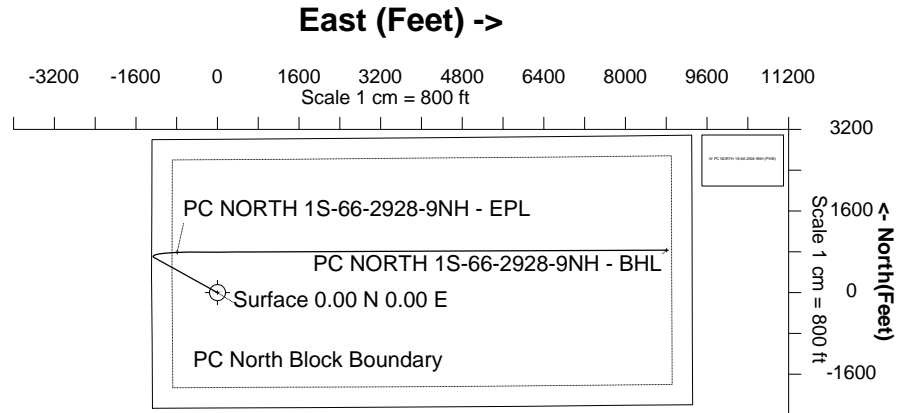
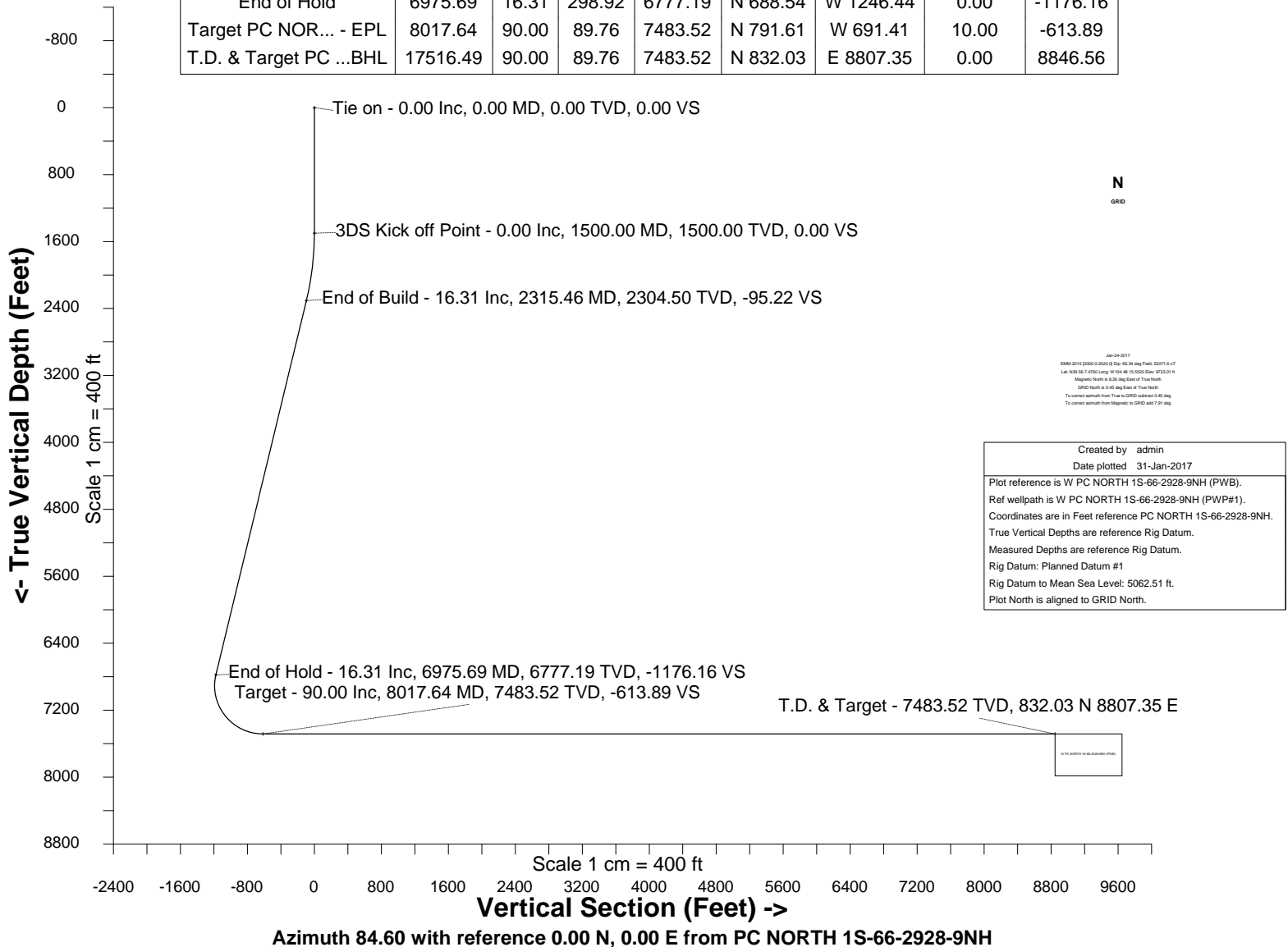


