

# Cub Creek Energy, LLC

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

N  
GRID

## 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	950.00	0.00	296.75	950.00	S 0.00	W 0.00	0.00	-0.00
End of Build	1538.50	11.77	296.75	1534.37	N 27.11	W 53.79	2.00	-21.58
End of Hold	6388.19	11.77	296.75	6282.09	N 472.38	W 937.17	0.00	-375.96
Target OLANDER 10 EP	7341.54	90.00	179.63	6897.82	S 98.82	W 1047.71	10.00	203.45
T.D. & Target OLA...2mi	17018.24	90.00	179.63	6897.82	S 9775.31	W 985.83	0.00	9824.90

East (Feet) ->

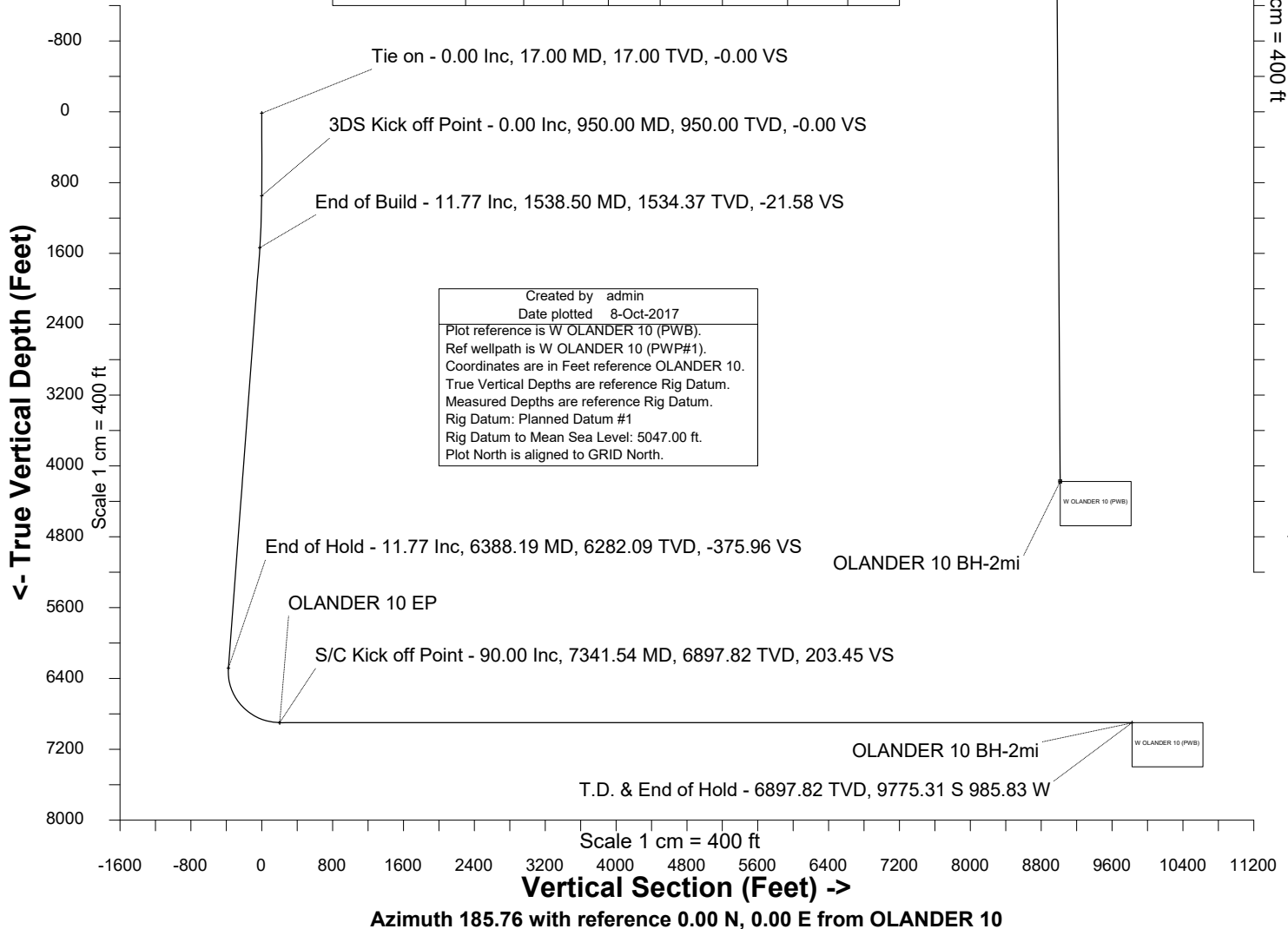
-2400 -1600 -800 0 800  
Scale 1 cm = 400 ft

