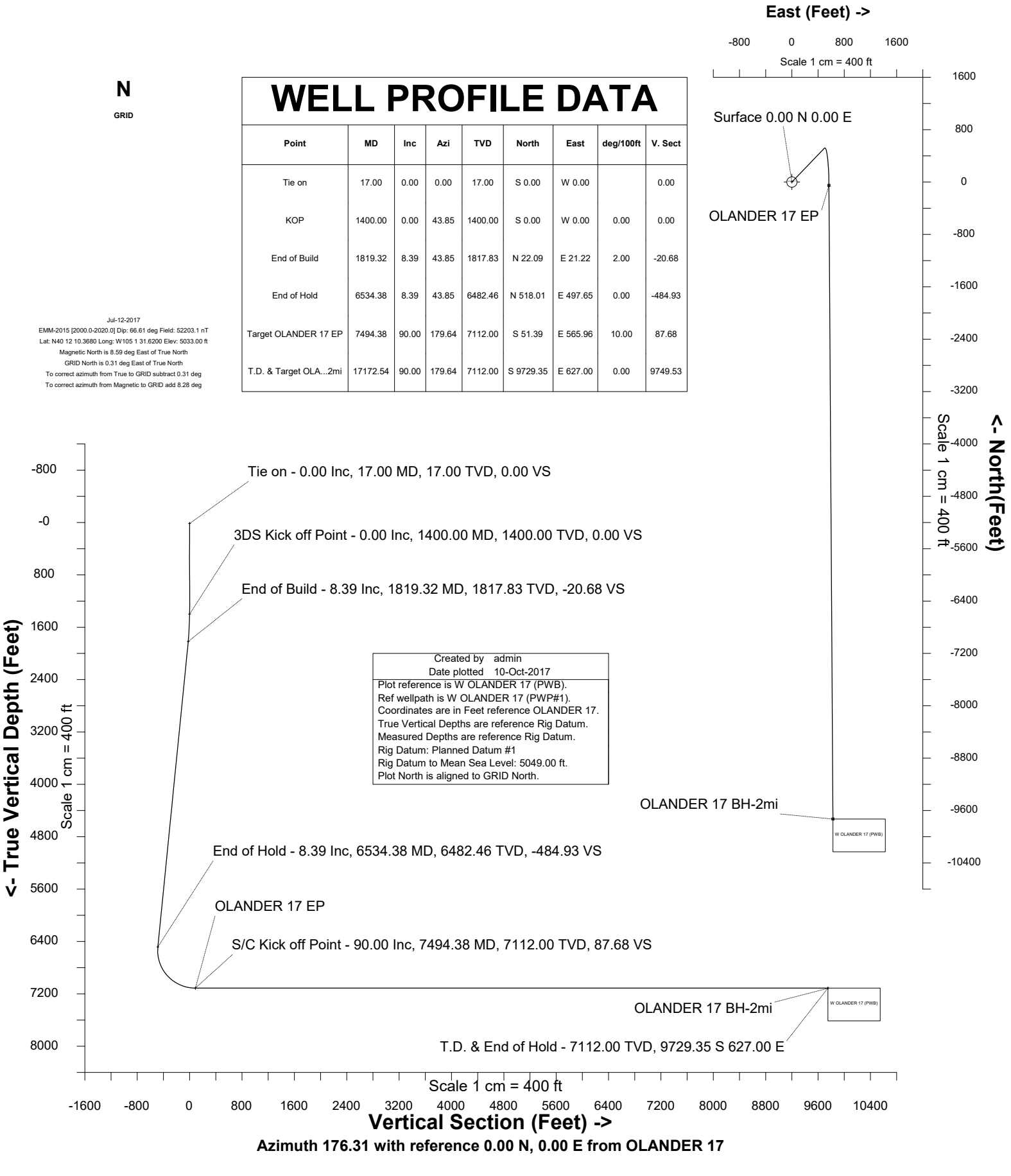
Cub Creek Energy, LLC

Location	**Weld County, CO**	**Slot**	**OLANDER 17**
Field	**WATTENBERG**	**Well**	**W OLANDER 17**
Installation	**Olander Pad**	**Wellbore**	**W OLANDER 17 (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	1400.00	0.00	43.85	1400.00	S 0.00	W 0.00	0.00	0.00
End of Build	1819.32	8.39	43.85	1817.83	N 22.09	E 21.22	2.00	-20.68
End of Hold	6534.38	8.39	43.85	6482.46	N 518.01	E 497.65	0.00	-484.93
Target OLANDER 17 EP	7494.38	90.00	179.64	7112.00	S 51.39	E 565.96	10.00	87.68
T.D. & Target OLA...2mi	17172.54	90.00	179.64	7112.00	S 9729.35	E 627.00	0.00	9749.53

