.00	90.00	179.890	6917.00	17.03S	2511.01W	==>	590.12	
8400.00	90.00	179.890	6917.00	117.03S	2510.81W	==>	687.43	
8500.00	90.00	179.890	6917.00	217.03S	2510.61W	==>	784.74	
8600.00	90.00	179.890	6917.00	317.03S	2510.41W	==>	882.05	
8700.00	90.00	179.890	6917.00	417.03S	2510.21W	==>	979.36	
8800.00	90.00	179.890	6917.00	517.03S	2510.01W	==>	1076.67	
8900.00	90.00	179.890	6917.00	617.03S	2509.81W	==>	1173.98	
9000.00	90.00	179.890	6917.00	717.03S	2509.61W	==>	1271.29	

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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 193.200 degrees  
Bottom hole distance is 10900.66 Feet on azimuth 193.20 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 19 (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	6917.00	817.03S	2509.41W	==>	1368.61	
9200.00	90.00	179.890	6917.00	917.03S	2509.21W	==>	1465.92	
9300.00	90.00	179.890	6917.00	1017.03S	2509.01W	==>	1563.23	
9400.00	90.00	179.890	6917.00	1117.03S	2508.81W	==>	1660.54	
9500.00	90.00	179.890	6917.00	1217.03S	2508.61W	==>	1757.85	
9600.00	90.00	179.890	6917.00	1317.03S	2508.41W	==>	1855.16	
9700.00	90.00	179.890	6917.00	1417.02S	2508.21W	==>	1952.47	
9800.00	90.00	179.890	6917.00	1517.02S	2508.01W	==>	2049.78	
9900.00	90.00	179.890	6917.00	1617.02S	2507.81W	==>	2147.09	
10000.00	90.00	179.890	6917.00	1717.02S	2507.61W	==>	2244.40	
10100.00	90.00	179.890	6917.00	1817.02S	2507.41W	==>	2341.71	
10200.00	90.00	179.890	6917.00	1917.02S	2507.21W	==>	2439.02	
10300.00	90.00	179.890	6917.00	2017.02S	2507.01W	==>	2536.33	
10400.00	90.00	179.890	6917.00	2117.02S	2506.81W	==>	2633.64	
10500.00	90.00	179.890	6917.00	2217.02S	2506.61W	==>	2730.95	
10600.00	90.00	179.890	6917.00	2317.02S	2506.41W	==>	2828.26	
10700.00	90.00	179.890	6917.00	2417.02S	2506.21W	==>	2925.58	
10800.00	90.00	179.890	6917.00	2517.02S	2506.01W	==>	3022.89	
10900.00	90.00	179.890	6917.00	2617.02S	2505.81W	==>	3120.20	
11000.00	90.00	179.890	6917.00	2717.02S	2505.61W	==>	3217.51	
11100.00	90.00	179.890	6917.00	2817.02S	2505.41W	==>	3314.82	
11200.00	90.00	179.890	6917.00	2917.02S	2505.22W	==>	3412.13	
11300.00	90.00	179.890	6917.00	3017.02S	2505.02W	==>	3509.44	
11400.00	90.00	179.890	6917.00	3117.02S	2504.82W	==>	3606.75	
11500.00	90.00	179.890	6917.00	3217.02S	2504.62W	==>	3704.06	
11600.00	90.00	179.890	6917.00	3317.02S	2504.42W	==>	3801.37	
11700.00	90.00	179.890	6917.00	3417.02S	2504.22W	==>	3898.68	
11800.00	90.00	179.890	6917.00	3517.02S	2504.02W	==>	3995.99	
11900.00	90.00	179.890	6917.00	3617.02S	2503.82W	==>	4093.30	
12000.00	90.00	179.890	6917.00	3717.02S	2503.62W	==>	4190.61	
12100.00	90.00	179.890	6917.00	3817.02S	2503.42W	==>	4287.92	
12200.00	90.00	179.890	6917.00	3917.02S	2503.22W	==>	4385.23	
12300.00	90.00	179.890	6917.00	4017.02S	2503.02W	==>	4482.54	
12400.00	90.00	179.890	6917.00	4117.02S	2502.82W	==>	4579.86	
12500.00	90.00	179.890	6917.00	4217.02S	2502.62W	==>	4677.17	
12600.00	90.00	179.890	6917.00	4317.02S	2502.42W	==>	4774.48	
12700.00	90.00	179.890	6917.00	4417.02S	2502.22W	==>	4871.79	
12800.00	90.00	179.890	6917.00	4517.02S	2502.02W	==>	4969.10	
12900.00	90.00	179.890	6917.00	4617.02S	2501.82W	==>	5066.41	
13000.00	90.00	179.890	6917.00	4717.02S	2501.62W	==>	5163.72	
13100.00	90.00	179.890	6917.00	4817.02S	2501.42W	==>	5261.03	
13200.00	90.00	179.890	6917.00	4917.02S	2501.22W	==>	5358.34	
13300.00	90.00	179.890	6917.00	5017.02S	2501.02W	==>	5455.65	
13400.00	90.00	179.890	6917.00	5117.02S	2500.82W	==>	5552.96	
13500.00	90.00	179.890	6917.00	5217.02S	2500.62W	==>	5650.27	
13600.00	90.00	179.890	6917.00	5317.02S	2500.42W	==>	5747.58	
13700.00	90.00	179.890	6917.00	5417.02S	2500.22W	==>	5844.89	
13800.00	90.00	179.890	6917.00	5517.02S	2500.02W	==>	5942.20	
13900.00	90.00	179.890	6917.00	5617.02S	2499.82W	==>	6039.51	
14000.00	90.00	179.890	6917.00	5717.02S	2499.62W	==>	6136.83	
14100.00	90.00	179.890	6917.00	5817.02S	2499.42W	==>	6234.14	
14200.00	90.00	179.890	6917.00	5917.02S	2499.22W	==>	6331.45	
14300.00	90.00	179.890	6917.00	6017.02S	2499.02W	==>	6428.76	
14400.00	90.00	179.890	6917.00	6117.02S	2498.82W	==>	6526.07	
14500.00	90.00	179.890	6917.00	6217.02S	2498.62W	==>	6623.38	
14600.00	90.00	179.890	6917.00	6317.02S	2498.42W	==>	6720.69	
14700.00	90.00	179.890	6917.00	6417.01S	2498.22W	==>	6818.00	
14800.00	90.00	179.890	6917.00	6517.01S	2498.02W	==>	6915.31	
14900.00	90.00	179.890	6917.00	6617.01S	2497.82W	==>	7012.62	