| HRM Resources | | | |
|---------------|-------------------|----------|---------------------------------|
| Location | DJ Basin | Slot | PC NORTH 1S-66-2928-9NH |
| Field | WATTENBERG | Well | W PC NORTH 1S-66-2928-9NH |
| Installation | PC 1S-66-2928 PAD | Wellbore | W PC NORTH 1S-66-2928-9NH (PWB) |

| HRM Resources | | | |
|---------------|-------------------|----------|---------------------------------|
| Location | DJ Basin | Slot | PC NORTH 1S-66-2928-9NH |
| Field | WATTENBERG | Well | W PC NORTH 1S-66-2928-9NH |
| Installation | PC 1S-66-2928 PAD | Wellbore | W PC NORTH 1S-66-2928-9NH (PWB) |



| WELL PROFILE DATA | | | | | | | | |
|-------------------------|----------|-------|--------|---------|----------|-----------|-----------|----------|
| Point | MD | Inc | Azi | TVD | North | East | deg/100ft | V. Sect |
| Tie on | 0.00 | 0.00 | 0.00 | 0.00 | S 0.00 | W 0.00 | | 0.00 |
| KOP | 1500.00 | 0.00 | 298.92 | 1500.00 | S 0.00 | W 0.00 | 0.00 | 0.00 |
| End of Build | 2315.46 | 16.31 | 298.92 | 2304.50 | N 55.74 | W 100.91 | 2.00 | -95.22 |
| End of Hold | 6975.69 | 16.31 | 298.92 | 6777.19 | N 688.54 | W 1246.44 | 0.00 | -1176.16 |
| Target PC NOR... - EPL | 8017.64 | 90.00 | 89.76 | 7483.52 | N 791.61 | W 691.41 | 10.00 | -613.89 |
| T.D. & Target PC ...BHL | 17516.49 | 90.00 | 89.76 | 7483.52 | N 832.03 | E 8807.35 | 0.00 | 8846.56 |





SYSDRILL
Well Design Combined Report
Wellbore: W PC NORTH 1S-66-2928-9NH (PWB)



Wellhead Details

| Name | Latitude | Longitude | Northing | Easting | North | East | Slot Elevation Above Ground |
|-------------------------|---------------|-----------------|--------------|--------------|---------|-------|-----------------------------|
| PC NORTH 1S-66-2928-9NH | N39 56 6.2880 | W104 48 15.5520 | 1219963.4761 | 3195080.7791 | 120.21S | 0.94E | 0.00 |

Declination

| Date | Source | Time |
|-------------|--------------------------|-------|
| Jan-24-2017 | EMM-2015 [2000.0-2020.0] | 09:32 |

Installation Details

| Name | Installation Position (Latitude) | Installation Position (Longitude) | Northing | Easting | Coord System Name | North Alignment |
|-------------------|----------------------------------|-----------------------------------|--------------|--------------|--|-----------------|
| PC 1S-66-2928 PAD | N39 56 7.4760 | W104 48 15.5520 | 1220083.6821 | 3195079.8360 | 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 |
|----------|----------|----------|---------|-----------|----------|--------------------|----------------------|------------|------------|
| 0.00 | 0.00 | 0.000 | 0.00 | 0.00N | 0.00E | | 0.00 | 1219963.48 | 3195080.78 |
| 1500.00 | 0.00 | 298.920 | 1500.00 | 0.00N | 0.00E | ==> | 0.00 | 1219963.48 | 3195080.78 |
| 2315.46 | 16.31 | 298.920 | 2304.50 | 55.74N | 100.91W | 2.00 | -95.22 | 1220019.22 | 3194979.87 |
| 6975.69 | 16.31 | 298.920 | 6777.19 | 688.54N | 1246.44W | ==> | -1176.16 | 1220652.00 | 3193834.38 |
| 8017.64 | 90.00 | 89.760 | 7483.52 | 791.61N | 691.41W | 10.00 | -613.89 | 1220755.06 | 3194389.39 |
| 17516.49 | 90.00 | 89.760 | 7483.52 | 832.03N | 8807.35E | ==> | 8846.56 | 1220795.49 | 3203887.86 |

