

HG ENERGY

Location: Wetzel County, WV
 Field: Wetzel (UTM 17N NAD 27)
 Facility: Long 409 Part

Slot: Slot #08
 Well: Long 409 S-6H ST01
 Wellbore: Long 409 S-6H ST01 (PWB)



JUL 05 2016

Location Information

| Facility Name | Grid East (US ft) | Grid North (US ft) | Latitude | Longitude |
|--|-------------------|--------------------|-------------------|--------------------|
| Long 409 Part | 1731860.700 | 14374712.000 | 39°35'02.180"N | 80°40'31.591"W |
| Slot | Local N (ft) | Local E (ft) | Grid East (US ft) | Grid North (US ft) |
| Slot #08 | -45.92 | -77.43 | 1731763.300 | 14374667.000 |
| | | | Latitude | Longitude |
| | | | 39°35'01.729"N | 80°40'32.588"W |
| DM 24 (RT) to Mud line (At Slot: Slot #08) | | | 18ft | |
| Mean Sea Level to Mud line (At Slot: Slot #08) | | | -1340ft | |
| DM 24 (RT) to Mean Sea Level | | | 1358ft | |

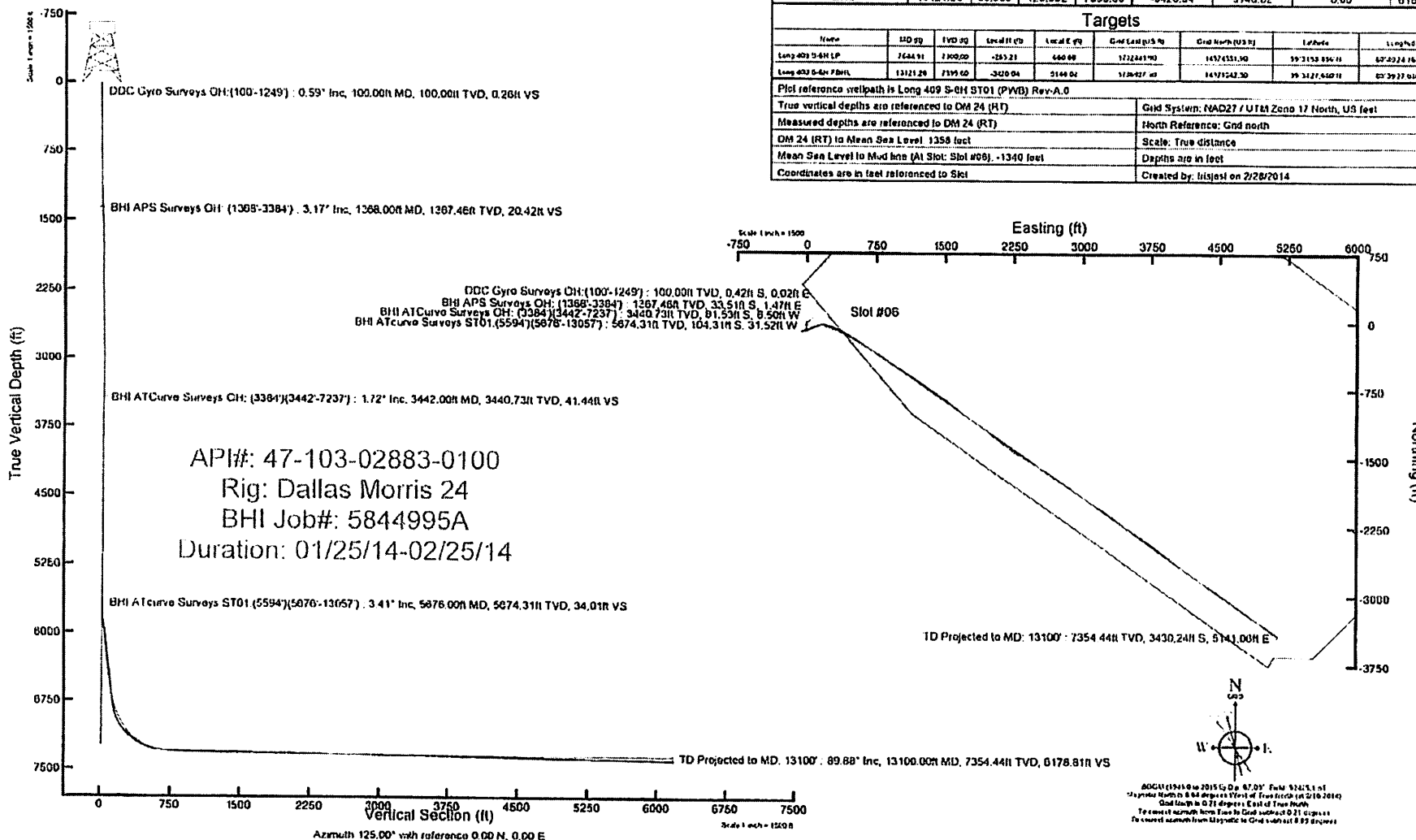
Well Profile Data

| Design Comment | MO (ft) | Inc (") | Az (") | TVD (ft) | Local N (ft) | Local E (ft) | DLS (*/100ft) | VS |
|--------------------|----------|---------|---------|----------|--------------|--------------|---------------|---------|
| Survey | 5657.00 | 0.810 | 270.550 | 5855.35 | -105.25 | -33.99 | 0.00 | 32 |
| Est KQP | 5700.00 | 0.605 | 260.418 | 5889.35 | -105.29 | -34.44 | 0.25 | 32 |
| End of 3D Arc (J) | 5817.51 | 11.158 | 68.643 | 5815.18 | -101.24 | -24.43 | 10.00 | 35 |
| End of Tangent (J) | 8818.32 | 11.158 | 69.643 | 6703.08 | -30.85 | 155.39 | 0.00 | 14 |
| LP | 7644.91 | 89.000 | 125.002 | 7300.60 | -285.21 | 660.86 | 10.00 | 704.94 |
| PBHL | 13121.28 | 89.000 | 125.002 | 7395.60 | -3426.04 | 5146.02 | 0.00 | 6180.47 |

Targets

