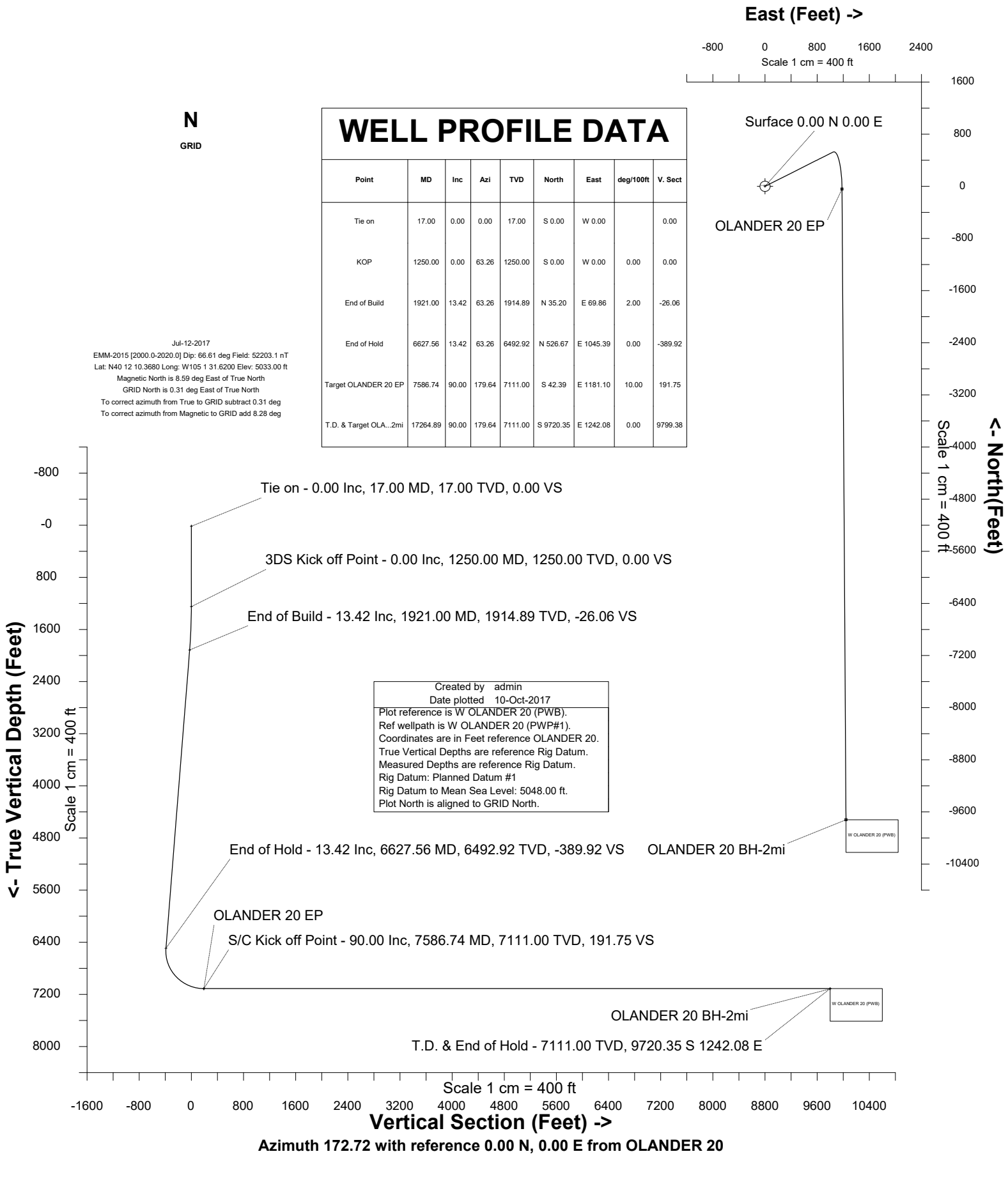
# Cub Creek Energy, LLC

| | | | |
|---|---|---|---|
| **Location** | **Weld County, CO** | **Slot** | **OLANDER 20** |
| **Field** | **WATTENBERG** | **Well** | **W OLANDER 20** |
| **Installation** | **Olander Pad** | **Wellbore** | **W OLANDER 20 (PWB)** |



