

Cub Creek Energy, LLC

Location	Weld County, CO	Slot	OLANDER 7
Field	WATTENBERG	Well	W OLANDER 7
Installation	Olander Pad	Wellbore	W OLANDER 7 (PWB)

East (Feet) ->

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

N
GRID

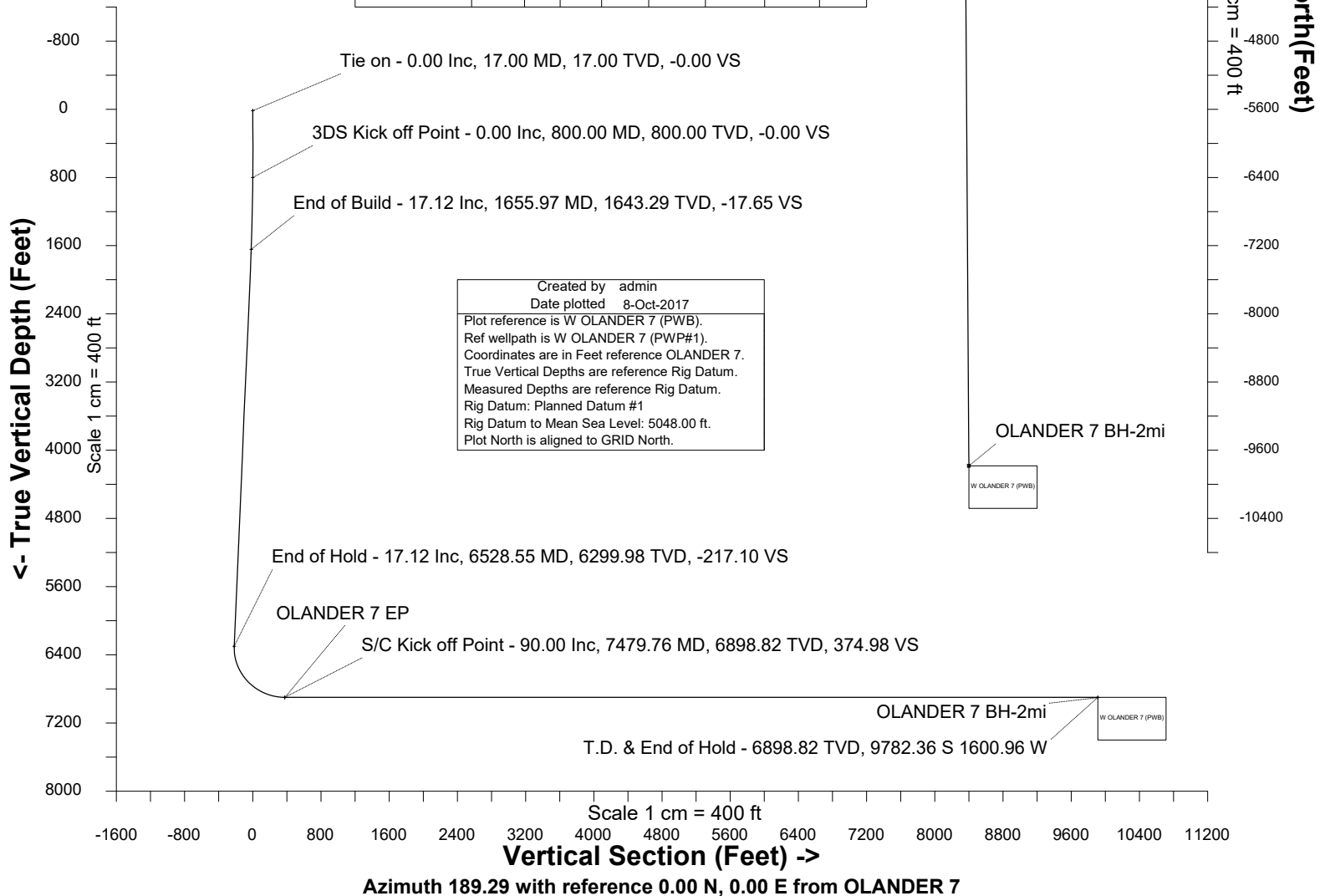
WELL PROFILE DATA

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	800.00	0.00	287.29	800.00	S 0.00	W 0.00	0.00	-0.00
End of Build	1655.97	17.12	287.29	1643.29	N 37.72	W 121.20	2.00	-17.65
End of Hold	6528.55	17.12	287.29	6299.98	N 463.95	W 1490.71	0.00	-217.10
Target OLANDER 7 EP	7479.76	90.00	179.63	6898.82	S 107.83	W 1662.82	10.00	374.98
T.D. & Target OLA...2mi	17154.49	90.00	179.63	6898.82	S 9782.36	W 1600.96	0.00	9912.50

