



Highlands Natural Resources



| | | | |
|---------------------|-----------------------------|-----------------|--------------------------------|
| Location | DJ Basin Southern Extension | Slot | Slot 13 |
| Field | DJ Basin Southern Extension | Well | W POWELL 5-64 15-16-1CHZ |
| Installation | HNR Arapahoe County Pad | Wellbore | W POWELL 5-64 15-16-1CHZ (PWB) |

N
GRID

East (Feet) ->

-11200 -9600 -8000 -6400 -4800 -3200 -1600 0 1600 3200
Scale 1 cm = 800 ft

Jan-30-2017
EMMA-2015 (2000.0-2020.0) Dip: 66.55 deg Field: 52134.2 nT
Lat: N29 36 54.0000 Long: W104 31 51.5568 Elev: 5936.00 ft
Magnetic North is 0.61 deg East of True North
GRID North is 0.61 deg East of True North
To correct azimuth from True to GRID subtract 0.61 deg
To correct azimuth from Magnetic to GRID add 0.00 deg

Created by admin
Date plotted 13-Apr-2017
Plot reference is W POWELL 5-64 15-16-1CHZ (PWB).
Ref wellpath is W POWELL 5-64 15-16-1CHZ (PWP#1).
Coordinates are in Feet reference Slot 13.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Planned Datum #1
Rig Datum to Mean Sea Level: 5953.00 ft.
Plot North is aligned to GRID North.

W POWELL 5-64 15-16-1CHZ - BHL
W POWELL 5-64 15-16-1CHZ - EP
Surface 0.00 N 0.00 E

3200
1600
0
-1600
Scale 1 cm = 800 ft
North (Feet)

Tie on - 0.00 Inc, 16.00 MD, 16.00 TVD, 0.00 VS
3DS Kick off Point - 0.00 Inc, 1525.00 MD, 1525.00 TVD, 0.00 VS
End of Build - 18.27 Inc, 2438.33 MD, 2422.94 TVD, -6.43 VS

WELL PROFILE DATA

| Point | MD | Inc | Azi | TVD | North | East | deg/100ft | V. Sect |
|-------------------------|----------|-------|--------|---------|-----------|-----------|-----------|----------|
| Tie on | 16.00 | 0.00 | 0.00 | 16.00 | S 0.00 | W 0.00 | | 0.00 |
| KOP | 1525.00 | 0.00 | 13.43 | 1525.00 | S 0.00 | W 0.00 | 0.00 | 0.00 |
| End of Build | 2438.33 | 18.27 | 13.43 | 2422.94 | N 140.41 | E 33.53 | 2.00 | -6.43 |
| End of Hold | 7522.31 | 18.27 | 13.43 | 7250.73 | N 1690.35 | E 403.65 | 0.00 | -77.38 |
| Target W POWE...Z - EP | 8422.30 | 90.41 | 270.23 | 7807.00 | N 1872.71 | W 143.65 | 10.50 | 494.50 |
| T.D. & Target W P...BHL | 18230.45 | 90.41 | 270.23 | 7736.00 | N 1912.45 | W 9951.47 | 0.00 | 10133.57 |

End of Hold - 18.27 Inc, 7522.31 MD, 7250.73 TVD, -77.38 VS
Target - 90.41 Inc, 8422.30 MD, 7807.00 TVD, 494.50 VS

T.D. & Target - 7736.00 TVD, 1912.45 N 9951.47 W

True Vertical Depth (Feet)

-800
0
800
1600
2400
3200
4000
4800
5600
6400
7200
8000
8800
Scale 1 cm = 400 ft

Scale 1 cm = 400 ft

Vertical Section (Feet) ->

Azimuth 280.88 with reference 0.00 N, 0.00 E from Slot 13



SYS DRILL
Well Design Combined Report
Wellbore: W POWELL 5-64 15-16-1CHZ (PWB)



| Wellhead Details | | | | | | | |
|------------------|----------------|-----------------|--------------|--------------|--------|-------|-----------------------------|
| Name | Latitude | Longitude | Northing | Easting | North | East | Slot Elevation Above Ground |
| Slot 13 | N39 36 53.8920 | W104 31 51.5604 | 1650337.1435 | 3272987.9586 | 20.04S | 0.07W | 0.00 |

| Declination | | |
|-------------|--------------------------|-------|
| Date | Source | Time |
| Jan-30-2017 | EMM-2015 [2000.0-2020.0] | 15:10 |