Jul-12-2017
EMM-2015 [2000.0-2020.0] Dip: 66.61 deg Field: 52203.1 nT
Lat: N40 12 10.3680 Long: W105 1 31.6200 Elev: 5033.00 ft
Magnetic North is 8.59 deg East of True North
GRID North is 0.31 deg East of True North
To correct azimuth from True to GRID subtract 0.31 deg
To correct azimuth from Magnetic to GRID add 8.28 deg

Created by	admin
Date plotted	10-Oct-2017

Plot reference is W OLANDER 17 (PWB).
Ref wellpath is W OLANDER 17 (PWP#1).
Coordinates are in Feet reference OLANDER 17.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Planned Datum #1
Rig Datum to Mean Sea Level: 5049.00 ft.
Plot North is aligned to GRID North.

Paradigm

SYSDRILL
Well Design Combined Report
Wellbore: W OLANDER 17 (PWB)

IPT

Wellhead Details

Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
OLANDER 17	40.20281000	-105.02524000	1317081.0881	3132609.5400	25.19S	58.80E	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	1317081.09	3132609.54
1400.00	0.00	43.850	1400.00	0.00N	0.00E	==>	0.00	1317081.09	3132609.54
1819.32	8.39	43.850	1817.83	22.09N	21.22E	2.00	-20.68	1317103.18	3132630.76
6534.38	8.39	43.850	6482.46	518.01N	497.65E	==>	-484.93	1317599.07	3133107.17
7494.38	90.00	179.640	7112.00	51.39S	565.96E	10.00	87.68	1317029.70	3133175.48
17172.54	90.00	179.640	7112.00	9729.35S	627.00E	==>	9749.53	1307352.18	3133236.51

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	43.850	1400.00	0.00N	0.00E	==>	0.00	
1500.00	2.00	43.850	1499.98	1.26N	1.21E	2.00	-1.18	
1517.00	2.34	43.850	1516.97	1.72N	1.65E	2.00	-1.61	
1617.00	4.34	43.850	1616.79	5.92N	5.69E	2.00	-5.55	
1717.00	6.34	43.850	1716.35	12.63N	12.14E	2.00	-11.83	
1817.00	8.34	43.850	1815.53	21.85N	20.99E	2.00	-20.45	
1917.00	8.39	43.850	1914.46	32.36N	31.09E	==>	-30.30	
2017.00	8.39	43.850	2013.39	42.88N	41.20E	==>	-40.14	
2117.00	8.39	43.850	2112.32	53.40N	51.30E	==>	-49.99	
2217.00	8.39	43.850	2211.25	63.92N	61.41E	==>	-59.84	
2317.00	8.39	43.850	2310.18	74.44N	71.51E	==>	-69.68	
2417.00	8.39	43.850	2409.11	84.95N	81.61E	==>	-79.53	
2517.00	8.39	43.850	2508.04	95.47N	91.72E	==>	-89.37	
2617.00	8.39	43.850	2606.97	105.99N	101.82E	==>	-99.22	
2717.00	8.39	43.850	2705.91	116.51N	111.93E	==>	-109.07	
2817.00	8.39	43.850	2804.84	127.02N	122.03E	==>	-118.91	
2917.00	8.39	43.850	2903.77	137.54N	132.14E	==>	-128.76	
3017.00	8.39	43.850	3002.70	148.06N	142.24E	==>	-138.61	

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Vertical Section is from 0.00N 0.00E on azimuth 176.310 degrees
Bottom hole distance is 9749.53 Feet on azimuth 176.31 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Microsoft
Date Printed: 10-Oct-2017