Surface 0.00 N 0.00 E

OLANDER 7 EP

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





SYSDRILL
Well Design Combined Report
Wellbore: W OLANDER 7 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
OLANDER 7	40.20288000	-105.02513000	1317106.7520	3132640.1283	0.48N	89.39E	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	1317106.75	3132640.13
800.00	0.00	287.290	800.00	0.00N	0.00E	==>	0.00	1317106.75	3132640.13
1655.97	17.12	287.290	1643.29	37.72N	121.20W	2.00	-17.65	1317144.47	3132518.94
6528.55	17.12	287.290	6299.98	463.95N	1490.71W	==>	-217.10	1317570.68	3131149.48
7479.76	90.00	179.630	6898.82	107.83S	1662.82W	10.00	374.98	1316998.93	3130977.38
17154.49	90.00	179.630	6898.82	9782.36S	1600.96W	==>	9912.50	1307324.83	3131039.24

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	287.290	800.00	0.00N	0.00E	==>	0.00	
900.00	2.00	287.290	899.98	0.52N	1.67W	2.00	-0.24	
1000.00	4.00	287.290	999.84	2.07N	6.66W	2.00	-0.97	
1100.00	6.00	287.290	1099.45	4.66N	14.98W	2.00	-2.18	
1200.00	8.00	287.290	1198.70	8.29N	26.62W	2.00	-3.88	
1300.00	10.00	287.290	1297.47	12.93N	41.56W	2.00	-6.05	
1400.00	12.00	287.290	1395.62	18.60N	59.77W	2.00	-8.71	
1500.00	14.00	287.290	1493.06	25.29N	81.25W	2.00	-11.83	
1517.00	14.34	287.290	1509.54	26.52N	85.23W	2.00	-12.41	
1617.00	16.34	287.290	1605.97	34.39N	110.48W	2.00	-16.09	
1717.00	17.12	287.290	1701.62	43.06N	138.35W	==>	-20.15	
1817.00	17.12	287.290	1797.19	51.81N	166.46W	==>	-24.24	
1917.00	17.12	287.290	1892.76	60.55N	194.56W	==>	-28.33	
2017.00	17.12	287.290	1988.32	69.30N	222.67W	==>	-32.43	
2117.00	17.12	287.290	2083.89	78.05N	250.78W	==>	-36.52	
2217.00	17.12	287.290	2179.46	86.80N	278.88W	==>	-40.61	
2317.00	17.12	287.290	2275.03	95.54N	306.99W	==>	-44.71	
2417.00	17.12	287.290	2370.60	104.29N	335.09W	==>	-48.80	
2517.00	17.12	287.290	2466.17	113.04N	363.20W	==>	-52.89	
2617.00	17.12	287.290	2561.74	121.79N	391.31W	==>	-56.99	
2717.00	17.12	287.290	2657.31	130.53N	419.41W	==>	-61.08	
2817.00	17.12	287.290	2752.88	139.28N	447.52W	==>	-65.17	
2917.00	17.12	287.290	2848.45	148.03N	475.63W	==>	-69.27	
3017.00	17.12	287.290	2944.02	156.78N	503.73W	==>	-73.36	