| Installation Details | | | | | | |
|-------------------------|----------------------------------|-----------------------------------|--------------|--------------|--|-----------------|
| Name | Installation Position (Latitude) | Installation Position (Longitude) | Northing | Easting | Coord System Name | North Alignment |
| HNR Arapahoe County Pad | N39 36 54.0900 | W104 31 51.5568 | 1650357.1793 | 3272988.0267 | CO83-CF 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 |
| 16.00 | 0.00 | 0.000 | 16.00 | 0.00N | 0.00E | | 0.00 | 1650337.14 | 3272987.96 |
| 1525.00 | 0.00 | 13.430 | 1525.00 | 0.00N | 0.00E | ==> | 0.00 | 1650337.14 | 3272987.96 |
| 2438.33 | 18.27 | 13.430 | 2422.94 | 140.41N | 33.53E | 2.00 | -6.43 | 1650477.55 | 3273021.49 |
| 7522.31 | 18.27 | 13.430 | 7250.73 | 1690.35N | 403.65E | ==> | -77.38 | 1652027.45 | 3273391.59 |
| 8422.30 | 90.41 | 270.230 | 7807.00 | 1872.71N | 143.65W | 10.50 | 494.50 | 1652209.80 | 3272844.31 |
| 18230.45 | 90.41 | 270.230 | 7736.00 | 1912.45N | 9951.47W | ==> | 10133.57 | 1652249.54 | 3263036.74 |

| 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 |
| 16.00 | 0.00 | 0.000 | 16.00 | 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 | 0.000 | 1500.00 | 0.00N | 0.00E | ==> | 0.00 | |
| 1600.00 | 1.50 | 13.430 | 1599.99 | 0.95N | 0.23E | 2.00 | -0.04 | |
| 1700.00 | 3.50 | 13.430 | 1699.89 | 5.20N | 1.24E | 2.00 | -0.24 | |
| 1800.00 | 5.50 | 13.430 | 1799.58 | 12.83N | 3.06E | 2.00 | -0.59 | |
| 1900.00 | 7.50 | 13.430 | 1898.93 | 23.84N | 5.69E | 2.00 | -1.09 | |
| 2000.00 | 9.50 | 13.430 | 1997.83 | 38.21N | 9.13E | 2.00 | -1.75 | |
| 2100.00 | 11.50 | 13.430 | 2096.15 | 55.94N | 13.36E | 2.00 | -2.56 | |
| 2200.00 | 13.50 | 13.430 | 2193.77 | 76.99N | 18.38E | 2.00 | -3.52 | |
| 2300.00 | 15.50 | 13.430 | 2290.58 | 101.34N | 24.20E | 2.00 | -4.64 | |
| 2400.00 | 17.50 | 13.430 | 2386.46 | 128.97N | 30.80E | 2.00 | -5.90 | |
| 2500.00 | 18.27 | 13.430 | 2481.50 | 159.21N | 38.02E | ==> | -7.29 | |
| 2600.00 | 18.27 | 13.430 | 2576.46 | 189.70N | 45.30E | ==> | -8.68 | |
| 2700.00 | 18.27 | 13.430 | 2671.42 | 220.19N | 52.58E | ==> | -10.08 | |
| 2800.00 | 18.27 | 13.430 | 2766.38 | 250.68N | 59.86E | ==> | -11.48 | |
| 2900.00 | 18.27 | 13.430 | 2861.34 | 281.16N | 67.14E | ==> | -12.87 | |
| 3000.00 | 18.27 | 13.430 | 2956.30 | 311.65N | 74.42E | ==> | -14.27 | |
| 3100.00 | 18.27 | 13.430 | 3051.26 | 342.14N | 81.70E | ==> | -15.66 | |

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 5953.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 280.880 degrees
Bottom hole distance is 10133.57 Feet on azimuth 280.88 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 13-Apr-2017