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 | 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 | 298.920 | 1500.00 | 0.00N | 0.00E | ==> | 0.00 | |
| 1600.00 | 2.00 | 298.920 | 1599.98 | 0.84N | 1.53W | 2.00 | -1.44 | |
| 1700.00 | 4.00 | 298.920 | 1699.84 | 3.37N | 6.11W | 2.00 | -5.76 | |
| 1800.00 | 6.00 | 298.920 | 1799.45 | 7.59N | 13.74W | 2.00 | -12.96 | |
| 1900.00 | 8.00 | 298.920 | 1898.70 | 13.48N | 24.40W | 2.00 | -23.03 | |
| 2000.00 | 10.00 | 298.920 | 1997.47 | 21.04N | 38.10W | 2.00 | -35.95 | |
| 2100.00 | 12.00 | 298.920 | 2095.62 | 30.27N | 54.80W | 2.00 | -51.71 | |
| 2200.00 | 14.00 | 298.920 | 2193.06 | 41.15N | 74.49W | 2.00 | -70.29 | |
| 2300.00 | 16.00 | 298.920 | 2289.64 | 53.66N | 97.14W | 2.00 | -91.66 | |
| 2400.00 | 16.31 | 298.920 | 2385.63 | 67.22N | 121.69W | ==> | -114.83 | |
| 2500.00 | 16.31 | 298.920 | 2481.61 | 80.80N | 146.27W | ==> | -138.02 | |
| 2600.00 | 16.31 | 298.920 | 2577.58 | 94.38N | 170.85W | ==> | -161.22 | |
| 2700.00 | 16.31 | 298.920 | 2673.56 | 107.96N | 195.43W | ==> | -184.41 | |
| 2800.00 | 16.31 | 298.920 | 2769.53 | 121.54N | 220.01W | ==> | -207.61 | |
| 2900.00 | 16.31 | 298.920 | 2865.51 | 135.11N | 244.59W | ==> | -230.80 | |
| 3000.00 | 16.31 | 298.920 | 2961.49 | 148.69N | 269.17W | ==> | -254.00 | |
| 3100.00 | 16.31 | 298.920 | 3057.46 | 162.27N | 293.75W | ==> | -277.19 | |

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 5062.5ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 84.600 degrees
Bottom hole distance is 8846.56 Feet on azimuth 84.60 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 31-Jan-2017