| Name | MO (ft) | TVD (ft) | Local N (ft) | Local E (ft) | Grid East (US ft) | Grid North (US ft) | Latitude | Longitude |
|--------------------|----------|----------|--------------|--------------|-------------------|--------------------|----------------|----------------|
| Long 409 S-6H LP | 7644.91 | 7300.60 | -285.21 | 660.86 | 1732611.90 | 14374531.90 | 39°35'02.180"N | 80°40'31.591"W |
| Long 409 S-6H PBHL | 13121.28 | 7395.60 | -3426.04 | 5146.02 | 1732611.90 | 14374531.90 | 39°35'02.180"N | 80°40'31.591"W |

Plot reference wellpath is Long 409 S-6H ST01 (PWB) Rev-A.0
 True vertical depths are referenced to DM 24 (RT) Grid System: NAD27 / UTM Zone 17 North, US feet
 Measured depths are referenced to DM 24 (RT) North Reference: Grid north
 DM 24 (RT) to Mean Sea Level: 1358 feet Scale: True distance
 Mean Sea Level to Mud line (At Slot: Slot #08): -1340 feet Depths are in feet
 Coordinates are in feet referenced to Slot Created by: litajst on 7/28/2014



ADUC (1941) to 2015 G.D. 87.01' FWH 9245.1 ft
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 Grid North is 0.21 degrees East of True North
 To convert magnetic North True to Grid subtract 0.21 degrees
 To convert magnetic True to Grid subtract 0.89 degrees

Actual Wellpath Report

Long 409 S-6H ST01 (AWB) Proj: 13100'

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REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|-------------------------|----------------|---|
| Operator | HIG ENERGY | Slot | Slot #06 |
| Area | Wetzel County, WY | Well | Long 409 S-6H ST01 |
| Field | Wetzel (UTM 17N NAD 27) | Wellbore | Long 409 S-6H ST01 (AWB) |
| Facility | Long 409 Pad | Sidetrack from | Long 409 S-6H (AWB) at 328083989501312370000.00 MID |