Surface 0.00 N 0.00 E

OLANDER 10 EP

<- North(Feet)

Scale 1 cm = 400 ft





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



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
OLANDER 10	40.20288000	-105.02497000	1317106.9914	3132684.8189	0.72N	134.08E	0.00

Declination		
Date	Source	Time
Jul-12-2017	EMM-2015 [2000.0-2020.0]	14:01

Installation Details						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Olander Pad	40.20288000	-105.02545000	1317106.2735	3132550.7471	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	1317106.99	3132684.82
950.00	0.00	296.750	950.00	0.00N	0.00E	==>	0.00	1317106.99	3132684.82
1538.50	11.77	296.750	1534.37	27.11N	53.79W	2.00	-21.58	1317134.10	3132631.03
6388.19	11.77	296.750	6282.09	472.38N	937.17W	==>	-375.96	1317579.35	3131747.69
7341.54	90.00	179.630	6897.82	98.82S	1047.71W	10.00	203.45	1317008.18	3131637.15
17018.24	90.00	179.630	6897.82	9775.31S	985.83W	==>	9824.90	1307332.12	3131699.03

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	1.00	296.750	1000.00	0.20N	0.39W	2.00	-0.16	
1100.00	3.00	296.750	1099.93	1.77N	3.51W	2.00	-1.41	
1200.00	5.00	296.750	1199.68	4.91N	9.73W	2.00	-3.91	
1300.00	7.00	296.750	1299.13	9.61N	19.07W	2.00	-7.65	
1400.00	9.00	296.750	1398.15	15.88N	31.50W	2.00	-12.63	
1500.00	11.00	296.750	1496.63	23.69N	47.00W	2.00	-18.86	
1517.00	11.34	296.750	1513.31	25.17N	49.94W	2.00	-20.03	
1617.00	11.77	296.750	1611.22	34.32N	68.09W	==>	-27.31	
1717.00	11.77	296.750	1709.12	43.50N	86.30W	==>	-34.62	
1817.00	11.77	296.750	1807.01	52.68N	104.52W	==>	-41.93	
1917.00	11.77	296.750	1904.91	61.86N	122.73W	==>	-49.24	
2017.00	11.77	296.750	2002.81	71.04N	140.95W	==>	-56.54	
2117.00	11.77	296.750	2100.71	80.23N	159.16W	==>	-63.85	
2217.00	11.77	296.750	2198.60	89.41N	177.38W	==>	-71.16	
2317.00	11.77	296.750	2296.50	98.59N	195.59W	==>	-78.46	
2417.00	11.77	296.750	2394.40	107.77N	213.81W	==>	-85.77	
2517.00	11.77	296.750	2492.30	116.95N	232.02W	==>	-93.08	
2617.00	11.77	296.750	2590.19	126.13N	250.24W	==>	-100.39	
2717.00	11.77	296.750	2688.09	135.31N	268.45W	==>	-107.69	
2817.00	11.77	296.750	2785.99	144.50N	286.67W	==>	-115.00	
2917.00	11.77	296.750	2883.89	153.68N	304.88W	==>	-122.31	
3017.00	11.77	296.750	2981.78	162.86N	323.10W	==>	-129.62	