| 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 | 16.31 | 298.920 | 3153.44 | 175.85N | 318.34W | ==> | -300.39 | |
| 3300.00 | 16.31 | 298.920 | 3249.41 | 189.43N | 342.92W | ==> | -323.58 | |
| 3400.00 | 16.31 | 298.920 | 3345.39 | 203.01N | 367.50W | ==> | -346.78 | |
| 3500.00 | 16.31 | 298.920 | 3441.37 | 216.59N | 392.08W | ==> | -369.97 | |
| 3600.00 | 16.31 | 298.920 | 3537.34 | 230.17N | 416.66W | ==> | -393.17 | |
| 3700.00 | 16.31 | 298.920 | 3633.32 | 243.75N | 441.24W | ==> | -416.36 | |
| 3800.00 | 16.31 | 298.920 | 3729.29 | 257.32N | 465.82W | ==> | -439.56 | |
| 3900.00 | 16.31 | 298.920 | 3825.27 | 270.90N | 490.40W | ==> | -462.75 | |
| 4000.00 | 16.31 | 298.920 | 3921.25 | 284.48N | 514.98W | ==> | -485.95 | |
| 4100.00 | 16.31 | 298.920 | 4017.22 | 298.06N | 539.56W | ==> | -509.14 | |
| 4200.00 | 16.31 | 298.920 | 4113.20 | 311.64N | 564.15W | ==> | -532.34 | |
| 4300.00 | 16.31 | 298.920 | 4209.17 | 325.22N | 588.73W | ==> | -555.53 | |
| 4400.00 | 16.31 | 298.920 | 4305.15 | 338.80N | 613.31W | ==> | -578.73 | |
| 4500.00 | 16.31 | 298.920 | 4401.13 | 352.38N | 637.89W | ==> | -601.92 | |
| 4600.00 | 16.31 | 298.920 | 4497.10 | 365.95N | 662.47W | ==> | -625.11 | |
| 4700.00 | 16.31 | 298.920 | 4593.08 | 379.53N | 687.05W | ==> | -648.31 | |
| 4800.00 | 16.31 | 298.920 | 4689.05 | 393.11N | 711.63W | ==> | -671.50 | |
| 4900.00 | 16.31 | 298.920 | 4785.03 | 406.69N | 736.21W | ==> | -694.70 | |
| 5000.00 | 16.31 | 298.920 | 4881.01 | 420.27N | 760.79W | ==> | -717.89 | |
| 5100.00 | 16.31 | 298.920 | 4976.98 | 433.85N | 785.38W | ==> | -741.09 | |
| 5200.00 | 16.31 | 298.920 | 5072.96 | 447.43N | 809.96W | ==> | -764.28 | |
| 5300.00 | 16.31 | 298.920 | 5168.93 | 461.01N | 834.54W | ==> | -787.48 | |
| 5400.00 | 16.31 | 298.920 | 5264.91 | 474.58N | 859.12W | ==> | -810.67 | |
| 5500.00 | 16.31 | 298.920 | 5360.89 | 488.16N | 883.70W | ==> | -833.87 | |
| 5600.00 | 16.31 | 298.920 | 5456.86 | 501.74N | 908.28W | ==> | -857.06 | |
| 5700.00 | 16.31 | 298.920 | 5552.84 | 515.32N | 932.86W | ==> | -880.26 | |
| 5800.00 | 16.31 | 298.920 | 5648.81 | 528.90N | 957.44W | ==> | -903.45 | |
| 5900.00 | 16.31 | 298.920 | 5744.79 | 542.48N | 982.02W | ==> | -926.65 | |
| 6000.00 | 16.31 | 298.920 | 5840.77 | 556.06N | 1006.60W | ==> | -949.84 | |
| 6100.00 | 16.31 | 298.920 | 5936.74 | 569.64N | 1031.19W | ==> | -973.04 | |
| 6200.00 | 16.31 | 298.920 | 6032.72 | 583.21N | 1055.77W | ==> | -996.23 | |
| 6300.00 | 16.31 | 298.920 | 6128.69 | 596.79N | 1080.35W | ==> | -1019.43 | |
| 6400.00 | 16.31 | 298.920 | 6224.67 | 610.37N | 1104.93W | ==> | -1042.62 | |
| 6500.00 | 16.31 | 298.920 | 6320.65 | 623.95N | 1129.51W | ==> | -1065.82 | |
| 6600.00 | 16.31 | 298.920 | 6416.62 | 637.53N | 1154.09W | ==> | -1089.01 | |
| 6700.00 | 16.31 | 298.920 | 6512.60 | 651.11N | 1178.67W | ==> | -1112.21 | |
| 6800.00 | 16.31 | 298.920 | 6608.57 | 664.69N | 1203.25W | ==> | -1135.40 | |
| 6900.00 | 16.31 | 298.920 | 6704.55 | 678.27N | 1227.83W | ==> | -1158.60 | |
| 7000.00 | 14.26 | 303.880 | 6800.64 | 691.86N | 1251.91W | 10.00 | -1181.29 | |
| 7100.00 | 8.30 | 347.440 | 6898.83 | 705.81N | 1263.74W | 10.00 | -1191.75 | |
| 7200.00 | 11.54 | 45.480 | 6997.54 | 719.91N | 1258.16W | 10.00 | -1184.87 | |
| 7300.00 | 19.90 | 66.570 | 7093.79 | 733.73N | 1235.35W | 10.00 | -1160.87 | |
| 7400.00 | 29.29 | 75.030 | 7184.65 | 746.85N | 1196.01W | 10.00 | -1120.46 | |
| 7500.00 | 38.96 | 79.600 | 7267.35 | 758.87N | 1141.32W | 10.00 | -1064.89 | |
| 7600.00 | 48.75 | 82.570 | 7339.38 | 769.43N | 1072.95W | 10.00 | -995.83 | |
| 7700.00 | 58.59 | 84.760 | 7398.56 | 778.21N | 992.98W | 10.00 | -915.38 | |
| 7800.00 | 68.46 | 86.530 | 7443.08 | 784.94N | 903.83W | 10.00 | -826.00 | |
| 7900.00 | 78.36 | 88.070 | 7471.60 | 789.41N | 808.22W | 10.00 | -730.39 | |
| 8000.00 | 88.25 | 89.510 | 7483.25 | 791.49N | 709.05W | 10.00 | -631.47 | |
| 8100.00 | 90.00 | 89.760 | 7483.52 | 791.96N | 609.06W | ==> | -531.87 | |
| 8200.00 | 90.00 | 89.760 | 7483.52 | 792.38N | 509.06W | ==> | -432.27 | |
| 8300.00 | 90.00 | 89.760 | 7483.52 | 792.81N | 409.06W | ==> | -332.68 | |
| 8400.00 | 90.00 | 89.760 | 7483.52 | 793.23N | 309.06W | ==> | -233.08 | |
| 8500.00 | 90.00 | 89.760 | 7483.52 | 793.66N | 209.06W | ==> | -133.49 | |
| 8600.00 | 90.00 | 89.760 | 7483.52 | 794.09N | 109.06W | ==> | -33.89 | |
| 8700.00 | 90.00 | 89.760 | 7483.52 | 794.51N | 9.06W | ==> | 65.70 | |
| 8800.00 | 90.00 | 89.760 | 7483.52 | 794.94N | 90.94E | ==> | 165.30 | |
| 8900.00 | 90.00 | 89.760 | 7483.52 | 795.36N | 190.94E | ==> | 264.90 | |
| 9000.00 | 90.00 | 89.760 | 7483.52 | 795.79N | 290.94E | ==> | 364.49 | |