Paradigm

SYSDRILL
Well Design Combined Report
Wellbore: W OLANDER 20 (PWB)

IPT

## Wellhead Details

| Name | Latitude | Longitude | Northing | Easting | North | East | Slot Elevation Above Ground |
|---|---|---|---|---|---|---|---|
| OLANDER 20 | 40.20281000 | -105.02508000 | 1317081.3274 | 3132654.2307 | 24.95S | 103.49E | 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 | 1317081.33 | 3132654.23 |
| 1250.00 | 0.00 | 63.260 | 1250.00 | 0.00N | 0.00E | ==> | 0.00 | 1317081.33 | 3132654.23 |
| 1921.00 | 13.42 | 63.260 | 1914.89 | 35.20N | 69.86E | 2.00 | -26.06 | 1317116.52 | 3132724.09 |
| 6627.56 | 13.42 | 63.260 | 6492.92 | 526.67N | 1045.39E | ==> | -389.92 | 1317607.97 | 3133699.57 |
| 7586.74 | 90.00 | 179.640 | 7111.00 | 42.39S | 1181.10E | 10.00 | 191.75 | 1317038.94 | 3133835.28 |
| 17264.89 | 90.00 | 179.640 | 7111.00 | 9720.35S | 1242.08E | ==> | 9799.38 | 1307361.41 | 3133896.26 |

## 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 | 1.00 | 63.260 | 1300.00 | 0.20N | 0.39E | 2.00 | -0.15 | |
| | | | | | | | | |
| 1400.00 | 3.00 | 63.260 | 1399.93 | 1.77N | 3.51E | 2.00 | -1.31 | |
| 1500.00 | 5.00 | 63.260 | 1499.68 | 4.90N | 9.74E | 2.00 | -3.63 | |
| 1517.00 | 5.34 | 63.260 | 1516.61 | 5.59N | 11.10E | 2.00 | -4.14 | |
| 1617.00 | 7.34 | 63.260 | 1616.00 | 10.56N | 20.97E | 2.00 | -7.82 | |
| 1717.00 | 9.34 | 63.260 | 1714.93 | 17.09N | 33.92E | 2.00 | -12.65 | |
| | | | | | | | | |
| 1817.00 | 11.34 | 63.260 | 1813.31 | 25.16N | 49.95E | 2.00 | -18.63 | |
| 1917.00 | 13.34 | 63.260 | 1910.99 | 34.78N | 69.03E | 2.00 | -25.75 | |
| 2017.00 | 13.42 | 63.260 | 2008.26 | 45.22N | 89.76E | ==> | -33.48 | |
| 2117.00 | 13.42 | 63.260 | 2105.53 | 55.66N | 110.48E | ==> | -41.21 | |
| 2217.00 | 13.42 | 63.260 | 2202.80 | 66.10N | 131.21E | ==> | -48.94 | |
| | | | | | | | | |
| 2317.00 | 13.42 | 63.260 | 2300.07 | 76.55N | 151.94E | ==> | -56.67 | |
| 2417.00 | 13.42 | 63.260 | 2397.34 | 86.99N | 172.66E | ==> | -64.40 | |
| 2517.00 | 13.42 | 63.260 | 2494.61 | 97.43N | 193.39E | ==> | -72.13 | |
| 2617.00 | 13.42 | 63.260 | 2591.88 | 107.87N | 214.12E | ==> | -79.86 | |
| 2717.00 | 13.42 | 63.260 | 2689.15 | 118.32N | 234.85E | ==> | -87.59 | |
| | | | | | | | | |
| 2817.00 | 13.42 | 63.260 | 2786.42 | 128.76N | 255.57E | ==> | -95.33 | |
| 2917.00 | 13.42 | 63.260 | 2883.69 | 139.20N | 276.30E | ==> | -103.06 | |
| 3017.00 | 13.42 | 63.260 | 2980.95 | 149.64N | 297.03E | ==> | -110.79 | |