REPORT SETUP INFORMATION

| | | | |
|---------------------|------------------------------------|----------------------|--|
| Projection System | NAD27 / UTM Zone 17 North, US feet | Software System | WellArchitect® 4.0.1 |
| North Reference | Grid | User | Frisjesl |
| Scale | 0.99961 | Report Generated | 3/20/2014 at 10:52:17 AM |
| Convergence at slot | 0.21° East | Database/Source file | WA_EasternUS/Long_409_S-6H_ST01_AWB_.and |

WELLPATH LOCATION

| | Local coordinates | | Grid coordinates | | Geographic coordinates | |
|-----------------------|-------------------|-----------|------------------|------------------|------------------------|----------------|
| | North [ft] | East [ft] | Easting [US ft] | Northing [US ft] | Latitude | Longitude |
| Slot Location | -45.92 | -77.43 | 1731783.30 | 14374667.00 | 39°35'01.729"N | 80°40'32.588"W |
| Facility Reference Pt | | | 1731860.70 | 14374712.90 | 39°35'02.180"N | 80°40'31.597"W |
| Field Reference Pt | | | 1731860.70 | 14374712.90 | 39°35'02.180"N | 80°40'31.597"W |

WELLPATH DATUM

| | | | |
|--------------------------|-------------------|---|-------------------|
| Calculation method | Minimum curvature | DM 24 (RT) to Facility Vertical Datum | 18.00ft |
| Horizontal Reference Pt | Slot | DM 24 (RT) to Mean Sea Level | 1358.00ft |
| Vertical Reference Pt | DM 24 (RT) | DM 24 (RT) to Mud Line at Slot (Slot #06) | 18.00ft |
| MD Reference Pt | DM 24 (RT) | Section Origin | N 0.00, E 0.00 ft |
| Field Vertical Reference | Mean Sea Level | Section Azimuth | 125.00° |

Actual Wellpath Report

Long 409 S-6H ST01 (AWB) Proj: 13100'
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Received
 Office of
 JUL 05

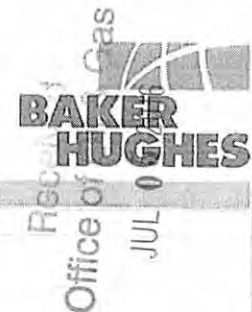
| | | | |
|------------------------------------|-------------------------|----------------|---|
| REFERENCE WELL PATH IDENTIFICATION | | | |
| Operator | HIG ENERGY | Slot | Slot #06 |
| Area | Wetzel County, WV | Well | Long 409 S-6H ST01 |
| Field | Wetzel (UTM 17N NAD 27) | Wellbore | Long 409 S-6H ST01 (AWB) |
| Facility | Long 409 Pad | Sidetrack from | Long 409 S-6H (AWB) at 328083989501312370000.00 MID |