SYSDRILL
Well Design Combined Report
Wellbore: W POWELL 5-64 15-16-1CHZ (PWB)



| 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 | 18.27 | 13.430 | 3146.22 | 372.62N | 88.98E | ==> | -17.06 | |
| 3300.00 | 18.27 | 13.430 | 3241.19 | 403.11N | 96.26E | ==> | -18.45 | |
| | | | | | | | | |
| 3400.00 | 18.27 | 13.430 | 3336.15 | 433.60N | 103.54E | ==> | -19.85 | |
| 3500.00 | 18.27 | 13.430 | 3431.11 | 464.08N | 110.82E | ==> | -21.24 | |
| 3600.00 | 18.27 | 13.430 | 3526.07 | 494.57N | 118.10E | ==> | -22.64 | |
| 3700.00 | 18.27 | 13.430 | 3621.03 | 525.06N | 125.38E | ==> | -24.04 | |
| 3800.00 | 18.27 | 13.430 | 3715.99 | 555.54N | 132.66E | ==> | -25.43 | |
| | | | | | | | | |
| 3900.00 | 18.27 | 13.430 | 3810.95 | 586.03N | 139.94E | ==> | -26.83 | |
| 4000.00 | 18.27 | 13.430 | 3905.91 | 616.52N | 147.22E | ==> | -28.22 | |
| 4100.00 | 18.27 | 13.430 | 4000.87 | 647.00N | 154.50E | ==> | -29.62 | |
| 4200.00 | 18.27 | 13.430 | 4095.83 | 677.49N | 161.78E | ==> | -31.01 | |
| 4300.00 | 18.27 | 13.430 | 4190.79 | 707.98N | 169.06E | ==> | -32.41 | |
| | | | | | | | | |
| 4400.00 | 18.27 | 13.430 | 4285.75 | 738.46N | 176.34E | ==> | -33.81 | |
| 4500.00 | 18.27 | 13.430 | 4380.72 | 768.95N | 183.62E | ==> | -35.20 | |
| 4600.00 | 18.27 | 13.430 | 4475.68 | 799.44N | 190.90E | ==> | -36.60 | |
| 4700.00 | 18.27 | 13.430 | 4570.64 | 829.92N | 198.18E | ==> | -37.99 | |
| 4800.00 | 18.27 | 13.430 | 4665.60 | 860.41N | 205.46E | ==> | -39.39 | |
| | | | | | | | | |
| 4900.00 | 18.27 | 13.430 | 4760.56 | 890.90N | 212.74E | ==> | -40.78 | |
| 5000.00 | 18.27 | 13.430 | 4855.52 | 921.38N | 220.02E | ==> | -42.18 | |
| 5100.00 | 18.27 | 13.430 | 4950.48 | 951.87N | 227.30E | ==> | -43.58 | |
| 5200.00 | 18.27 | 13.430 | 5045.44 | 982.36N | 234.58E | ==> | -44.97 | |
| 5300.00 | 18.27 | 13.430 | 5140.40 | 1012.84N | 241.86E | ==> | -46.37 | |
| | | | | | | | | |
| 5400.00 | 18.27 | 13.430 | 5235.36 | 1043.33N | 249.14E | ==> | -47.76 | |
| 5500.00 | 18.27 | 13.430 | 5330.32 | 1073.82N | 256.42E | ==> | -49.16 | |
| 5600.00 | 18.27 | 13.430 | 5425.28 | 1104.30N | 263.70E | ==> | -50.55 | |
| 5700.00 | 18.27 | 13.430 | 5520.25 | 1134.79N | 270.98E | ==> | -51.95 | |
| 5800.00 | 18.27 | 13.430 | 5615.21 | 1165.28N | 278.26E | ==> | -53.34 | |
| | | | | | | | | |
| 5900.00 | 18.27 | 13.430 | 5710.17 | 1195.76N | 285.54E | ==> | -54.74 | |
| 6000.00 | 18.27 | 13.430 | 5805.13 | 1226.25N | 292.82E | ==> | -56.14 | |