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 172.720 degrees
Bottom hole distance is 9799.38 Feet on azimuth 172.72 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 | 13.42 | 63.260 | 3078.22 | 160.09N | 317.75E | ==> | -118.52 | |
| 3217.00 | 13.42 | 63.260 | 3175.49 | 170.53N | 338.48E | ==> | -126.25 | |
| | | | | | | | | |
| 3317.00 | 13.42 | 63.260 | 3272.76 | 180.97N | 359.21E | ==> | -133.98 | |
| 3417.00 | 13.42 | 63.260 | 3370.03 | 191.41N | 379.94E | ==> | -141.71 | |
| 3517.00 | 13.42 | 63.260 | 3467.30 | 201.85N | 400.66E | ==> | -149.44 | |
| 3617.00 | 13.42 | 63.260 | 3564.57 | 212.30N | 421.39E | ==> | -157.17 | |
| 3717.00 | 13.42 | 63.260 | 3661.84 | 222.74N | 442.12E | ==> | -164.90 | |
| | | | | | | | | |
| 3817.00 | 13.42 | 63.260 | 3759.11 | 233.18N | 462.84E | ==> | -172.63 | |
| 3917.00 | 13.42 | 63.260 | 3856.38 | 243.62N | 483.57E | ==> | -180.37 | |
| 4017.00 | 13.42 | 63.260 | 3953.65 | 254.07N | 504.30E | ==> | -188.10 | |
| 4117.00 | 13.42 | 63.260 | 4050.92 | 264.51N | 525.02E | ==> | -195.83 | |
| 4217.00 | 13.42 | 63.260 | 4148.19 | 274.95N | 545.75E | ==> | -203.56 | |
| | | | | | | | | |
| 4317.00 | 13.42 | 63.260 | 4245.46 | 285.39N | 566.48E | ==> | -211.29 | |
| 4417.00 | 13.42 | 63.260 | 4342.73 | 295.84N | 587.21E | ==> | -219.02 | |
| 4517.00 | 13.42 | 63.260 | 4440.00 | 306.28N | 607.93E | ==> | -226.75 | |
| 4617.00 | 13.42 | 63.260 | 4537.27 | 316.72N | 628.66E | ==> | -234.48 | |
| 4717.00 | 13.42 | 63.260 | 4634.54 | 327.16N | 649.39E | ==> | -242.21 | |
| | | | | | | | | |
| 4817.00 | 13.42 | 63.260 | 4731.80 | 337.61N | 670.11E | ==> | -249.94 | |
| 4917.00 | 13.42 | 63.260 | 4829.07 | 348.05N | 690.84E | ==> | -257.68 | |
| 5017.00 | 13.42 | 63.260 | 4926.34 | 358.49N | 711.57E | ==> | -265.41 | |
| 5117.00 | 13.42 | 63.260 | 5023.61 | 368.93N | 732.30E | ==> | -273.14 | |
| 5217.00 | 13.42 | 63.260 | 5120.88 | 379.37N | 753.02E | ==> | -280.87 | |
| | | | | | | | | |
| 5317.00 | 13.42 | 63.260 | 5218.15 | 389.82N | 773.75E | ==> | -288.60 | |
| 5417.00 | 13.42 | 63.260 | 5315.42 | 400.26N | 794.48E | ==> | -296.33 | |
| 5517.00 | 13.42 | 63.260 | 5412.69 | 410.70N | 815.20E | ==> | -304.06 | |
| 5617.00 | 13.42 | 63.260 | 5509.96 | 421.14N | 835.93E | ==> | -311.79 | |
| 5717.00 | 13.42 | 63.260 | 5607.23 | 431.59N | 856.66E | ==> | -319.52 | |
| | | | | | | | | |
| 5817.00 | 13.42 | 63.260 | 5704.50 | 442.03N | 877.38E | ==> | -327.25 | |
| 5917.00 | 13.42 | 63.260 | 5801.77 | 452.47N | 898.11E | ==> | -334.98 | |