All data is in Feet unless otherwise stated  
Coordinates are from Slot MD's are from Rig ( Planned Datum #1 5047.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 185.760 degrees  
Bottom hole distance is 9824.90 Feet on azimuth 185.76 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Microsoft  
Date Printed: 8-Oct-2017



SYSDRILL  
Well Design Combined Report  
Wellbore: W OLANDER 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
3117.00	11.77	296.750	3079.68	172.04N	341.31W	==>	-136.92	
3217.00	11.77	296.750	3177.58	181.22N	359.53W	==>	-144.23	
3317.00	11.77	296.750	3275.48	190.40N	377.75W	==>	-151.54	
3417.00	11.77	296.750	3373.37	199.58N	395.96W	==>	-158.84	
3517.00	11.77	296.750	3471.27	208.76N	414.18W	==>	-166.15	
3617.00	11.77	296.750	3569.17	217.95N	432.39W	==>	-173.46	
3717.00	11.77	296.750	3667.07	227.13N	450.61W	==>	-180.77	
3817.00	11.77	296.750	3764.96	236.31N	468.82W	==>	-188.07	
3917.00	11.77	296.750	3862.86	245.49N	487.04W	==>	-195.38	
4017.00	11.77	296.750	3960.76	254.67N	505.25W	==>	-202.69	
4117.00	11.77	296.750	4058.66	263.85N	523.47W	==>	-210.00	
4217.00	11.77	296.750	4156.55	273.03N	541.68W	==>	-217.30	
4317.00	11.77	296.750	4254.45	282.22N	559.90W	==>	-224.61	
4417.00	11.77	296.750	4352.35	291.40N	578.11W	==>	-231.92	
4517.00	11.77	296.750	4450.24	300.58N	596.33W	==>	-239.23	
4617.00	11.77	296.750	4548.14	309.76N	614.54W	==>	-246.53	
4717.00	11.77	296.750	4646.04	318.94N	632.76W	==>	-253.84	
4817.00	11.77	296.750	4743.94	328.12N	650.97W	==>	-261.15	
4917.00	11.77	296.750	4841.83	337.30N	669.19W	==>	-268.45	
5017.00	11.77	296.750	4939.73	346.48N	687.40W	==>	-275.76	
5117.00	11.77	296.750	5037.63	355.67N	705.62W	==>	-283.07	
5217.00	11.77	296.750	5135.53	364.85N	723.83W	==>	-290.38	
5317.00	11.77	296.750	5233.42	374.03N	742.05W	==>	-297.68	
5417.00	11.77	296.750	5331.32	383.21N	760.27W	==>	-304.99	
5517.00	11.77	296.750	5429.22	392.39N	778.48W	==>	-312.30	
5617.00	11.77	296.750	5527.12	401.57N	796.70W	==>	-319.61	
5717.00	11.77	296.750	5625.01	410.75N	814.91W	==>	-326.91	
5817.00	11.77	296.750	5722.91	419.94N	833.13W	==>	-334.22	
5917.00	11.77	296.750	5820.81	429.12N	851.34W	==>	-341.53	
6017.00	11.77	296.750	5918.71	438.30N	869.56W	==>	-348.83	
6117.00	11.77	296.750	6016.60	447.48N	887.77W	==>	-356.14	
6217.00	11.77	296.750	6114.50	456.66N	905.99W	==>	-363.45	
6317.00	11.77	296.750	6212.40	465.84N	924.20W	==>	-370.76	
6417.00	10.79	282.860	6310.35	474.30N	942.42W	10.00	-377.34	
6517.00	12.91	233.640	6408.45	469.75N	960.59W	10.00	-370.99	
6617.00	20.37	209.610	6504.31	447.94N	978.23W	10.00	-347.52	
6717.00	29.33	198.900	6595.00	409.54N	994.80W	10.00	-307.65	
6817.00	38.78	192.980	6677.78	355.71N	1009.81W	10.00	-252.59	
6917.00	48.42	189.100	6750.12	288.10N	1022.79W	10.00	-184.02	
7017.00	58.15	186.250	6809.84	208.74N	1033.36W	10.00	-104.00	
7117.00	67.94	183.940	6855.11	120.07N	1041.19W	10.00	-14.99	
7217.00	77.76	181.940	6884.57	24.76N	1046.05W	10.00	80.33	
7317.00	87.59	180.080	6897.31	74.28S	1047.77W	10.00	179.04	
7417.00	90.00	179.630	6897.82	174.27S	1047.23W	==>	278.47	
7517.00	90.00	179.630	6897.82	274.27S	1046.59W	==>	377.90	
7617.00	90.00	179.630	6897.82	374.27S	1045.95W	==>	477.33	
7717.00	90.00	179.630	6897.82	474.27S	1045.31W	==>	576.76	
7817.00	90.00	179.630	6897.82	574.27S	1044.67W	==>	676.19	
7917.00	90.00	179.630	6897.82	674.26S	1044.03W	==>	775.62	
8017.00	90.00	179.630	6897.82	774.26S	1043.39W	==>	875.05	
8117.00	90.00	179.630	6897.82	874.26S	1042.75W	==>	974.48	
8217.00	90.00	179.630	6897.82	974.26S	1042.12W	==>	1073.91	
8317.00	90.00	179.630	6897.82	1074.26S	1041.48W	==>	1173.34	
8417.00	90.00	179.630	6897.82	1174.25S	1040.84W	==>	1272.76	
8517.00	90.00	179.630	6897.82	1274.25S	1040.20W	==>	1372.19	
8617.00	90.00	179.630	6897.82	1374.25S	1039.56W	==>	1471.62	
8717.00	90.00	179.630	6897.82	1474.25S	1038.92W	==>	1571.05	
8817.00	90.00	179.630	6897.82	1574.24S	1038.28W	==>	1670.48	
8917.00	90.00	179.630	6897.82	1674.24S	1037.64W	==>	1769.91	