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	8.39	43.850	3101.63	158.58N	152.35E	==>	-148.45	
3217.00	8.39	43.850	3200.56	169.10N	162.45E	==>	-158.30	
3317.00	8.39	43.850	3299.49	179.61N	172.55E	==>	-168.14	
3417.00	8.39	43.850	3398.42	190.13N	182.66E	==>	-177.99	
3517.00	8.39	43.850	3497.35	200.65N	192.76E	==>	-187.84	
3617.00	8.39	43.850	3596.28	211.17N	202.87E	==>	-197.68	
3717.00	8.39	43.850	3695.21	221.68N	212.97E	==>	-207.53	
3817.00	8.39	43.850	3794.14	232.20N	223.08E	==>	-217.37	
3917.00	8.39	43.850	3893.07	242.72N	233.18E	==>	-227.22	
4017.00	8.39	43.850	3992.00	253.24N	243.28E	==>	-237.07	
4117.00	8.39	43.850	4090.93	263.75N	253.39E	==>	-246.91	
4217.00	8.39	43.850	4189.87	274.27N	263.49E	==>	-256.76	
4317.00	8.39	43.850	4288.80	284.79N	273.60E	==>	-266.61	
4417.00	8.39	43.850	4387.73	295.31N	283.70E	==>	-276.45	
4517.00	8.39	43.850	4486.66	305.83N	293.81E	==>	-286.30	
4617.00	8.39	43.850	4585.59	316.34N	303.91E	==>	-296.14	
4717.00	8.39	43.850	4684.52	326.86N	314.02E	==>	-305.99	
4817.00	8.39	43.850	4783.45	337.38N	324.12E	==>	-315.84	
4917.00	8.39	43.850	4882.38	347.90N	334.22E	==>	-325.68	
5017.00	8.39	43.850	4981.31	358.41N	344.33E	==>	-335.53	
5117.00	8.39	43.850	5080.24	368.93N	354.43E	==>	-345.37	
5217.00	8.39	43.850	5179.17	379.45N	364.54E	==>	-355.22	
5317.00	8.39	43.850	5278.10	389.97N	374.64E	==>	-365.07	
5417.00	8.39	43.850	5377.03	400.49N	384.75E	==>	-374.91	
5517.00	8.39	43.850	5475.96	411.00N	394.85E	==>	-384.76	
5617.00	8.39	43.850	5574.89	421.52N	404.95E	==>	-394.61	
5717.00	8.39	43.850	5673.83	432.04N	415.06E	==>	-404.45	
5817.00	8.39	43.850	5772.76	442.56N	425.16E	==>	-414.30	
5917.00	8.39	43.850	5871.69	453.07N	435.27E	==>	-424.14	
6017.00	8.39	43.850	5970.62	463.59N	445.37E	==>	-433.99	
6117.00	8.39	43.850	6069.55	474.11N	455.48E	==>	-443.84	
6217.00	8.39	43.850	6168.48	484.63N	465.58E	==>	-453.68	
6317.00	8.39	43.850	6267.41	495.15N	475.69E	==>	-463.53	
6417.00	8.39	43.850	6366.34	505.66N	485.79E	==>	-473.37	
6517.00	8.39	43.850	6465.27	516.18N	495.89E	==>	-483.22	
6617.00	6.29	110.750	6564.54	520.75N	506.07E	10.00	-487.13	
6717.00	13.57	154.440	6663.09	508.20N	516.28E	10.00	-473.94	
6817.00	22.98	165.610	6757.96	478.62N	526.22E	10.00	-443.79	
6917.00	32.73	170.440	6846.28	432.93N	535.59E	10.00	-397.59	
7017.00	42.59	173.220	6925.35	372.52N	544.10E	10.00	-336.75	
7117.00	52.49	175.110	6992.77	299.21N	551.49E	10.00	-263.12	
7217.00	62.42	176.560	7046.50	215.24N	557.55E	10.00	-178.94	
7317.00	72.36	177.770	7084.90	123.15N	562.08E	10.00	-86.75	
7417.00	82.30	178.840	7106.81	25.75N	564.94E	10.00	10.63	
7517.00	90.00	179.640	7112.00	74.01S	566.10E	==>	110.26	
7617.00	90.00	179.640	7112.00	174.00S	566.73E	==>	210.09	
7717.00	90.00	179.640	7112.00	274.00S	567.37E	==>	309.92	
7817.00	90.00	179.640	7112.00	374.00S	568.00E	==>	409.75	
7917.00	90.00	179.640	7112.00	474.00S	568.63E	==>	509.58	
8017.00	90.00	179.640	7112.00	574.00S	569.26E	==>	609.42	
8117.00	90.00	179.640	7112.00	673.99S	569.89E	==>	709.25	
8217.00	90.00	179.640	7112.00	773.99S	570.52E	==>	809.08	
8317.00	90.00	179.640	7112.00	873.99S	571.15E	==>	908.91	
8417.00	90.00	179.640	7112.00	973.99S	571.78E	==>	1008.74	
8517.00	90.00	179.640	7112.00	1073.99S	572.41E	==>	1108.57	
8617.00	90.00	179.640	7112.00	1173.98S	573.04E	==>	1208.41	
8717.00	90.00	179.640	7112.00	1273.98S	573.67E	==>	1308.24	
8817.00	90.00	179.640	7112.00	1373.98S	574.30E	==>	1408.07	
8917.00	90.00	179.640	7112.00	1473.98S	574.93E	==>	1507.90	