| 6017.00 | 13.42 | 63.260 | 5899.04 | 462.91N | 918.84E | ==> | -342.72 | |
| 6117.00 | 13.42 | 63.260 | 5996.31 | 473.36N | 939.57E | ==> | -350.45 | |
| 6217.00 | 13.42 | 63.260 | 6093.58 | 483.80N | 960.29E | ==> | -358.18 | |
| | | | | | | | | |
| 6317.00 | 13.42 | 63.260 | 6190.85 | 494.24N | 981.02E | ==> | -365.91 | |
| 6417.00 | 13.42 | 63.260 | 6288.12 | 504.68N | 1001.75E | ==> | -373.64 | |
| 6517.00 | 13.42 | 63.260 | 6385.39 | 515.12N | 1022.47E | ==> | -381.37 | |
| 6617.00 | 13.42 | 63.260 | 6482.66 | 525.57N | 1043.20E | ==> | -389.10 | |
| 6717.00 | 12.43 | 103.830 | 6580.27 | 529.04N | 1064.05E | 10.00 | -389.91 | |
| | | | | | | | | |
| 6817.00 | 17.68 | 137.540 | 6676.98 | 515.23N | 1084.81E | 10.00 | -373.57 | |
| 6917.00 | 25.84 | 153.450 | 6769.86 | 484.45N | 1104.85E | 10.00 | -340.50 | |
| 7017.00 | 34.92 | 161.810 | 6856.07 | 437.64N | 1123.58E | 10.00 | -291.70 | |
| 7117.00 | 44.37 | 167.010 | 6933.01 | 376.22N | 1140.41E | 10.00 | -228.64 | |
| 7217.00 | 53.97 | 170.700 | 6998.33 | 302.06N | 1154.84E | 10.00 | -153.25 | |
| | | | | | | | | |
| 7317.00 | 63.67 | 173.570 | 7050.04 | 217.41N | 1166.43E | 10.00 | -67.81 | |
| 7417.00 | 73.41 | 175.990 | 7086.59 | 124.85N | 1174.83E | 10.00 | 25.07 | |
| 7517.00 | 83.18 | 178.170 | 7106.85 | 27.17N | 1179.77E | 10.00 | 122.58 | |
| 7617.00 | 90.00 | 179.640 | 7111.00 | 72.65S | 1181.29E | ==> | 221.79 | |
| 7717.00 | 90.00 | 179.640 | 7111.00 | 172.64S | 1181.92E | ==> | 321.06 | |
| | | | | | | | | |
| 7817.00 | 90.00 | 179.640 | 7111.00 | 272.64S | 1182.55E | ==> | 420.33 | |
| 7917.00 | 90.00 | 179.640 | 7111.00 | 372.64S | 1183.18E | ==> | 519.60 | |
| 8017.00 | 90.00 | 179.640 | 7111.00 | 472.64S | 1183.81E | ==> | 618.87 | |
| 8117.00 | 90.00 | 179.640 | 7111.00 | 572.64S | 1184.44E | ==> | 718.15 | |
| 8217.00 | 90.00 | 179.640 | 7111.00 | 672.63S | 1185.07E | ==> | 817.42 | |
| | | | | | | | | |
| 8317.00 | 90.00 | 179.640 | 7111.00 | 772.63S | 1185.70E | ==> | 916.69 | |
| 8417.00 | 90.00 | 179.640 | 7111.00 | 872.63S | 1186.33E | ==> | 1015.96 | |
| 8517.00 | 90.00 | 179.640 | 7111.00 | 972.63S | 1186.96E | ==> | 1115.23 | |
| 8617.00 | 90.00 | 179.640 | 7111.00 | 1072.63S | 1187.59E | ==> | 1214.50 | |
| 8717.00 | 90.00 | 179.640 | 7111.00 | 1172.62S | 1188.22E | ==> | 1313.77 | |
| | | | | | | | | |
| 8817.00 | 90.00 | 179.640 | 7111.00 | 1272.62S | 1188.85E | ==> | 1413.05 | |
| 8917.00 | 90.00 | 179.640 | 7111.00 | 1372.62S | 1189.48E | ==> | 1512.32 | |