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 5062.5ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 84.600 degrees
Bottom hole distance is 8846.56 Feet on azimuth 84.60 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 31-Jan-2017



SYSDRILL
Well Design Combined Report
Wellbore: W PC NORTH 1S-66-2928-9NH (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 | 89.760 | 7483.52 | 796.21N | 390.94E | ==> | 464.09 | |
| 9200.00 | 90.00 | 89.760 | 7483.52 | 796.64N | 490.93E | ==> | 563.68 | |
| 9300.00 | 90.00 | 89.760 | 7483.52 | 797.06N | 590.93E | ==> | 663.28 | |
| 9400.00 | 90.00 | 89.760 | 7483.52 | 797.49N | 690.93E | ==> | 762.88 | |
| 9500.00 | 90.00 | 89.760 | 7483.52 | 797.92N | 790.93E | ==> | 862.47 | |
| 9600.00 | 90.00 | 89.760 | 7483.52 | 798.34N | 890.93E | ==> | 962.07 | |
| 9700.00 | 90.00 | 89.760 | 7483.52 | 798.77N | 990.93E | ==> | 1061.66 | |
| 9800.00 | 90.00 | 89.760 | 7483.52 | 799.19N | 1090.93E | ==> | 1161.26 | |
| 9900.00 | 90.00 | 89.760 | 7483.52 | 799.62N | 1190.93E | ==> | 1260.86 | |
| 10000.00 | 90.00 | 89.760 | 7483.52 | 800.04N | 1290.93E | ==> | 1360.45 | |
| 10100.00 | 90.00 | 89.760 | 7483.52 | 800.47N | 1390.93E | ==> | 1460.05 | |
| 10200.00 | 90.00 | 89.760 | 7483.52 | 800.90N | 1490.93E | ==> | 1559.64 | |
| 10300.00 | 90.00 | 89.760 | 7483.52 | 801.32N | 1590.92E | ==> | 1659.24 | |
| 10400.00 | 90.00 | 89.760 | 7483.52 | 801.75N | 1690.92E | ==> | 1758.83 | |
| 10500.00 | 90.00 | 89.760 | 7483.52 | 802.17N | 1790.92E | ==> | 1858.43 | |
| 10600.00 | 90.00 | 89.760 | 7483.52 | 802.60N | 1890.92E | ==> | 1958.03 | |
| 10700.00 | 90.00 | 89.760 | 7483.52 | 803.02N | 1990.92E | ==> | 2057.62 | |
| 10800.00 | 90.00 | 89.760 | 7483.52 | 803.45N | 2090.92E | ==> | 2157.22 | |
| 10900.00 | 90.00 | 89.760 | 7483.52 | 803.87N | 2190.92E | ==> | 2256.81 | |
| 11000.00 | 90.00 | 89.760 | 7483.52 | 804.30N | 2290.92E | ==> | 2356.41 | |
| 11100.00 | 90.00 | 89.760 | 7483.52 | 804.73N | 2390.92E | ==> | 2456.01 | |
| 11200.00 | 90.00 | 89.760 | 7483.52 | 805.15N | 2490.92E | ==> | 2555.60 | |
| 11300.00 | 90.00 | 89.760 | 7483.52 | 805.58N | 2590.92E | ==> | 2655.20 | |
| 11400.00 | 90.00 | 89.760 | 7483.52 | 806.00N | 2690.91E | ==> | 2754.79 | |
| 11500.00 | 90.00 | 89.760 | 7483.52 | 806.43N | 2790.91E | ==> | 2854.39 | |
| 11600.00 | 90.00 | 89.760 | 7483.52 | 806.85N | 2890.91E | ==> | 2953.98 | |
| 11700.00 | 90.00 | 89.760 | 7483.52 | 807.28N | 2990.91E | ==> | 3053.58 | |