WELLPATH DATA (220 stations) † = interpolated/extrapolated station

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [ft/100ft] |
|---------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|----------------|
| 0.00 | 0.00 | 176.700 | 0.00 | 0.00 | 0.00 | 0.00 | 1731783.30 | 14374667.00 | 39°35'01.729"N | 80°40'32.588"W | 0.00 | 0.000 | 0.00 |
| 18.00 | 0.00 | 176.700 | 18.00 | 0.00 | 0.00 | 0.00 | 1731783.30 | 14374667.00 | 39°35'01.729"N | 80°40'32.588"W | 0.00 | 0.000 | 0.00 |
| 100.00 | 0.590 | 176.700 | 100.00 | 0.26 | -0.42 | 0.02 | 1731783.32 | 14374666.58 | 39°35'01.724"N | 80°40'32.588"W | 0.42 | 176.700 | 0.72 |
| 200.00 | 0.670 | 197.760 | 199.99 | 0.75 | -1.49 | -0.12 | 1731783.18 | 14374665.51 | 39°35'01.714"N | 80°40'32.590"W | 1.50 | 184.765 | 0.24 |
| 300.00 | 0.810 | 170.700 | 299.98 | 1.42 | -2.75 | -0.19 | 1731783.11 | 14374664.25 | 39°35'01.701"N | 80°40'32.591"W | 2.75 | 183.926 | 0.37 |
| 400.00 | 0.990 | 180.770 | 399.97 | 2.40 | -4.31 | -0.09 | 1731783.21 | 14374662.69 | 39°35'01.686"N | 80°40'32.589"W | 4.31 | 181.142 | 0.24 |
| 500.00 | 0.820 | 189.940 | 499.96 | 3.19 | -5.88 | -0.22 | 1731783.08 | 14374661.13 | 39°35'01.670"N | 80°40'32.591"W | 5.88 | 182.154 | 0.22 |
| 600.00 | 1.030 | 161.540 | 599.95 | 4.21 | -7.43 | -0.06 | 1731783.24 | 14374659.57 | 39°35'01.655"N | 80°40'32.589"W | 7.43 | 180.462 | 0.50 |
| 700.00 | 1.200 | 189.520 | 699.93 | 5.39 | -9.32 | 0.05 | 1731783.35 | 14374657.68 | 39°35'01.636"N | 80°40'32.588"W | 9.32 | 179.654 | 0.56 |
| 800.00 | 1.420 | 181.780 | 799.90 | 6.52 | -11.59 | -0.16 | 1731783.14 | 14374655.41 | 39°35'01.614"N | 80°40'32.591"W | 11.59 | 180.792 | 0.28 |
| 900.00 | 1.790 | 175.050 | 899.86 | 8.20 | -14.38 | -0.06 | 1731783.24 | 14374652.62 | 39°35'01.586"N | 80°40'32.589"W | 14.39 | 180.255 | 0.41 |
| 1000.00 | 1.870 | 176.260 | 999.81 | 10.22 | -17.57 | 0.18 | 1731783.48 | 14374649.44 | 39°35'01.555"N | 80°40'32.587"W | 17.57 | 179.422 | 0.09 |
| 1100.00 | 2.120 | 175.430 | 1099.75 | 12.42 | -21.04 | 0.43 | 1731783.73 | 14374645.97 | 39°35'01.521"N | 80°40'32.583"W | 21.05 | 178.826 | 0.25 |
| 1200.00 | 2.650 | 178.250 | 1199.66 | 14.98 | -25.20 | 0.65 | 1731783.95 | 14374641.81 | 39°35'01.479"N | 80°40'32.581"W | 25.20 | 178.524 | 0.54 |