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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 172.720 degrees
Bottom hole distance is 9799.38 Feet on azimuth 172.72 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 | 7111.00 | 1472.62S | 1190.11E | ==> | 1611.59 | |
| 9117.00 | 90.00 | 179.640 | 7111.00 | 1572.62S | 1190.74E | ==> | 1710.86 | |
| 9217.00 | 90.00 | 179.640 | 7111.00 | 1672.61S | 1191.37E | ==> | 1810.13 | |
| | | | | | | | | |
| 9317.00 | 90.00 | 179.640 | 7111.00 | 1772.61S | 1192.00E | ==> | 1909.40 | |
| 9417.00 | 90.00 | 179.640 | 7111.00 | 1872.61S | 1192.63E | ==> | 2008.67 | |
| 9517.00 | 90.00 | 179.640 | 7111.00 | 1972.61S | 1193.26E | ==> | 2107.95 | |
| 9617.00 | 90.00 | 179.640 | 7111.00 | 2072.61S | 1193.89E | ==> | 2207.22 | |
| 9717.00 | 90.00 | 179.640 | 7111.00 | 2172.60S | 1194.52E | ==> | 2306.49 | |
| | | | | | | | | |
| 9817.00 | 90.00 | 179.640 | 7111.00 | 2272.60S | 1195.15E | ==> | 2405.76 | |
| 9917.00 | 90.00 | 179.640 | 7111.00 | 2372.60S | 1195.78E | ==> | 2505.03 | |
| 10017.00 | 90.00 | 179.640 | 7111.00 | 2472.60S | 1196.41E | ==> | 2604.30 | |
| 10117.00 | 90.00 | 179.640 | 7111.00 | 2572.60S | 1197.04E | ==> | 2703.57 | |
| 10217.00 | 90.00 | 179.640 | 7111.00 | 2672.59S | 1197.67E | ==> | 2802.84 | |
| | | | | | | | | |
| 10317.00 | 90.00 | 179.640 | 7111.00 | 2772.59S | 1198.30E | ==> | 2902.12 | |
| 10417.00 | 90.00 | 179.640 | 7111.00 | 2872.59S | 1198.93E | ==> | 3001.39 | |
| 10517.00 | 90.00 | 179.640 | 7111.00 | 2972.59S | 1199.56E | ==> | 3100.66 | |
| 10617.00 | 90.00 | 179.640 | 7111.00 | 3072.59S | 1200.19E | ==> | 3199.93 | |
| 10717.00 | 90.00 | 179.640 | 7111.00 | 3172.58S | 1200.82E | ==> | 3299.20 | |
| | | | | | | | | |
| 10817.00 | 90.00 | 179.640 | 7111.00 | 3272.58S | 1201.45E | ==> | 3398.47 | |
| 10917.00 | 90.00 | 179.640 | 7111.00 | 3372.58S | 1202.08E | ==> | 3497.74 | |
| 11017.00 | 90.00 | 179.640 | 7111.00 | 3472.58S | 1202.71E | ==> | 3597.02 | |
| 11117.00 | 90.00 | 179.640 | 7111.00 | 3572.58S | 1203.34E | ==> | 3696.29 | |
| 11217.00 | 90.00 | 179.640 | 7111.00 | 3672.57S | 1203.97E | ==> | 3795.56 | |
| | | | | | | | | |
| 11317.00 | 90.00 | 179.640 | 7111.00 | 3772.57S | 1204.60E | ==> | 3894.83 | |
| 11417.00 | 90.00 | 179.640 | 7111.00 | 3872.57S | 1205.23E | ==> | 3994.10 | |
| 11517.00 | 90.00 | 179.640 | 7111.00 | 3972.57S | 1205.86E | ==> | 4093.37 | |
| 11617.00 | 90.00 | 179.640 | 7111.00 | 4072.57S | 1206.49E | ==> | 4192.64 | |
| 11717.00 | 90.00 | 179.640 | 7111.00 | 4172.56S | 1207.12E | ==> | 4291.92 | |
| | | | | | | | | |