| 11800.00 | 90.00 | 89.760 | 7483.52 | 807.70N | 3090.91E | ==> | 3153.18 | |
| 11900.00 | 90.00 | 89.760 | 7483.52 | 808.13N | 3190.91E | ==> | 3252.77 | |
| 12000.00 | 90.00 | 89.760 | 7483.52 | 808.56N | 3290.91E | ==> | 3352.37 | |
| 12100.00 | 90.00 | 89.760 | 7483.52 | 808.98N | 3390.91E | ==> | 3451.96 | |
| 12200.00 | 90.00 | 89.760 | 7483.52 | 809.41N | 3490.91E | ==> | 3551.56 | |
| 12300.00 | 90.00 | 89.760 | 7483.52 | 809.83N | 3590.91E | ==> | 3651.16 | |
| 12400.00 | 90.00 | 89.760 | 7483.52 | 810.26N | 3690.91E | ==> | 3750.75 | |
| 12500.00 | 90.00 | 89.760 | 7483.52 | 810.68N | 3790.90E | ==> | 3850.35 | |
| 12600.00 | 90.00 | 89.760 | 7483.52 | 811.11N | 3890.90E | ==> | 3949.94 | |
| 12700.00 | 90.00 | 89.760 | 7483.52 | 811.54N | 3990.90E | ==> | 4049.54 | |
| 12800.00 | 90.00 | 89.760 | 7483.52 | 811.96N | 4090.90E | ==> | 4149.13 | |
| 12900.00 | 90.00 | 89.760 | 7483.52 | 812.39N | 4190.90E | ==> | 4248.73 | |
| 13000.00 | 90.00 | 89.760 | 7483.52 | 812.81N | 4290.90E | ==> | 4348.33 | |
| 13100.00 | 90.00 | 89.760 | 7483.52 | 813.24N | 4390.90E | ==> | 4447.92 | |
| 13200.00 | 90.00 | 89.760 | 7483.52 | 813.66N | 4490.90E | ==> | 4547.52 | |
| 13300.00 | 90.00 | 89.760 | 7483.52 | 814.09N | 4590.90E | ==> | 4647.11 | |
| 13400.00 | 90.00 | 89.760 | 7483.52 | 814.51N | 4690.90E | ==> | 4746.71 | |
| 13500.00 | 90.00 | 89.760 | 7483.52 | 814.94N | 4790.90E | ==> | 4846.31 | |
| 13600.00 | 90.00 | 89.760 | 7483.52 | 815.37N | 4890.90E | ==> | 4945.90 | |
| 13700.00 | 90.00 | 89.760 | 7483.52 | 815.79N | 4990.89E | ==> | 5045.50 | |
| 13800.00 | 90.00 | 89.760 | 7483.52 | 816.22N | 5090.89E | ==> | 5145.09 | |
| 13900.00 | 90.00 | 89.760 | 7483.52 | 816.64N | 5190.89E | ==> | 5244.69 | |
| 14000.00 | 90.00 | 89.760 | 7483.52 | 817.07N | 5290.89E | ==> | 5344.29 | |
| 14100.00 | 90.00 | 89.760 | 7483.52 | 817.49N | 5390.89E | ==> | 5443.88 | |
| 14200.00 | 90.00 | 89.760 | 7483.52 | 817.92N | 5490.89E | ==> | 5543.48 | |
| 14300.00 | 90.00 | 89.760 | 7483.52 | 818.34N | 5590.89E | ==> | 5643.07 | |
| 14400.00 | 90.00 | 89.760 | 7483.52 | 818.77N | 5690.89E | ==> | 5742.67 | |
| 14500.00 | 90.00 | 89.760 | 7483.52 | 819.20N | 5790.89E | ==> | 5842.26 | |
| 14600.00 | 90.00 | 89.760 | 7483.52 | 819.62N | 5890.89E | ==> | 5941.86 | |
| 14700.00 | 90.00 | 89.760 | 7483.52 | 820.05N | 5990.89E | ==> | 6041.46 | |
| 14800.00 | 90.00 | 89.760 | 7483.52 | 820.47N | 6090.88E | ==> | 6141.05 | |
| 14900.00 | 90.00 | 89.760 | 7483.52 | 820.90N | 6190.88E | ==> | 6240.65 | |