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Vertical Section is from 0.00N 0.00E on azimuth 176.310 degrees
Bottom hole distance is 9749.53 Feet on azimuth 176.31 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Microsoft
Date Printed: 10-Oct-2017

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	179.640	7112.00	1573.98S	575.56E	==>	1607.73	
9117.00	90.00	179.640	7112.00	1673.97S	576.19E	==>	1707.56	
9217.00	90.00	179.640	7112.00	1773.97S	576.83E	==>	1807.40	
9317.00	90.00	179.640	7112.00	1873.97S	577.46E	==>	1907.23	
9417.00	90.00	179.640	7112.00	1973.97S	578.09E	==>	2007.06	
9517.00	90.00	179.640	7112.00	2073.97S	578.72E	==>	2106.89	
9617.00	90.00	179.640	7112.00	2173.96S	579.35E	==>	2206.72	
9717.00	90.00	179.640	7112.00	2273.96S	579.98E	==>	2306.55	
9817.00	90.00	179.640	7112.00	2373.96S	580.61E	==>	2406.38	
9917.00	90.00	179.640	7112.00	2473.96S	581.24E	==>	2506.22	
10017.00	90.00	179.640	7112.00	2573.96S	581.87E	==>	2606.05	
10117.00	90.00	179.640	7112.00	2673.95S	582.50E	==>	2705.88	
10217.00	90.00	179.640	7112.00	2773.95S	583.13E	==>	2805.71	
10317.00	90.00	179.640	7112.00	2873.95S	583.76E	==>	2905.54	
10417.00	90.00	179.640	7112.00	2973.95S	584.39E	==>	3005.37	
10517.00	90.00	179.640	7112.00	3073.95S	585.02E	==>	3105.21	
10617.00	90.00	179.640	7112.00	3173.94S	585.65E	==>	3205.04	
10717.00	90.00	179.640	7112.00	3273.94S	586.28E	==>	3304.87	
10817.00	90.00	179.640	7112.00	3373.94S	586.92E	==>	3404.70	
10917.00	90.00	179.640	7112.00	3473.94S	587.55E	==>	3504.53	
11017.00	90.00	179.640	7112.00	3573.94S	588.18E	==>	3604.36	
11117.00	90.00	179.640	7112.00	3673.93S	588.81E	==>	3704.19	
11217.00	90.00	179.640	7112.00	3773.93S	589.44E	==>	3804.03	
11317.00	90.00	179.640	7112.00	3873.93S	590.07E	==>	3903.86	
11417.00	90.00	179.640	7112.00	3973.93S	590.70E	==>	4003.69	
11517.00	90.00	179.640	7112.00	4073.93S	591.33E	==>	4103.52	
11617.00	90.00	179.640	7112.00	4173.92S	591.96E	==>	4203.35	
11717.00	90.00	179.640	7112.00	4273.92S	592.59E	==>	4303.18	
11817.00	90.00	179.640	7112.00	4373.92S	593.22E	==>	4403.02	
11917.00	90.00	179.640	7112.00	4473.92S	593.85E	==>	4502.85	
12017.00	90.00	179.640	7112.00	4573.92S	594.48E	==>	4602.68	
12117.00	90.00	179.640	7112.00	4673.91S	595.11E	==>	4702.51	
12217.00	90.00	179.640	7112.00	4773.91S	595.74E	==>	4802.34	
12317.00	90.00	179.640	7112.00	4873.91S	596.38E	==>	4902.17	
12417.00	90.00	179.640	7112.00	4973.91S	597.01E	==>	5002.01	
12517.00	90.00	179.640	7112.00	5073.91S	597.64E	==>	5101.84	
12617.00	90.00	179.640	7112.00	5173.90S	598.27E	==>	5201.67	
12717.00	90.00	179.640	7112.00	5273.90S	598.90E	==>	5301.50	
12817.00	90.00	179.640	7112.00	5373.90S	599.53E	==>	5401.33	
12917.00	90.00	179.640	7112.00	5473.90S	600.16E	==>	5501.16	
13017.00	90.00	179.640	7112.00	5573.90S	600.79E	==>	5600.99	
13117.00	90.00	179.640	7112.00	5673.89S	601.42E	==>	5700.83	
13217.00	90.00	179.640	7112.00	5773.89S	602.05E	==>	5800.66	
13317.00	90.00	179.640	7112.00	5873.89S	602.68E	==>	5900.49	
13417.00	90.00	179.640	7112.00	5973.89S	603.31E	==>	6000.32	
13517.00	90.00	179.640	7112.00	6073.89S	603.94E	==>	6100.15	
13617.00	90.00	179.640	7112.00	6173.88S	604.57E	==>	6199.98	
13717.00	90.00	179.640	7112.00	6273.88S	605.20E	==>	6299.82	
13817.00	90.00	179.640	7112.00	6373.88S	605.84E	==>	6399.65	
13917.00	90.00	179.640	7112.00	6473.88S	606.47E	==>	6499.48	
14017.00	90.00	179.640	7112.00	6573.88S	607.10E	==>	6599.31	
14117.00	90.00	179.640	7112.00	6673.87S	607.73E	==>	6699.14	
14217.00	90.00	179.640	7112.00	6773.87S	608.36E	==>	6798.97	
14317.00	90.00	179.640	7112.00	6873.87S	608.99E	==>	6898.81	
14417.00	90.00	179.640	7112.00	6973.87S	609.62E	==>	6998.64	
14517.00	90.00	179.640	7112.00	7073.87S	610.25E	==>	7098.47	
14617.00	90.00	179.640	7112.00	7173.86S	610.88E	==>	7198.30	
14717.00	90.00	179.640	7112.00	7273.86S	611.51E	==>	7298.13	
14817.00	90.00	179.640	7112.00	7373.86S	612.14E	==>	7397.96	