| 11817.00 | 90.00 | 179.640 | 7111.00 | 4272.56S | 1207.75E | ==> | 4391.19 | |
| 11917.00 | 90.00 | 179.640 | 7111.00 | 4372.56S | 1208.38E | ==> | 4490.46 | |
| 12017.00 | 90.00 | 179.640 | 7111.00 | 4472.56S | 1209.02E | ==> | 4589.73 | |
| 12117.00 | 90.00 | 179.640 | 7111.00 | 4572.56S | 1209.65E | ==> | 4689.00 | |
| 12217.00 | 90.00 | 179.640 | 7111.00 | 4672.55S | 1210.28E | ==> | 4788.27 | |
| | | | | | | | | |
| 12317.00 | 90.00 | 179.640 | 7111.00 | 4772.55S | 1210.91E | ==> | 4887.54 | |
| 12417.00 | 90.00 | 179.640 | 7111.00 | 4872.55S | 1211.54E | ==> | 4986.81 | |
| 12517.00 | 90.00 | 179.640 | 7111.00 | 4972.55S | 1212.17E | ==> | 5086.09 | |
| 12617.00 | 90.00 | 179.640 | 7111.00 | 5072.55S | 1212.80E | ==> | 5185.36 | |
| 12717.00 | 90.00 | 179.640 | 7111.00 | 5172.54S | 1213.43E | ==> | 5284.63 | |
| | | | | | | | | |
| 12817.00 | 90.00 | 179.640 | 7111.00 | 5272.54S | 1214.06E | ==> | 5383.90 | |
| 12917.00 | 90.00 | 179.640 | 7111.00 | 5372.54S | 1214.69E | ==> | 5483.17 | |
| 13017.00 | 90.00 | 179.640 | 7111.00 | 5472.54S | 1215.32E | ==> | 5582.44 | |
| 13117.00 | 90.00 | 179.640 | 7111.00 | 5572.54S | 1215.95E | ==> | 5681.71 | |
| 13217.00 | 90.00 | 179.640 | 7111.00 | 5672.53S | 1216.58E | ==> | 5780.99 | |
| | | | | | | | | |
| 13317.00 | 90.00 | 179.640 | 7111.00 | 5772.53S | 1217.21E | ==> | 5880.26 | |
| 13417.00 | 90.00 | 179.640 | 7111.00 | 5872.53S | 1217.84E | ==> | 5979.53 | |
| 13517.00 | 90.00 | 179.640 | 7111.00 | 5972.53S | 1218.47E | ==> | 6078.80 | |
| 13617.00 | 90.00 | 179.640 | 7111.00 | 6072.53S | 1219.10E | ==> | 6178.07 | |
| 13717.00 | 90.00 | 179.640 | 7111.00 | 6172.52S | 1219.73E | ==> | 6277.34 | |
| | | | | | | | | |
| 13817.00 | 90.00 | 179.640 | 7111.00 | 6272.52S | 1220.36E | ==> | 6376.61 | |
| 13917.00 | 90.00 | 179.640 | 7111.00 | 6372.52S | 1220.99E | ==> | 6475.88 | |
| 14017.00 | 90.00 | 179.640 | 7111.00 | 6472.52S | 1221.62E | ==> | 6575.16 | |
| 14117.00 | 90.00 | 179.640 | 7111.00 | 6572.52S | 1222.25E | ==> | 6674.43 | |
| 14217.00 | 90.00 | 179.640 | 7111.00 | 6672.51S | 1222.88E | ==> | 6773.70 | |
| | | | | | | | | |
| 14317.00 | 90.00 | 179.640 | 7111.00 | 6772.51S | 1223.51E | ==> | 6872.97 | |
| 14417.00 | 90.00 | 179.640 | 7111.00 | 6872.51S | 1224.14E | ==> | 6972.24 | |
| 14517.00 | 90.00 | 179.640 | 7111.00 | 6972.51S | 1224.77E | ==> | 7071.51 | |
| 14617.00 | 90.00 | 179.640 | 7111.00 | 7072.51S | 1225.40E | ==> | 7170.78 | |
| 14717.00 | 90.00 | 179.640 | 7111.00 | 7172.50S | 1226.03E | ==> | 7270.06 | |
| | | | | | | | | |
| 14817.00 | 90.00 | 179.640 | 7111.00 | 7272.50S | 1226.66E | ==> | 7369.33 | |