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 5062.5ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 84.600 degrees
Bottom hole distance is 8846.56 Feet on azimuth 84.60 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 31-Jan-2017



SYS DRILL
Well Design Combined Report
Wellbore: W PC NORTH 1S-66-2928-9NH (PWB)



| 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 | 89.760 | 7483.52 | 821.32N | 6290.88E | ==> | 6340.24 | |
| 15100.00 | 90.00 | 89.760 | 7483.52 | 821.75N | 6390.88E | ==> | 6439.84 | |
| 15200.00 | 90.00 | 89.760 | 7483.52 | 822.18N | 6490.88E | ==> | 6539.44 | |
| 15300.00 | 90.00 | 89.760 | 7483.52 | 822.60N | 6590.88E | ==> | 6639.03 | |
| 15400.00 | 90.00 | 89.760 | 7483.52 | 823.03N | 6690.88E | ==> | 6738.63 | |
| | | | | | | | | |
| 15500.00 | 90.00 | 89.760 | 7483.52 | 823.45N | 6790.88E | ==> | 6838.22 | |
| 15600.00 | 90.00 | 89.760 | 7483.52 | 823.88N | 6890.88E | ==> | 6937.82 | |
| 15700.00 | 90.00 | 89.760 | 7483.52 | 824.30N | 6990.88E | ==> | 7037.41 | |
| 15800.00 | 90.00 | 89.760 | 7483.52 | 824.73N | 7090.88E | ==> | 7137.01 | |
| 15900.00 | 90.00 | 89.760 | 7483.52 | 825.15N | 7190.87E | ==> | 7236.61 | |
| | | | | | | | | |
| 16000.00 | 90.00 | 89.760 | 7483.52 | 825.58N | 7290.87E | ==> | 7336.20 | |
| 16100.00 | 90.00 | 89.760 | 7483.52 | 826.01N | 7390.87E | ==> | 7435.80 | |
| 16200.00 | 90.00 | 89.760 | 7483.52 | 826.43N | 7490.87E | ==> | 7535.39 | |
| 16300.00 | 90.00 | 89.760 | 7483.52 | 826.86N | 7590.87E | ==> | 7634.99 | |
| 16400.00 | 90.00 | 89.760 | 7483.52 | 827.28N | 7690.87E | ==> | 7734.59 | |
| | | | | | | | | |
| 16500.00 | 90.00 | 89.760 | 7483.52 | 827.71N | 7790.87E | ==> | 7834.18 | |
| 16600.00 | 90.00 | 89.760 | 7483.52 | 828.13N | 7890.87E | ==> | 7933.78 | |
| 16700.00 | 90.00 | 89.760 | 7483.52 | 828.56N | 7990.87E | ==> | 8033.37 | |
| 16800.00 | 90.00 | 89.760 | 7483.52 | 828.98N | 8090.87E | ==> | 8132.97 | |
| 16900.00 | 90.00 | 89.760 | 7483.52 | 829.41N | 8190.87E | ==> | 8232.57 | |
| | | | | | | | | |
| 17000.00 | 90.00 | 89.760 | 7483.52 | 829.84N | 8290.86E | ==> | 8332.16 | |
| 17100.00 | 90.00 | 89.760 | 7483.52 | 830.26N | 8390.86E | ==> | 8431.76 | |
| 17200.00 | 90.00 | 89.760 | 7483.52 | 830.69N | 8490.86E | ==> | 8531.35 | |
| 17300.00 | 90.00 | 89.760 | 7483.52 | 831.11N | 8590.86E | ==> | 8630.95 | |
| 17400.00 | 90.00 | 89.760 | 7483.52 | 831.54N | 8690.86E | ==> | 8730.54 | |
| | | | | | | | | |
| 17500.00 | 90.00 | 89.760 | 7483.52 | 831.96N | 8790.86E | ==> | 8830.14 | |
| 17516.49 | 90.00 | 89.760 | 7483.52 | 832.03N | 8807.35E | ==> | 8846.56 | |

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Targets

| Name | North[ft] | East[ft] | TVD[ft] | Latitude | Longitude | Northing | Easting |
|-------------------------------------|-----------|----------|---------|----------------|-----------------|------------|------------|
| PC NORTH 1S-66-2928-9NH - BHL | 832.03N | 8807.35E | 7483.51 | N39 56 13.8120 | W104 46 22.4040 | 1220795.49 | 3203887.86 |
| PC NORTH 1S-66-2928-9NH - EPL | 791.61N | 791.41W | 7483.51 | N39 56 14.1720 | W104 48 25.6320 | 1220755.06 | 3194289.39 |

Survey Tool Program

| Reference | Survey Name | MD[ft] | TVD[ft] | Survey Tool | Error Model |
|-----------|-------------|----------|---------|---------------|-------------------|
| 523151 | Planned | 1500.00 | 1500.00 | WdW Rate Gyro | Standard |
| 523150 | Planned | 17516.49 | 7483.52 | ISCWSA MWD | Rev 4 + SAG + FLT |

Notes



SYSDRILL
Closest Approach + Clearance Factor Summary Report
Wellbore: W PC NORTH 1S-66-2928-9NH (PWB)



| |
|--|
| Ellipse separations are reported ONLY if BOTH wells have uncertainty data |
| Only Depth and Magnetic Reference Field error terms are correlated across tie points |
| Scan limit is calculated on CENTRE to CENTRE distance |
| Summary data uses Closest Approach clearance calculation for all minima |
| Hole size/Casings ARE included |
| Hole size/Casings are NOT subtracted from Centre-Centre distance |
| Confidence limit of 95.00% / 2.80 SD. |

| Wellbore | | |
|---------------------------------|-------------|--------------|
| Name | Created | Last Revised |
| W PC NORTH 1S-66-2928-9NH (PWB) | Jan-24-2017 | Jan-24-2017 |

| Well | | |
|---------------------------|---------------|--------------|
| Name | Government ID | Last Revised |
| W PC NORTH 1S-66-2928-9NH | | Jan-24-2017 |