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Well Design Combined Report  
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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	6917.00	6717.01S	2497.62W	==>	7109.93	
15100.00	90.00	179.890	6917.00	6817.01S	2497.42W	==>	7207.24	
15200.00	90.00	179.890	6917.00	6917.01S	2497.22W	==>	7304.55	
15300.00	90.00	179.890	6917.00	7017.01S	2497.02W	==>	7401.86	
15400.00	90.00	179.890	6917.00	7117.01S	2496.82W	==>	7499.17	
15500.00	90.00	179.890	6917.00	7217.01S	2496.62W	==>	7596.48	
15600.00	90.00	179.890	6917.00	7317.01S	2496.42W	==>	7693.80	
15700.00	90.00	179.890	6917.00	7417.01S	2496.22W	==>	7791.11	
15800.00	90.00	179.890	6917.00	7517.01S	2496.02W	==>	7888.42	
15900.00	90.00	179.890	6917.00	7617.01S	2495.82W	==>	7985.73	
16000.00	90.00	179.890	6917.00	7717.01S	2495.62W	==>	8083.04	
16100.00	90.00	179.890	6917.00	7817.01S	2495.42W	==>	8180.35	
16200.00	90.00	179.890	6917.00	7917.01S	2495.22W	==>	8277.66	
16300.00	90.00	179.890	6917.00	8017.01S	2495.02W	==>	8374.97	
16400.00	90.00	179.890	6917.00	8117.01S	2494.82W	==>	8472.28	
16500.00	90.00	179.890	6917.00	8217.01S	2494.62W	==>	8569.59	
16600.00	90.00	179.890	6917.00	8317.01S	2494.42W	==>	8666.90	
16700.00	90.00	179.890	6917.00	8417.01S	2494.22W	==>	8764.21	
16800.00	90.00	179.890	6917.00	8517.01S	2494.02W	==>	8861.52	
16900.00	90.00	179.890	6917.00	8617.01S	2493.82W	==>	8958.83	
17000.00	90.00	179.890	6917.00	8717.01S	2493.62W	==>	9056.14	
17100.00	90.00	179.890	6917.00	8817.01S	2493.42W	==>	9153.45	
17200.00	90.00	179.890	6917.00	8917.01S	2493.22W	==>	9250.77	
17300.00	90.00	179.890	6917.00	9017.01S	2493.02W	==>	9348.08	
17400.00	90.00	179.890	6917.00	9117.01S	2492.82W	==>	9445.39	
17500.00	90.00	179.890	6917.00	9217.01S	2492.62W	==>	9542.70	
17600.00	90.00	179.890	6917.00	9317.01S	2492.42W	==>	9640.01	
17700.00	90.00	179.890	6917.00	9417.01S	2492.22W	==>	9737.32	
17800.00	90.00	179.890	6917.00	9517.01S	2492.02W	==>	9834.63	
17900.00	90.00	179.890	6917.00	9617.01S	2491.82W	==>	9931.94	
18000.00	90.00	179.890	6917.00	9717.01S	2491.62W	==>	10029.25	
18100.00	90.00	179.890	6917.00	9817.01S	2491.42W	==>	10126.56	
18200.00	90.00	179.890	6917.00	9917.01S	2491.22W	==>	10223.87	
18300.00	90.00	179.890	6917.00	10017.01S	2491.02W	==>	10321.18	
18400.00	90.00	179.890	6917.00	10117.01S	2490.82W	==>	10418.49	
18500.00	90.00	179.890	6917.00	10217.01S	2490.62W	==>	10515.80	
18600.00	90.00	179.890	6917.00	10317.01S	2490.42W	==>	10613.11	
18700.00	90.00	179.890	6917.00	10417.01S	2490.22W	==>	10710.42	
18800.00	90.00	179.890	6917.00	10517.01S	2490.02W	==>	10807.74	
18895.49	90.00	179.890	6917.00	10612.50S	2489.83W	==>	10900.66	

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 193.200 degrees  
Bottom hole distance is 10900.66 Feet on azimuth 193.20 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 19 EP	334.70N	2511.72W	6917.00	40.19879000	-105.05104000	1315579.15	3125410.58
Knight 19 BH	10612.50S	2489.83W	6917.00	40.16874000	-105.05116000	1304632.44	3125432.47

Notes