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 5048.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 189.290 degrees
Bottom hole distance is 9912.50 Feet on azimuth 189.29 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 7 (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	17.12	287.290	3039.59	165.52N	531.84W	==>	-77.45	
3217.00	17.12	287.290	3135.16	174.27N	559.95W	==>	-81.55	
3317.00	17.12	287.290	3230.73	183.02N	588.05W	==>	-85.64	
3417.00	17.12	287.290	3326.30	191.77N	616.16W	==>	-89.73	
3517.00	17.12	287.290	3421.86	200.51N	644.27W	==>	-93.83	
3617.00	17.12	287.290	3517.43	209.26N	672.37W	==>	-97.92	
3717.00	17.12	287.290	3613.00	218.01N	700.48W	==>	-102.01	
3817.00	17.12	287.290	3708.57	226.76N	728.59W	==>	-106.11	
3917.00	17.12	287.290	3804.14	235.50N	756.69W	==>	-110.20	
4017.00	17.12	287.290	3899.71	244.25N	784.80W	==>	-114.29	
4117.00	17.12	287.290	3995.28	253.00N	812.91W	==>	-118.39	
4217.00	17.12	287.290	4090.85	261.75N	841.01W	==>	-122.48	
4317.00	17.12	287.290	4186.42	270.50N	869.12W	==>	-126.57	
4417.00	17.12	287.290	4281.99	279.24N	897.23W	==>	-130.67	
4517.00	17.12	287.290	4377.56	287.99N	925.33W	==>	-134.76	
4617.00	17.12	287.290	4473.13	296.74N	953.44W	==>	-138.85	
4717.00	17.12	287.290	4568.70	305.49N	981.55W	==>	-142.95	
4817.00	17.12	287.290	4664.27	314.23N	1009.65W	==>	-147.04	
4917.00	17.12	287.290	4759.84	322.98N	1037.76W	==>	-151.13	
5017.00	17.12	287.290	4855.40	331.73N	1065.87W	==>	-155.23	
5117.00	17.12	287.290	4950.97	340.48N	1093.97W	==>	-159.32	
5217.00	17.12	287.290	5046.54	349.22N	1122.08W	==>	-163.41	
5317.00	17.12	287.290	5142.11	357.97N	1150.19W	==>	-167.51	
5417.00	17.12	287.290	5237.68	366.72N	1178.29W	==>	-171.60	
5517.00	17.12	287.290	5333.25	375.47N	1206.40W	==>	-175.69	
5617.00	17.12	287.290	5428.82	384.21N	1234.51W	==>	-179.79	
5717.00	17.12	287.290	5524.39	392.96N	1262.61W	==>	-183.88	
5817.00	17.12	287.290	5619.96	401.71N	1290.72W	==>	-187.97	
5917.00	17.12	287.290	5715.53	410.46N	1318.83W	==>	-192.06	
6017.00	17.12	287.290	5811.10	419.20N	1346.93W	==>	-196.16	
6117.00	17.12	287.290	5906.67	427.95N	1375.04W	==>	-200.25	
6217.00	17.12	287.290	6002.24	436.70N	1403.15W	==>	-204.34	
6317.00	17.12	287.290	6097.81	445.45N	1431.25W	==>	-208.44	
6417.00	17.12	287.290	6193.38	454.19N	1459.36W	==>	-212.53	
6517.00	17.12	287.290	6288.94	462.94N	1487.47W	==>	-216.62	
6617.00	16.76	256.620	6384.76	464.87N	1515.60W	10.00	-213.98	
6717.00	21.23	228.700	6479.48	449.55N	1543.31W	10.00	-194.39	
6817.00	28.55	212.290	6570.24	417.32N	1569.74W	10.00	-158.31	
6917.00	37.05	202.510	6654.28	369.16N	1594.10W	10.00	-106.85	
7017.00	46.10	196.040	6729.05	306.55N	1615.64W	10.00	-41.58	
7117.00	55.41	191.310	6792.26	231.37N	1633.72W	10.00	35.53	
7217.00	64.86	187.550	6842.02	145.92N	1647.77W	10.00	122.13	
7317.00	74.40	184.330	6876.79	52.79N	1657.38W	10.00	215.59	
7417.00	83.98	181.410	6895.53	45.19S	1662.26W	10.00	313.07	
7517.00	90.00	179.630	6898.82	145.07S	1662.59W	==>	411.69	
7617.00	90.00	179.630	6898.82	245.07S	1661.95W	==>	510.27	
7717.00	90.00	179.630	6898.82	345.06S	1661.31W	==>	608.85	
7817.00	90.00	179.630	6898.82	445.06S	1660.67W	==>	707.43	
7917.00	90.00	179.630	6898.82	545.06S	1660.03W	==>	806.01	
8017.00	90.00	179.630	6898.82	645.06S	1659.39W	==>	904.59	
8117.00	90.00	179.630	6898.82	745.06S	1658.75W	==>	1003.18	
8217.00	90.00	179.630	6898.82	845.05S	1658.11W	==>	1101.76	
8317.00	90.00	179.630	6898.82	945.05S	1657.47W	==>	1200.34	
8417.00	90.00	179.630	6898.82	1045.05S	1656.83W	==>	1298.92	
8517.00	90.00	179.630	6898.82	1145.05S	1656.19W	==>	1397.50	
8617.00	90.00	179.630	6898.82	1245.04S	1655.55W	==>	1496.09	
8717.00	90.00	179.630	6898.82	1345.04S	1654.91W	==>	1594.67	
8817.00	90.00	179.630	6898.82	1445.04S	1654.27W	==>	1693.25	
8917.00	90.00	179.630	6898.82	1545.04S	1653.63W	==>	1791.83	