| 6100.00 | 18.27 | 13.430 | 5900.09 | 1256.74N | 300.10E | ==> | -57.53 | |
| 6200.00 | 18.27 | 13.430 | 5995.05 | 1287.22N | 307.38E | ==> | -58.93 | |
| 6300.00 | 18.27 | 13.430 | 6090.01 | 1317.71N | 314.66E | ==> | -60.32 | |
| | | | | | | | | |
| 6400.00 | 18.27 | 13.430 | 6184.97 | 1348.20N | 321.94E | ==> | -61.72 | |
| 6500.00 | 18.27 | 13.430 | 6279.93 | 1378.69N | 329.22E | ==> | -63.11 | |
| 6600.00 | 18.27 | 13.430 | 6374.89 | 1409.17N | 336.50E | ==> | -64.51 | |
| 6700.00 | 18.27 | 13.430 | 6469.85 | 1439.66N | 343.78E | ==> | -65.91 | |
| 6800.00 | 18.27 | 13.430 | 6564.81 | 1470.15N | 351.06E | ==> | -67.30 | |
| | | | | | | | | |
| 6900.00 | 18.27 | 13.430 | 6659.78 | 1500.63N | 358.34E | ==> | -68.70 | |
| 7000.00 | 18.27 | 13.430 | 6754.74 | 1531.12N | 365.62E | ==> | -70.09 | |
| 7100.00 | 18.27 | 13.430 | 6849.70 | 1561.61N | 372.90E | ==> | -71.49 | |
| 7200.00 | 18.27 | 13.430 | 6944.66 | 1592.09N | 380.18E | ==> | -72.88 | |
| 7300.00 | 18.27 | 13.430 | 7039.62 | 1622.58N | 387.46E | ==> | -74.28 | |
| | | | | | | | | |
| 7400.00 | 18.27 | 13.430 | 7134.58 | 1653.07N | 394.74E | ==> | -75.67 | |
| 7500.00 | 18.27 | 13.430 | 7229.54 | 1683.55N | 402.02E | ==> | -77.07 | |
| 7600.00 | 18.27 | 347.200 | 7324.62 | 1714.11N | 403.78E | 10.50 | -73.03 | |
| 7700.00 | 22.89 | 319.980 | 7418.43 | 1744.38N | 387.75E | 10.50 | -51.58 | |
| 7800.00 | 30.44 | 303.530 | 7507.85 | 1773.35N | 354.04E | 10.50 | -13.00 | |
| | | | | | | | | |
| 7900.00 | 39.27 | 293.520 | 7589.89 | 1800.05N | 303.76E | 10.50 | 41.41 | |
| 8000.00 | 48.69 | 286.780 | 7661.81 | 1823.59N | 238.60E | 10.50 | 109.84 | |
| 8100.00 | 58.39 | 281.780 | 7721.19 | 1843.18N | 160.74E | 10.50 | 190.00 | |
| 8200.00 | 68.25 | 277.730 | 7766.05 | 1858.16N | 72.79E | 10.50 | 279.20 | |
| 8300.00 | 78.20 | 274.220 | 7794.89 | 1868.04N | 22.30W | 10.50 | 374.45 | |
| | | | | | | | | |
| 8400.00 | 88.19 | 270.950 | 7806.73 | 1872.48N | 121.36W | 10.50 | 472.56 | |
| 8500.00 | 90.41 | 270.230 | 7806.44 | 1873.02N | 221.35W | ==> | 570.86 | |
| 8600.00 | 90.41 | 270.230 | 7805.71 | 1873.43N | 321.35W | ==> | 669.14 | |
| 8700.00 | 90.41 | 270.230 | 7804.99 | 1873.83N | 421.35W | ==> | 767.41 | |
| 8800.00 | 90.41 | 270.230 | 7804.27 | 1874.24N | 521.34W | ==> | 865.69 | |
| | | | | | | | | |
| 8900.00 | 90.41 | 270.230 | 7803.54 | 1874.64N | 621.34W | ==> | 963.97 | |
| 9000.00 | 90.41 | 270.230 | 7802.82 | 1875.05N | 721.34W | ==> | 1062.24 | |