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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
14917.00	90.00	179.640	7112.00	7473.86S	612.77E	==>	7497.79	
15017.00	90.00	179.640	7112.00	7573.86S	613.40E	==>	7597.63	
15117.00	90.00	179.640	7112.00	7673.85S	614.03E	==>	7697.46	
15217.00	90.00	179.640	7112.00	7773.85S	614.66E	==>	7797.29	
15317.00	90.00	179.640	7112.00	7873.85S	615.29E	==>	7897.12	
15417.00	90.00	179.640	7112.00	7973.85S	615.93E	==>	7996.95	
15517.00	90.00	179.640	7112.00	8073.85S	616.56E	==>	8096.78	
15617.00	90.00	179.640	7112.00	8173.84S	617.19E	==>	8196.62	
15717.00	90.00	179.640	7112.00	8273.84S	617.82E	==>	8296.45	
15817.00	90.00	179.640	7112.00	8373.84S	618.45E	==>	8396.28	
15917.00	90.00	179.640	7112.00	8473.84S	619.08E	==>	8496.11	
16017.00	90.00	179.640	7112.00	8573.84S	619.71E	==>	8595.94	
16117.00	90.00	179.640	7112.00	8673.83S	620.34E	==>	8695.77	
16217.00	90.00	179.640	7112.00	8773.83S	620.97E	==>	8795.60	
16317.00	90.00	179.640	7112.00	8873.83S	621.60E	==>	8895.44	
16417.00	90.00	179.640	7112.00	8973.83S	622.23E	==>	8995.27	
16517.00	90.00	179.640	7112.00	9073.83S	622.86E	==>	9095.10	
16617.00	90.00	179.640	7112.00	9173.82S	623.49E	==>	9194.93	
16717.00	90.00	179.640	7112.00	9273.82S	624.12E	==>	9294.76	
16817.00	90.00	179.640	7112.00	9373.82S	624.75E	==>	9394.59	
16917.00	90.00	179.640	7112.00	9473.82S	625.39E	==>	9494.43	
17017.00	90.00	179.640	7112.00	9573.82S	626.02E	==>	9594.26	
17117.00	90.00	179.640	7112.00	9673.81S	626.65E	==>	9694.09	
17172.54	90.00	179.640	7112.00	9729.35S	627.00E	==>	9749.53	

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 5049.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 176.310 degrees
Bottom hole distance is 9749.53 Feet on azimuth 176.31 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Microsoft
Date Printed: 10-Oct-2017

Targets

Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
OLANDER 17 EP	51.39S	565.96E	7112.00	40.20266060	-105.02321490	1317029.70	3133175.48
OLANDER 17 BH-2mi	9729.35S	627.00E	7112.00	40.17609410	-105.02318270	1307352.18	3133236.51

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
562478	Planned	1517.00	1516.97	WdW Rate Gyro	Standard
562477	Planned	17172.54	7112.00	ISCWSA MWD	Rev 4 + SAG + FLT

Notes

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