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5048.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 189.290 degrees
Bottom hole distance is 9912.50 Feet on azimuth 189.29 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 7 (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	6898.82	1645.04S	1652.99W	==>	1890.41	
9117.00	90.00	179.630	6898.82	1745.03S	1652.35W	==>	1988.99	
9217.00	90.00	179.630	6898.82	1845.03S	1651.71W	==>	2087.58	
9317.00	90.00	179.630	6898.82	1945.03S	1651.08W	==>	2186.16	
9417.00	90.00	179.630	6898.82	2045.03S	1650.44W	==>	2284.74	
9517.00	90.00	179.630	6898.82	2145.03S	1649.80W	==>	2383.32	
9617.00	90.00	179.630	6898.82	2245.02S	1649.16W	==>	2481.90	
9717.00	90.00	179.630	6898.82	2345.02S	1648.52W	==>	2580.49	
9817.00	90.00	179.630	6898.82	2445.02S	1647.88W	==>	2679.07	
9917.00	90.00	179.630	6898.82	2545.02S	1647.24W	==>	2777.65	
10017.00	90.00	179.630	6898.82	2645.02S	1646.60W	==>	2876.23	
10117.00	90.00	179.630	6898.82	2745.01S	1645.96W	==>	2974.81	
10217.00	90.00	179.630	6898.82	2845.01S	1645.32W	==>	3073.40	
10317.00	90.00	179.630	6898.82	2945.01S	1644.68W	==>	3171.98	
10417.00	90.00	179.630	6898.82	3045.01S	1644.04W	==>	3270.56	
10517.00	90.00	179.630	6898.82	3145.01S	1643.40W	==>	3369.14	
10617.00	90.00	179.630	6898.82	3245.00S	1642.76W	==>	3467.72	
10717.00	90.00	179.630	6898.82	3345.00S	1642.12W	==>	3566.30	
10817.00	90.00	179.630	6898.82	3445.00S	1641.48W	==>	3664.89	
10917.00	90.00	179.630	6898.82	3545.00S	1640.84W	==>	3763.47	
11017.00	90.00	179.630	6898.82	3645.00S	1640.21W	==>	3862.05	
11117.00	90.00	179.630	6898.82	3744.99S	1639.57W	==>	3960.63	
11217.00	90.00	179.630	6898.82	3844.99S	1638.93W	==>	4059.21	
11317.00	90.00	179.630	6898.82	3944.99S	1638.29W	==>	4157.80	
11417.00	90.00	179.630	6898.82	4044.99S	1637.65W	==>	4256.38	
11517.00	90.00	179.630	6898.82	4144.99S	1637.01W	==>	4354.96	
11617.00	90.00	179.630	6898.82	4244.98S	1636.37W	==>	4453.54	
11717.00	90.00	179.630	6898.82	4344.98S	1635.73W	==>	4552.12	
11817.00	90.00	179.630	6898.82	4444.98S	1635.09W	==>	4650.70	
11917.00	90.00	179.630	6898.82	4544.98S	1634.45W	==>	4749.29	
12017.00	90.00	179.630	6898.82	4644.98S	1633.81W	==>	4847.87	
12117.00	90.00	179.630	6898.82	4744.97S	1633.17W	==>	4946.45	
12217.00	90.00	179.630	6898.82	4844.97S	1632.53W	==>	5045.03	
12317.00	90.00	179.630	6898.82	4944.97S	1631.89W	==>	5143.61	
12417.00	90.00	179.630	6898.82	5044.97S	1631.25W	==>	5242.20	
12517.00	90.00	179.630	6898.82	5144.97S	1630.61W	==>	5340.78	
12617.00	90.00	179.630	6898.82	5244.96S	1629.97W	==>	5439.36	
12717.00	90.00	179.630	6898.82	5344.96S	1629.34W	==>	5537.94	
12817.00	90.00	179.630	6898.82	5444.96S	1628.70W	==>	5636.52	
12917.00	90.00	179.630	6898.82	5544.96S	1628.06W	==>	5735.10	
13017.00	90.00	179.630	6898.82	5644.95S	1627.42W	==>	5833.69	
13117.00	90.00	179.630	6898.82	5744.95S	1626.78W	==>	5932.27	
13217.00	90.00	179.630	6898.82	5844.95S	1626.14W	==>	6030.85	
13317.00	90.00	179.630	6898.82	5944.95S	1625.50W	==>	6129.43	
13417.00	90.00	179.630	6898.82	6044.95S	1624.86W	==>	6228.01	
13517.00	90.00	179.630	6898.82	6144.94S	1624.22W	==>	6326.60	
13617.00	90.00	179.630	6898.82	6244.94S	1623.58W	==>	6425.18	
13717.00	90.00	179.630	6898.82	6344.94S	1622.94W	==>	6523.76	
13817.00	90.00	179.630	6898.82	6444.94S	1622.30W	==>	6622.34	
13917.00	90.00	179.630	6898.82	6544.94S	1621.66W	==>	6720.92	
14017.00	90.00	179.630	6898.82	6644.93S	1621.02W	==>	6819.50	
14117.00	90.00	179.630	6898.82	6744.93S	1620.38W	==>	6918.09	
14217.00	90.00	179.630	6898.82	6844.93S	1619.74W	==>	7016.67	
14317.00	90.00	179.630	6898.82	6944.93S	1619.10W	==>	7115.25	
14417.00	90.00	179.630	6898.82	7044.93S	1618.46W	==>	7213.83	
14517.00	90.00	179.630	6898.82	7144.92S	1617.83W	==>	7312.41	
14617.00	90.00	179.630	6898.82	7244.92S	1617.19W	==>	7411.00	
14717.00	90.00	179.630	6898.82	7344.92S	1616.55W	==>	7509.58	
14817.00	90.00	179.630	6898.82	7444.92S	1615.91W	==>	7608.16	