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 5953.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 280.880 degrees
Bottom hole distance is 10133.57 Feet on azimuth 280.88 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 13-Apr-2017



SYSDRILL
Well Design Combined Report
Wellbore: W POWELL 5-64 15-16-1CHZ (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 | 90.41 | 270.230 | 7802.09 | 1875.45N | 821.33W | ==> | 1160.52 | |
| 9200.00 | 90.41 | 270.230 | 7801.37 | 1875.86N | 921.33W | ==> | 1258.79 | |
| 9300.00 | 90.41 | 270.230 | 7800.65 | 1876.26N | 1021.33W | ==> | 1357.07 | |
| 9400.00 | 90.41 | 270.230 | 7799.92 | 1876.67N | 1121.32W | ==> | 1455.35 | |
| 9500.00 | 90.41 | 270.230 | 7799.20 | 1877.07N | 1221.32W | ==> | 1553.62 | |
| 9600.00 | 90.41 | 270.230 | 7798.47 | 1877.48N | 1321.32W | ==> | 1651.90 | |
| 9700.00 | 90.41 | 270.230 | 7797.75 | 1877.88N | 1421.31W | ==> | 1750.17 | |
| 9800.00 | 90.41 | 270.230 | 7797.03 | 1878.29N | 1521.31W | ==> | 1848.45 | |
| 9900.00 | 90.41 | 270.230 | 7796.30 | 1878.69N | 1621.31W | ==> | 1946.73 | |
| 10000.00 | 90.41 | 270.230 | 7795.58 | 1879.10N | 1721.30W | ==> | 2045.00 | |
| 10100.00 | 90.41 | 270.230 | 7794.86 | 1879.51N | 1821.30W | ==> | 2143.28 | |
| 10200.00 | 90.41 | 270.230 | 7794.13 | 1879.91N | 1921.30W | ==> | 2241.55 | |
| 10300.00 | 90.41 | 270.230 | 7793.41 | 1880.32N | 2021.29W | ==> | 2339.83 | |
| 10400.00 | 90.41 | 270.230 | 7792.68 | 1880.72N | 2121.29W | ==> | 2438.11 | |
| 10500.00 | 90.41 | 270.230 | 7791.96 | 1881.13N | 2221.29W | ==> | 2536.38 | |
| 10600.00 | 90.41 | 270.230 | 7791.24 | 1881.53N | 2321.28W | ==> | 2634.66 | |
| 10700.00 | 90.41 | 270.230 | 7790.51 | 1881.94N | 2421.28W | ==> | 2732.93 | |
| 10800.00 | 90.41 | 270.230 | 7789.79 | 1882.34N | 2521.27W | ==> | 2831.21 | |
| 10900.00 | 90.41 | 270.230 | 7789.06 | 1882.75N | 2621.27W | ==> | 2929.49 | |
| 11000.00 | 90.41 | 270.230 | 7788.34 | 1883.15N | 2721.27W | ==> | 3027.76 | |
| 11100.00 | 90.41 | 270.230 | 7787.62 | 1883.56N | 2821.26W | ==> | 3126.04 | |
| 11200.00 | 90.41 | 270.230 | 7786.89 | 1883.96N | 2921.26W | ==> | 3224.32 | |
| 11300.00 | 90.41 | 270.230 | 7786.17 | 1884.37N | 3021.26W | ==> | 3322.59 | |
| 11400.00 | 90.41 | 270.230 | 7785.44 | 1884.77N | 3121.25W | ==> | 3420.87 | |
| 11500.00 | 90.41 | 270.230 | 7784.72 | 1885.18N | 3221.25W | ==> | 3519.14 | |
| 11600.00 | 90.41 | 270.230 | 7784.00 | 1885.58N | 3321.25W | ==> | 3617.42 | |
| 11700.00 | 90.41 | 270.230 | 7783.27 | 1885.99N | 3421.24W | ==> | 3715.70 | |