| 1249.00 | 2.690 | 170.940 | 1248.61 | 16.46 | -27.46 | 0.86 | 1731784.16 | 14374639.55 | 39°35'01.457"N | 80°40'32.578"W | 27.48 | 178.197 | 0.70 |
| 1368.00 | 3.170 | 177.110 | 1367.46 | 20.42 | -33.51 | 1.47 | 1731784.77 | 14374633.51 | 39°35'01.397"N | 80°40'32.571"W | 33.51 | 177.487 | 0.48 |
| 1432.00 | 3.250 | 178.080 | 1431.36 | 22.60 | -37.09 | 1.62 | 1731784.92 | 14374629.93 | 39°35'01.362"N | 80°40'32.569"W | 37.12 | 177.498 | 0.15 |
| 1495.00 | 3.350 | 181.830 | 1494.25 | 24.68 | -40.71 | 1.62 | 1731784.92 | 14374626.30 | 39°35'01.326"N | 80°40'32.569"W | 40.74 | 177.719 | 0.38 |
| 1557.00 | 2.520 | 186.060 | 1556.17 | 26.33 | -43.88 | 1.42 | 1731784.72 | 14374623.14 | 39°35'01.295"N | 80°40'32.572"W | 43.90 | 178.147 | 1.38 |
| 1620.00 | 1.430 | 188.440 | 1619.13 | 27.35 | -46.03 | 1.16 | 1731784.46 | 14374620.99 | 39°35'01.274"N | 80°40'32.575"W | 46.05 | 178.559 | 1.73 |
| 1683.00 | 0.850 | 184.410 | 1682.12 | 27.94 | -47.28 | 1.01 | 1731784.31 | 14374619.74 | 39°35'01.261"N | 80°40'32.577"W | 47.29 | 178.780 | 0.93 |
| 1746.00 | 0.830 | 181.110 | 1745.11 | 28.43 | -48.20 | 0.96 | 1731784.26 | 14374618.82 | 39°35'01.252"N | 80°40'32.578"W | 48.21 | 178.857 | 0.08 |
| 1808.00 | 0.930 | 181.020 | 1807.10 | 28.97 | -49.15 | 0.94 | 1731784.24 | 14374617.87 | 39°35'01.243"N | 80°40'32.578"W | 49.16 | 178.899 | 0.16 |
| 1871.00 | 0.990 | 179.690 | 1870.10 | 29.57 | -50.21 | 0.94 | 1731784.24 | 14374616.81 | 39°35'01.232"N | 80°40'32.578"W | 50.21 | 178.930 | 0.10 |
| 1934.00 | 0.800 | 186.900 | 1935.09 | 30.09 | -51.19 | 0.89 | 1731784.19 | 14374615.83 | 39°35'01.223"N | 80°40'32.579"W | 51.19 | 179.006 | 0.35 |
| 1998.00 | 1.090 | 178.630 | 1997.08 | 30.66 | -52.24 | 0.85 | 1731784.15 | 14374614.78 | 39°35'01.212"N | 80°40'32.580"W | 52.25 | 179.069 | 0.50 |
| 2060.00 | 1.140 | 170.510 | 2059.07 | 31.44 | -53.44 | 0.96 | 1731784.26 | 14374613.58 | 39°35'01.200"N | 80°40'32.578"W | 53.45 | 178.966 | 0.27 |
| 2123.00 | 1.580 | 175.390 | 2122.05 | 32.36 | -54.81 | 1.13 | 1731784.43 | 14374612.21 | 39°35'01.187"N | 80°40'32.576"W | 54.82 | 178.820 | 0.42 |
| 2186.00 | 1.240 | 172.930 | 2185.04 | 33.30 | -56.24 | 1.27 | 1731784.57 | 14374610.78 | 39°35'01.173"N | 80°40'32.574"W | 56.26 | 178.702 | 0.24 |
| 2248.00 | 1.260 | 185.140 | 2247.02 | 34.09 | -57.59 | 1.30 | 1731784.60 | 14374609.43 | 39°35'01.159"N | 80°40'32.574"W | 57.60 | 178.711 | 0.43 |