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Vertical Section is from 0.00N 0.00E on azimuth 185.760 degrees  
Bottom hole distance is 9824.90 Feet on azimuth 185.76 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Microsoft  
Date Printed: 8-Oct-2017



SYS DRILL  
Well Design Combined Report  
Wellbore: W OLANDER 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
9017.00	90.00	179.630	6897.82	1774.24S	1037.00W	==>	1869.34	
9117.00	90.00	179.630	6897.82	1874.24S	1036.36W	==>	1968.77	
9217.00	90.00	179.630	6897.82	1974.24S	1035.72W	==>	2068.20	
9317.00	90.00	179.630	6897.82	2074.23S	1035.08W	==>	2167.63	
9417.00	90.00	179.630	6897.82	2174.23S	1034.44W	==>	2267.06	
9517.00	90.00	179.630	6897.82	2274.23S	1033.80W	==>	2366.49	
9617.00	90.00	179.630	6897.82	2374.23S	1033.16W	==>	2465.91	
9717.00	90.00	179.630	6897.82	2474.23S	1032.52W	==>	2565.34	
9817.00	90.00	179.630	6897.82	2574.22S	1031.88W	==>	2664.77	
9917.00	90.00	179.630	6897.82	2674.22S	1031.24W	==>	2764.20	
10017.00	90.00	179.630	6897.82	2774.22S	1030.60W	==>	2863.63	
10117.00	90.00	179.630	6897.82	2874.22S	1029.97W	==>	2963.06	
10217.00	90.00	179.630	6897.82	2974.22S	1029.33W	==>	3062.49	
10317.00	90.00	179.630	6897.82	3074.21S	1028.69W	==>	3161.92	
10417.00	90.00	179.630	6897.82	3174.21S	1028.05W	==>	3261.35	
10517.00	90.00	179.630	6897.82	3274.21S	1027.41W	==>	3360.78	
10617.00	90.00	179.630	6897.82	3374.21S	1026.77W	==>	3460.21	
10717.00	90.00	179.630	6897.82	3474.21S	1026.13W	==>	3559.63	
10817.00	90.00	179.630	6897.82	3574.20S	1025.49W	==>	3659.06	
10917.00	90.00	179.630	6897.82	3674.20S	1024.85W	==>	3758.49	
11017.00	90.00	179.630	6897.82	3774.20S	1024.21W	==>	3857.92	
11117.00	90.00	179.630	6897.82	3874.20S	1023.57W	==>	3957.35	
11217.00	90.00	179.630	6897.82	3974.20S	1022.93W	==>	4056.78	
11317.00	90.00	179.630	6897.82	4074.19S	1022.29W	==>	4156.21	
11417.00	90.00	179.630	6897.82	4174.19S	1021.65W	==>	4255.64	
11517.00	90.00	179.630	6897.82	4274.19S	1021.01W	==>	4355.07	