| 11800.00 | 90.41 | 270.230 | 7782.55 | 1886.39N | 3521.24W | ==> | 3813.97 | |
| 11900.00 | 90.41 | 270.230 | 7781.83 | 1886.80N | 3621.24W | ==> | 3912.25 | |
| 12000.00 | 90.41 | 270.230 | 7781.10 | 1887.20N | 3721.23W | ==> | 4010.52 | |
| 12100.00 | 90.41 | 270.230 | 7780.38 | 1887.61N | 3821.23W | ==> | 4108.80 | |
| 12200.00 | 90.41 | 270.230 | 7779.65 | 1888.01N | 3921.23W | ==> | 4207.08 | |
| 12300.00 | 90.41 | 270.230 | 7778.93 | 1888.42N | 4021.22W | ==> | 4305.35 | |
| 12400.00 | 90.41 | 270.230 | 7778.21 | 1888.82N | 4121.22W | ==> | 4403.63 | |
| 12500.00 | 90.41 | 270.230 | 7777.48 | 1889.23N | 4221.22W | ==> | 4501.90 | |
| 12600.00 | 90.41 | 270.230 | 7776.76 | 1889.64N | 4321.21W | ==> | 4600.18 | |
| 12700.00 | 90.41 | 270.230 | 7776.03 | 1890.04N | 4421.21W | ==> | 4698.46 | |
| 12800.00 | 90.41 | 270.230 | 7775.31 | 1890.45N | 4521.21W | ==> | 4796.73 | |
| 12900.00 | 90.41 | 270.230 | 7774.59 | 1890.85N | 4621.20W | ==> | 4895.01 | |
| 13000.00 | 90.41 | 270.230 | 7773.86 | 1891.26N | 4721.20W | ==> | 4993.29 | |
| 13100.00 | 90.41 | 270.230 | 7773.14 | 1891.66N | 4821.20W | ==> | 5091.56 | |
| 13200.00 | 90.41 | 270.230 | 7772.41 | 1892.07N | 4921.19W | ==> | 5189.84 | |
| 13300.00 | 90.41 | 270.230 | 7771.69 | 1892.47N | 5021.19W | ==> | 5288.11 | |
| 13400.00 | 90.41 | 270.230 | 7770.97 | 1892.88N | 5121.19W | ==> | 5386.39 | |
| 13500.00 | 90.41 | 270.230 | 7770.24 | 1893.28N | 5221.18W | ==> | 5484.67 | |
| 13600.00 | 90.41 | 270.230 | 7769.52 | 1893.69N | 5321.18W | ==> | 5582.94 | |
| 13700.00 | 90.41 | 270.230 | 7768.80 | 1894.09N | 5421.17W | ==> | 5681.22 | |
| 13800.00 | 90.41 | 270.230 | 7768.07 | 1894.50N | 5521.17W | ==> | 5779.49 | |
| 13900.00 | 90.41 | 270.230 | 7767.35 | 1894.90N | 5621.17W | ==> | 5877.77 | |
| 14000.00 | 90.41 | 270.230 | 7766.62 | 1895.31N | 5721.16W | ==> | 5976.05 | |
| 14100.00 | 90.41 | 270.230 | 7765.90 | 1895.71N | 5821.16W | ==> | 6074.32 | |
| 14200.00 | 90.41 | 270.230 | 7765.18 | 1896.12N | 5921.16W | ==> | 6172.60 | |
| 14300.00 | 90.41 | 270.230 | 7764.45 | 1896.52N | 6021.15W | ==> | 6270.87 | |
| 14400.00 | 90.41 | 270.230 | 7763.73 | 1896.93N | 6121.15W | ==> | 6369.15 | |
| 14500.00 | 90.41 | 270.230 | 7763.00 | 1897.33N | 6221.15W | ==> | 6467.43 | |
| 14600.00 | 90.41 | 270.230 | 7762.28 | 1897.74N | 6321.14W | ==> | 6565.70 | |
| 14700.00 | 90.41 | 270.230 | 7761.56 | 1898.14N | 6421.14W | ==> | 6663.98 | |
| 14800.00 | 90.41 | 270.230 | 7760.83 | 1898.55N | 6521.14W | ==> | 6762.26 | |
| 14900.00 | 90.41 | 270.230 | 7760.11 | 1898.95N | 6621.13W | ==> | 6860.53 | |