| 2311.00 | 1.290 | 185.200 | 2310.01 | 34.79 | -58.98 | 1.17 | 1731784.47 | 14374608.04 | 39°35'01.146"N | 80°40'32.576"W | 59.00 | 178.864 | 0.05 |
| 2374.00 | 1.390 | 187.970 | 2372.99 | 35.49 | -60.45 | 1.00 | 1731784.30 | 14374606.58 | 39°35'01.131"N | 80°40'32.578"W | 60.46 | 179.053 | 0.19 |
| 2438.00 | 1.310 | 180.720 | 2436.97 | 36.25 | -61.93 | 0.88 | 1731784.18 | 14374605.08 | 39°35'01.116"N | 80°40'32.580"W | 61.95 | 179.184 | 0.29 |
| 2501.00 | 1.440 | 187.720 | 2499.95 | 37.02 | -63.45 | 0.77 | 1731784.07 | 14374603.57 | 39°35'01.101"N | 80°40'32.581"W | 63.46 | 179.308 | 0.34 |
| 2564.00 | 1.510 | 180.860 | 2562.93 | 37.85 | -65.07 | 0.65 | 1731783.95 | 14374601.96 | 39°35'01.085"N | 80°40'32.583"W | 65.07 | 179.429 | 0.30 |
| 2627.00 | 1.390 | 179.340 | 2625.91 | 38.76 | -66.66 | 0.64 | 1731783.94 | 14374600.37 | 39°35'01.070"N | 80°40'32.583"W | 66.66 | 179.446 | 0.20 |
| 2691.00 | 1.440 | 193.440 | 2689.89 | 39.51 | -68.22 | 0.47 | 1731783.77 | 14374598.81 | 39°35'01.054"N | 80°40'32.585"W | 68.22 | 179.608 | 0.55 |
| 2754.00 | 1.390 | 189.610 | 2752.87 | 40.13 | -69.74 | 0.15 | 1731783.45 | 14374597.28 | 39°35'01.039"N | 80°40'32.589"W | 69.74 | 179.873 | 0.17 |
| 2817.00 | 1.250 | 200.020 | 2815.86 | 40.63 | -71.14 | -0.21 | 1731783.09 | 14374595.89 | 39°35'01.025"N | 80°40'32.594"W | 71.14 | 180.168 | 0.44 |
| 2880.00 | 1.050 | 198.140 | 2878.84 | 40.98 | -72.34 | -0.62 | 1731782.68 | 14374594.69 | 39°35'01.014"N | 80°40'32.599"W | 72.34 | 180.493 | 0.32 |
| 2943.00 | 1.040 | 207.760 | 2941.83 | 41.22 | -73.39 | -1.07 | 1731782.23 | 14374593.64 | 39°35'01.003"N | 80°40'32.605"W | 73.40 | 180.834 | 0.28 |
| 3006.00 | 1.090 | 211.650 | 3004.82 | 41.33 | -74.41 | -1.65 | 1731781.65 | 14374592.62 | 39°35'00.993"N | 80°40'32.613"W | 74.42 | 181.270 | 0.14 |
| 3069.00 | 1.050 | 201.100 | 3067.81 | 41.50 | -75.45 | -2.17 | 1731781.13 | 14374591.57 | 39°35'00.983"N | 80°40'32.619"W | 75.49 | 181.649 | 0.42 |
| 3132.00 | 0.960 | 208.410 | 3130.80 | 41.70 | -76.46 | -2.63 | 1731780.67 | 14374590.57 | 39°35'00.973"N | 80°40'32.625"W | 76.50 | 181.971 | 0.25 |
| 3195.00 | 0.830 | 206.260 | 3193.79 | 41.83 | -77.33 | -3.08 | 1731780.22 | 14374589.70 | 39°35'00.964"N | 80°40'32.631"W | 77.39 | 182.284 | 0.21 |