11617.00	90.00	179.630	6897.82	4374.19S	1020.37W	==>	4454.50	
11717.00	90.00	179.630	6897.82	4474.19S	1019.73W	==>	4553.93	
11817.00	90.00	179.630	6897.82	4574.18S	1019.09W	==>	4653.35	
11917.00	90.00	179.630	6897.82	4674.18S	1018.45W	==>	4752.78	
12017.00	90.00	179.630	6897.82	4774.18S	1017.82W	==>	4852.21	
12117.00	90.00	179.630	6897.82	4874.18S	1017.18W	==>	4951.64	
12217.00	90.00	179.630	6897.82	4974.18S	1016.54W	==>	5051.07	
12317.00	90.00	179.630	6897.82	5074.17S	1015.90W	==>	5150.50	
12417.00	90.00	179.630	6897.82	5174.17S	1015.26W	==>	5249.93	
12517.00	90.00	179.630	6897.82	5274.17S	1014.62W	==>	5349.36	
12617.00	90.00	179.630	6897.82	5374.17S	1013.98W	==>	5448.79	
12717.00	90.00	179.630	6897.82	5474.17S	1013.34W	==>	5548.22	
12817.00	90.00	179.630	6897.82	5574.16S	1012.70W	==>	5647.65	
12917.00	90.00	179.630	6897.82	5674.16S	1012.06W	==>	5747.08	
13017.00	90.00	179.630	6897.82	5774.16S	1011.42W	==>	5846.50	
13117.00	90.00	179.630	6897.82	5874.16S	1010.78W	==>	5945.93	
13217.00	90.00	179.630	6897.82	5974.15S	1010.14W	==>	6045.36	
13317.00	90.00	179.630	6897.82	6074.15S	1009.50W	==>	6144.79	
13417.00	90.00	179.630	6897.82	6174.15S	1008.86W	==>	6244.22	
13517.00	90.00	179.630	6897.82	6274.15S	1008.22W	==>	6343.65	
13617.00	90.00	179.630	6897.82	6374.15S	1007.58W	==>	6443.08	
13717.00	90.00	179.630	6897.82	6474.14S	1006.94W	==>	6542.51	
13817.00	90.00	179.630	6897.82	6574.14S	1006.31W	==>	6641.94	
13917.00	90.00	179.630	6897.82	6674.14S	1005.67W	==>	6741.37	
14017.00	90.00	179.630	6897.82	6774.14S	1005.03W	==>	6840.80	
14117.00	90.00	179.630	6897.82	6874.14S	1004.39W	==>	6940.22	
14217.00	90.00	179.630	6897.82	6974.13S	1003.75W	==>	7039.65	
14317.00	90.00	179.630	6897.82	7074.13S	1003.11W	==>	7139.08	
14417.00	90.00	179.630	6897.82	7174.13S	1002.47W	==>	7238.51	
14517.00	90.00	179.630	6897.82	7274.13S	1001.83W	==>	7337.94	
14617.00	90.00	179.630	6897.82	7374.13S	1001.19W	==>	7437.37	
14717.00	90.00	179.630	6897.82	7474.12S	1000.55W	==>	7536.80	
14817.00	90.00	179.630	6897.82	7574.12S	999.91W	==>	7636.23	