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Prepared by Microsoft
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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 | 7111.00 | 7372.50S | 1227.29E | ==> | 7468.60 | |
| 15017.00 | 90.00 | 179.640 | 7111.00 | 7472.50S | 1227.92E | ==> | 7567.87 | |
| 15117.00 | 90.00 | 179.640 | 7111.00 | 7572.50S | 1228.55E | ==> | 7667.14 | |
| 15217.00 | 90.00 | 179.640 | 7111.00 | 7672.49S | 1229.18E | ==> | 7766.41 | |
| | | | | | | | | |
| 15317.00 | 90.00 | 179.640 | 7111.00 | 7772.49S | 1229.81E | ==> | 7865.68 | |
| 15417.00 | 90.00 | 179.640 | 7111.00 | 7872.49S | 1230.44E | ==> | 7964.96 | |
| 15517.00 | 90.00 | 179.640 | 7111.00 | 7972.49S | 1231.07E | ==> | 8064.23 | |
| 15617.00 | 90.00 | 179.640 | 7111.00 | 8072.49S | 1231.70E | ==> | 8163.50 | |
| 15717.00 | 90.00 | 179.640 | 7111.00 | 8172.48S | 1232.33E | ==> | 8262.77 | |
| | | | | | | | | |
| 15817.00 | 90.00 | 179.640 | 7111.00 | 8272.48S | 1232.96E | ==> | 8362.04 | |
| 15917.00 | 90.00 | 179.640 | 7111.00 | 8372.48S | 1233.59E | ==> | 8461.31 | |
| 16017.00 | 90.00 | 179.640 | 7111.00 | 8472.48S | 1234.22E | ==> | 8560.58 | |
| 16117.00 | 90.00 | 179.640 | 7111.00 | 8572.48S | 1234.85E | ==> | 8659.85 | |
| 16217.00 | 90.00 | 179.640 | 7111.00 | 8672.47S | 1235.48E | ==> | 8759.13 | |
| | | | | | | | | |
| 16317.00 | 90.00 | 179.640 | 7111.00 | 8772.47S | 1236.11E | ==> | 8858.40 | |
| 16417.00 | 90.00 | 179.640 | 7111.00 | 8872.47S | 1236.74E | ==> | 8957.67 | |
| 16517.00 | 90.00 | 179.640 | 7111.00 | 8972.47S | 1237.37E | ==> | 9056.94 | |
| 16617.00 | 90.00 | 179.640 | 7111.00 | 9072.47S | 1238.00E | ==> | 9156.21 | |
| 16717.00 | 90.00 | 179.640 | 7111.00 | 9172.46S | 1238.63E | ==> | 9255.48 | |
| | | | | | | | | |
| 16817.00 | 90.00 | 179.640 | 7111.00 | 9272.46S | 1239.26E | ==> | 9354.75 | |
| 16917.00 | 90.00 | 179.640 | 7111.00 | 9372.46S | 1239.89E | ==> | 9454.03 | |
| 17017.00 | 90.00 | 179.640 | 7111.00 | 9472.46S | 1240.52E | ==> | 9553.30 | |
| 17117.00 | 90.00 | 179.640 | 7111.00 | 9572.46S | 1241.15E | ==> | 9652.57 | |
| 17217.00 | 90.00 | 179.640 | 7111.00 | 9672.45S | 1241.78E | ==> | 9751.84 | |
| | | | | | | | | |
| 17264.89 | 90.00 | 179.640 | 7111.00 | 9720.35S | 1242.08E | ==> | 9799.38 | |

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 172.720 degrees
Bottom hole distance is 9799.38 Feet on azimuth 172.72 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 20 EP | 42.39S | 1181.10E | 7111.00 | 40.20267620 | -105.02085260 | 1317038.94 | 3133835.28 |
| OLANDER 20 BH-2mi | 9720.35S | 1242.08E | 7111.00 | 40.17610970 | -105.02082150 | 1307361.41 | 3133896.26 |

## Survey Tool Program

| Reference | Survey Name | MD[ft] | TVD[ft] | Survey Tool | Error Model |
|---|---|---|---|---|---|
| 562544 | Planned | 1517.00 | 1516.61 | WdW Rate Gyro | Standard |
| 562543 | Planned | 17264.89 | 7111.00 | ISCWSA MWD | Rev 4 + SAG + FLT |

## Notes

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Vertical Section is from 0.00N 0.00E on azimuth 172.720 degrees
Bottom hole distance is 9799.38 Feet on azimuth 172.72 degrees from Wellhead
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