| Slot | | | | | | |
|----------------------------|---------------|-----------------|---------------|--------------|---------|-------|
| Name | Latitude | Longitude | Grid Northing | Grid Easting | North | East |
| PC NORTH 1S-66-2928-9NH | N39 56 6.2880 | W104 48 15.5520 | 1219963.4761 | 3195080.7791 | 120.21S | 0.94E |

| Installation | | | | | | |
|-------------------|----------------------------------|-----------------------------------|--------------|--------------|--|-----------------|
| Name | Installation Position (Latitude) | Installation Position (Longitude) | Easting | Northing | Coord System Name | North Alignment |
| PC 1S-66-2928 PAD | N39 56 7.4760 | W104 48 15.5520 | 3195079.8360 | 1220083.6821 | CO83-NF on NORTH AMERICAN DATUM 1983 datum | Grid |

| Clearance Summary | | | | | | | |
|------------------------------|-----------------|---------|--------------------|-------------------------|----------------|------------------|------------------|
| Offset WellName | Separation [ft] | MD[ft] | Diverging From[ft] | Ellipse Separation [ft] | Ellipse MD[ft] | Clearance Factor | Clearance MD[ft] |
| W PC NORTH 1S-66-2928-10C DH | 14.57 | 1500.00 | 17516.49 | -116.69 | 17516.49 | 0.71 | 17516.49 |
| W PC NORTH 1S-66-2928-8NH | 14.57 | 1450.01 | 17500.00 | -390.91 | 17516.49 | 0.47 | 17516.49 |
| W PC NORTH 1S-66-2928-7CD H | 29.14 | 1400.00 | 17516.49 | -126.95 | 17516.49 | 0.81 | 17516.49 |
| W PC SOUTH 1S-66-2928-19C DH | 30.85 | 1500.00 | 17516.49 | 28.43 | 1500.00 | 3.44 | 17516.49 |
| W PC SOUTH 1S-66-2928-18N H | 34.12 | 1500.00 | 17516.49 | 31.70 | 1509.19 | 2.99 | 17516.49 |
| W PC SOUTH 1S-66-2928-20N H | 34.12 | 1500.00 | 17516.49 | 31.70 | 1500.00 | 3.54 | 17516.49 |
| W PC SOUTH 1S-66-2928-17N H | 42.44 | 1500.00 | 17516.49 | 40.02 | 1509.19 | 2.50 | 17516.49 |
| W PC NORTH 1S-66-2928-6NH | 43.71 | 1350.06 | 17516.49 | -52.13 | 17516.49 | 0.93 | 17516.49 |
| W PC SOUTH 1S-66-2928-16C DH | 53.50 | 1509.19 | 1500.00 | 51.08 | 1525.59 | 2.38 | 17516.49 |
| W PC NORTH 1S-66-2928-5NH | 58.29 | 1300.18 | 17516.49 | 56.19 | 1300.18 | 1.45 | 17516.49 |
| W PC SOUTH 1S-66-2928-15N | 65.92 | 1607.61 | 17516.49 | 63.27 | 1722.44 | 1.99 | 17516.49 |

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SYSDRILL
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Wellbore: W PC NORTH 1S-66-2928-9NH (PWB)



| Clearance Summary | | | | | | | |
|------------------------------------|-----------------|----------|--------------------|-------------------------|----------------|------------------|------------------|
| Offset WellName | Separation [ft] | MD[ft] | Diverging From[ft] | Ellipse Separation [ft] | Ellipse MD[ft] | Clearance Factor | Clearance MD[ft] |
| H | | | | | | | |
| W PC NORTH 1S-66-2928-4CD H | 76.50 | 1250.42 | 17516.49 | 74.49 | 1250.42 | 1.74 | 17516.49 |
| W PC SOUTH 1S-66-2928-14N H | 81.80 | 1755.25 | 1755.25 | 78.41 | 1820.87 | 1.48 | 17516.49 |
| W PC NORTH 1S-66-2928-3NH | 91.07 | 1200.45 | 1200.45 | 89.14 | 1200.45 | 1.92 | 17516.49 |
| W PC SOUTH 1S-66-2928-13C DH | 94.50 | 1820.87 | 1820.87 | 90.57 | 1870.08 | 1.32 | 17516.49 |
| W PC NORTH 1S-66-2928-2NH | 105.64 | 1150.58 | 17516.49 | 103.79 | 1150.58 | 2.32 | 17516.49 |
| W PC SOUTH 1S-66-2928-12N H | 107.19 | 1878.07 | 17516.49 | -24.03 | 17516.49 | 0.97 | 17516.49 |
| W PC NORTH 1S-66-2928-11N H | 119.89 | 1928.97 | 4183.07 | -381.30 | 17516.49 | 0.49 | 17516.49 |
| W POLLARD #1 | 2383.77 | 13395.44 | 13395.44 | 2125.42 | 13467.85 | 9.02 | 13812.34 |