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Vertical Section is from 0.00N 0.00E on azimuth 185.760 degrees  
Bottom hole distance is 9824.90 Feet on azimuth 185.76 degrees from Wellhead  
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Prepared by Microsoft  
Date Printed: 8-Oct-2017



SYS DRILL  
Well Design Combined Report  
Wellbore: W OLANDER 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
14917.00	90.00	179.630	6897.82	7674.12S	999.27W	==>	7735.66	
15017.00	90.00	179.630	6897.82	7774.12S	998.63W	==>	7835.09	
15117.00	90.00	179.630	6897.82	7874.12S	997.99W	==>	7934.52	
15217.00	90.00	179.630	6897.82	7974.11S	997.35W	==>	8033.94	
15317.00	90.00	179.630	6897.82	8074.11S	996.71W	==>	8133.37	
15417.00	90.00	179.630	6897.82	8174.11S	996.07W	==>	8232.80	
15517.00	90.00	179.630	6897.82	8274.11S	995.43W	==>	8332.23	
15617.00	90.00	179.630	6897.82	8374.11S	994.79W	==>	8431.66	
15717.00	90.00	179.630	6897.82	8474.10S	994.16W	==>	8531.09	
15817.00	90.00	179.630	6897.82	8574.10S	993.52W	==>	8630.52	
15917.00	90.00	179.630	6897.82	8674.10S	992.88W	==>	8729.95	
16017.00	90.00	179.630	6897.82	8774.10S	992.24W	==>	8829.38	
16117.00	90.00	179.630	6897.82	8874.10S	991.60W	==>	8928.81	
16217.00	90.00	179.630	6897.82	8974.09S	990.96W	==>	9028.24	
16317.00	90.00	179.630	6897.82	9074.09S	990.32W	==>	9127.67	
16417.00	90.00	179.630	6897.82	9174.09S	989.68W	==>	9227.09	
16517.00	90.00	179.630	6897.82	9274.09S	989.04W	==>	9326.52	
16617.00	90.00	179.630	6897.82	9374.09S	988.40W	==>	9425.95	
16717.00	90.00	179.630	6897.82	9474.08S	987.76W	==>	9525.38	
16817.00	90.00	179.630	6897.82	9574.08S	987.12W	==>	9624.81	
16917.00	90.00	179.630	6897.82	9674.08S	986.48W	==>	9724.24	
17017.00	90.00	179.630	6897.82	9774.08S	985.84W	==>	9823.67	
17018.24	90.00	179.630	6897.82	9775.31S	985.83W	==>	9824.90	

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 5047.0ft above Mean Sea Level )  
Vertical Section is from 0.00N 0.00E on azimuth 185.760 degrees  
Bottom hole distance is 9824.90 Feet on azimuth 185.76 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Microsoft  
Date Printed: 8-Oct-2017



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



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
OLANDER 10 EP	98.82S	1047.71W	6897.82	40.20262410	-105.02872260	1317008.18	3131637.15
OLANDER 10 BH-2mi	9775.31S	985.83W	6897.82	40.17606160	-105.02868520	1307332.12	3131699.03

Survey Tool Program					
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
562312	Planned	1517.00	1513.31	WdW Rate Gyro	Standard
562311	Planned	17018.24	6897.82	ISCWSA MWD	Rev 4 + SAG + FLT

Notes