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Vertical Section is from 0.00N 0.00E on azimuth 189.290 degrees
Bottom hole distance is 9912.50 Feet on azimuth 189.29 degrees from Wellhead
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Prepared by Microsoft
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SYS DRILL
Well Design Combined Report
Wellbore: W OLANDER 7 (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	6898.82	7544.92S	1615.27W	==>	7706.74	
15017.00	90.00	179.630	6898.82	7644.91S	1614.63W	==>	7805.32	
15117.00	90.00	179.630	6898.82	7744.91S	1613.99W	==>	7903.90	
15217.00	90.00	179.630	6898.82	7844.91S	1613.35W	==>	8002.49	
15317.00	90.00	179.630	6898.82	7944.91S	1612.71W	==>	8101.07	
15417.00	90.00	179.630	6898.82	8044.91S	1612.07W	==>	8199.65	
15517.00	90.00	179.630	6898.82	8144.90S	1611.43W	==>	8298.23	
15617.00	90.00	179.630	6898.82	8244.90S	1610.79W	==>	8396.81	
15717.00	90.00	179.630	6898.82	8344.90S	1610.15W	==>	8495.40	
15817.00	90.00	179.630	6898.82	8444.90S	1609.51W	==>	8593.98	
15917.00	90.00	179.630	6898.82	8544.90S	1608.87W	==>	8692.56	
16017.00	90.00	179.630	6898.82	8644.89S	1608.23W	==>	8791.14	
16117.00	90.00	179.630	6898.82	8744.89S	1607.59W	==>	8889.72	
16217.00	90.00	179.630	6898.82	8844.89S	1606.96W	==>	8988.30	
16317.00	90.00	179.630	6898.82	8944.89S	1606.32W	==>	9086.89	
16417.00	90.00	179.630	6898.82	9044.89S	1605.68W	==>	9185.47	
16517.00	90.00	179.630	6898.82	9144.88S	1605.04W	==>	9284.05	
16617.00	90.00	179.630	6898.82	9244.88S	1604.40W	==>	9382.63	
16717.00	90.00	179.630	6898.82	9344.88S	1603.76W	==>	9481.21	
16817.00	90.00	179.630	6898.82	9444.88S	1603.12W	==>	9579.80	
16917.00	90.00	179.630	6898.82	9544.88S	1602.48W	==>	9678.38	
17017.00	90.00	179.630	6898.82	9644.87S	1601.84W	==>	9776.96	
17117.00	90.00	179.630	6898.82	9744.87S	1601.20W	==>	9875.54	
17154.49	90.00	179.630	6898.82	9782.36S	1600.96W	==>	9912.50	

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 5048.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 189.290 degrees
Bottom hole distance is 9912.50 Feet on azimuth 189.29 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Microsoft
Date Printed: 8-Oct-2017



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
OLANDER 7 EP	107.83S	1662.82W	6898.82	40.20260830	-105.03108480	1316998.93	3130977.38
OLANDER 7 BH-2mi	9782.36S	1600.96W	6898.82	40.17605120	-105.03104650	1307324.83	3131039.24

Survey Tool Program					
Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool	Error Model
562246	Planned	1517.00	1509.54	WdW Rate Gyro	Standard
562245	Planned	17154.49	6898.82	ISCWSA MWD	Rev 4 + SAG + FLT

Notes