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 5953.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 280.880 degrees
Bottom hole distance is 10133.57 Feet on azimuth 280.88 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 13-Apr-2017



SYSDRILL
Well Design Combined Report
Wellbore: W POWELL 5-64 15-16-1CHZ (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 | 90.41 | 270.230 | 7759.38 | 1899.36N | 6721.13W | ==> | 6958.81 | |
| 15100.00 | 90.41 | 270.230 | 7758.66 | 1899.77N | 6821.13W | ==> | 7057.08 | |
| 15200.00 | 90.41 | 270.230 | 7757.94 | 1900.17N | 6921.12W | ==> | 7155.36 | |
| 15300.00 | 90.41 | 270.230 | 7757.21 | 1900.58N | 7021.12W | ==> | 7253.64 | |
| 15400.00 | 90.41 | 270.230 | 7756.49 | 1900.98N | 7121.12W | ==> | 7351.91 | |
| 15500.00 | 90.41 | 270.230 | 7755.77 | 1901.39N | 7221.11W | ==> | 7450.19 | |
| 15600.00 | 90.41 | 270.230 | 7755.04 | 1901.79N | 7321.11W | ==> | 7548.46 | |
| 15700.00 | 90.41 | 270.230 | 7754.32 | 1902.20N | 7421.11W | ==> | 7646.74 | |
| 15800.00 | 90.41 | 270.230 | 7753.59 | 1902.60N | 7521.10W | ==> | 7745.02 | |
| 15900.00 | 90.41 | 270.230 | 7752.87 | 1903.01N | 7621.10W | ==> | 7843.29 | |
| 16000.00 | 90.41 | 270.230 | 7752.15 | 1903.41N | 7721.10W | ==> | 7941.57 | |
| 16100.00 | 90.41 | 270.230 | 7751.42 | 1903.82N | 7821.09W | ==> | 8039.84 | |
| 16200.00 | 90.41 | 270.230 | 7750.70 | 1904.22N | 7921.09W | ==> | 8138.12 | |
| 16300.00 | 90.41 | 270.230 | 7749.97 | 1904.63N | 8021.09W | ==> | 8236.40 | |
| 16400.00 | 90.41 | 270.230 | 7749.25 | 1905.03N | 8121.08W | ==> | 8334.67 | |
| 16500.00 | 90.41 | 270.230 | 7748.53 | 1905.44N | 8221.08W | ==> | 8432.95 | |
| 16600.00 | 90.41 | 270.230 | 7747.80 | 1905.84N | 8321.08W | ==> | 8531.23 | |
| 16700.00 | 90.41 | 270.230 | 7747.08 | 1906.25N | 8421.07W | ==> | 8629.50 | |
| 16800.00 | 90.41 | 270.230 | 7746.35 | 1906.65N | 8521.07W | ==> | 8727.78 | |
| 16900.00 | 90.41 | 270.230 | 7745.63 | 1907.06N | 8621.06W | ==> | 8826.05 | |
| 17000.00 | 90.41 | 270.230 | 7744.91 | 1907.46N | 8721.06W | ==> | 8924.33 | |
| 17100.00 | 90.41 | 270.230 | 7744.18 | 1907.87N | 8821.06W | ==> | 9022.61 | |
| 17200.00 | 90.41 | 270.230 | 7743.46 | 1908.27N | 8921.05W | ==> | 9120.88 | |
| 17300.00 | 90.41 | 270.230 | 7742.74 | 1908.68N | 9021.05W | ==> | 9219.16 | |
| 17400.00 | 90.41 | 270.230 | 7742.01 | 1909.08N | 9121.05W | ==> | 9317.43 | |
| 17500.00 | 90.41 | 270.230 | 7741.29 | 1909.49N | 9221.04W | ==> | 9415.71 | |
| 17600.00 | 90.41 | 270.230 | 7740.56 | 1909.90N | 9321.04W | ==> | 9513.99 | |
| 17700.00 | 90.41 | 270.230 | 7739.84 | 1910.30N | 9421.04W | ==> | 9612.26 | |
| 17800.00 | 90.41 | 270.230 | 7739.12 | 1910.71N | 9521.03W | ==> | 9710.54 | |
| 17900.00 | 90.41 | 270.230 | 7738.39 | 1911.11N | 9621.03W | ==> | 9808.81 | |
| 18000.00 | 90.41 | 270.230 | 7737.67 | 1911.52N | 9721.03W | ==> | 9907.09 | |
| 18100.00 | 90.41 | 270.230 | 7736.94 | 1911.92N | 9821.02W | ==> | 10005.37 | |
| 18200.00 | 90.41 | 270.230 | 7736.22 | 1912.33N | 9921.02W | ==> | 10103.64 | |
| 18230.45 | 90.41 | 270.230 | 7736.00 | 1912.45N | 9951.47W | ==> | 10133.57 | |

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Coordinates are from Slot MD's are from Rig and TVD's are from Rig (Planned Datum #1 5953.0ft above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 280.880 degrees
Bottom hole distance is 10133.57 Feet on azimuth 280.88 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 13-Apr-2017



| Targets | | | | | | | |
|-----------------------------------|-----------|----------|---------|----------------|-----------------|------------|------------|
| Name | North[ft] | East[ft] | TVD[ft] | Latitude | Longitude | Northing | Easting |
| W POWELL 5-64 15-16-1CHZ - EP | 1872.71N | 143.65W | 7807.00 | N39 37 12.4140 | W104 31 53.1408 | 1652209.80 | 3272844.31 |
| W POWELL 5-64 15-16-1CHZ - BHL | 1912.45N | 9951.47W | 7736.00 | N39 37 13.8216 | W104 33 58.4640 | 1652249.54 | 3263036.74 |

| Notes |
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