Actual Wellpath Report

Long 409 S-6H ST01 (AWB) Proj: 13100'
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REFERENCE WELLPATH IDENTIFICATION

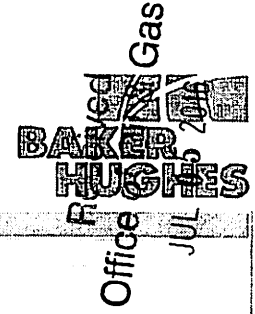
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|----------|-------------------------|----------------|---|
| Operator | HIG ENERGY | Slot | Slot #06 |
| Area | Wetzel County, WV | Well | Long 409 S-6H ST01 |
| Field | Wetzel (UTM 17N NAD 27) | Wellbore | Long 409 S-6H ST01 (AWB) |
| Facility | Long 409 Pad | Sidetrack from | Long 409 S-6H (AWB) at 328083989501312370000.00 MID |

WELLPATH DATA (220 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Secl [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [°/100ft] |
|---------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|---------------|
| 3258.00 | 0.950 | 218.530 | 3256.79 | 41.87 | -78.15 | -3.61 | 1731779.69 | 14374588.88 | 39°35'00.956"N | 80°40'32.638"W | 78.23 | 182.646 | 0.36 |
| 3321.00 | 1.290 | 221.040 | 3319.77 | 41.76 | -79.09 | -4.40 | 1731778.90 | 14374587.94 | 39°35'00.947"N | 80°40'32.648"W | 79.21 | 183.186 | 0.55 |
| 3384.00 | 1.570 | 215.410 | 3382.75 | 41.68 | -80.33 | -5.37 | 1731777.93 | 14374586.70 | 39°35'00.935"N | 80°40'32.660"W | 80.51 | 183.823 | 0.50 |
| 3442.00 | 1.720 | 230.490 | 3440.73 | 41.44 | -81.53 | -6.50 | 1731776.80 | 14374585.50 | 39°35'00.923"N | 80°40'32.675"W | 81.79 | 184.558 | 0.79 |
| 3505.00 | 1.860 | 228.160 | 3503.70 | 40.96 | -82.82 | -7.99 | 1731775.31 | 14374584.22 | 39°35'00.910"N | 80°40'32.694"W | 83.20 | 185.511 | 0.25 |
| 3568.00 | 2.140 | 228.180 | 3566.66 | 40.45 | -84.28 | -9.63 | 1731773.67 | 14374582.75 | 39°35'00.896"N | 80°40'32.715"W | 84.83 | 186.518 | 0.44 |
| 3630.00 | 1.890 | 225.410 | 3628.62 | 40.01 | -85.77 | -11.22 | 1731772.08 | 14374581.26 | 39°35'00.881"N | 80°40'32.735"W | 86.50 | 187.453 | 0.43 |
| 3693.00 | 1.920 | 233.890 | 3691.59 | 39.48 | -87.12 | -12.81 | 1731770.49 | 14374579.91 | 39°35'00.868"N | 80°40'32.756"W | 88.06 | 188.366 | 0.45 |
| 3756.00 | 1.410 | 222.770 | 3754.56 | 39.03 | -88.31 | -14.19 | 1731769.11 | 14374578.72 | 39°35'00.856"N | 80°40'32.773"W | 89.45 | 189.129 | 0.95 |
| 3820.00 | 0.570 | 178.560 | 3818.55 | 39.11 | -89.21 | -14.72 | 1731768.59 | 14374577.83 | 39°35'00.847"N | 80°40'32.780"W | 90.42 | 189.368 | 1.68 |
| 3883.00 | 0.770 | 198.530 | 3881.55 | 39.42 | -89.92 | -14.84 | 1731768.46 | 14374577.11 | 39°35'00.840"N | 80°40'32.782"W | 91.14 | 189.374 | 0.48 |
| 3947.00 | 0.710 | 187.580 | 3945.54 | 39.72 | -90.73 | -15.03 | 1731768.27 | 14374576.31 | 39°35'00.832"N | 80°40'32.784"W | 91.96 | 189.409 | 0.24 |
| 4010.00 | 0.780 | 223.050 | 4008.54 | 39.84 | -91.43 | -15.38 | 1731767.93 | 14374575.61 | 39°35'00.825"N | 80°40'32.789"W | 92.71 | 189.548 | 0.73 |
| 4073.00 | 0.890 | 214.890 | 4071.53 | 39.78 | -92.14 | -15.95 | 1731767.36 | 14374574.90 | 39°35'00.818"N | 80°40'32.796"W | 93.51 | 189.821 | 0.26 |
| 4137.00 | 1.010 | 236.650 | 4135.52 | 39.57 | -92.87 | -16.72 | 1731766.59 | 14374574.17 | 39°35'00.811"N | 80°40'32.806"W | 94.36 | 190.206 | 0.61 |
| 4201.00 | 0.720 | 233.270 | 4199.51 | 39.23 | -93.43 | -17.53 | 1731765.78 | 14374573.61 | 39°35'00.806"N | 80°40'32.816"W | 95.06 | 190.625 | 0.51 |
| 4264.00 | 1.120 | 240.460 | 4262.51 | 38.81 | -93.97 | -18.38 | 1731764.93 | 14374573.07 | 39°35'00.800"N | 80°40'32.827"W | 95.75 | 191.068 | 0.66 |
| 4328.00 | 0.870 | 244.860 | 4326.50 | 38.33 | -94.48 | -19.36 | 1731763.94 | 14374572.55 | 39°35'00.795"N | 80°40'32.840"W | 96.45 | 191.583 | 0.41 |
| 4390.00 | 1.160 | 237.900 | 4388.49 | 37.85 | -95.02 | -20.32 | 1731762.99 | 14374572.02 | 39°35'00.790"N | 80°40'32.852"W | 97.16 | 192.073 | 0.51 |
| 4454.00 | 1.580 | 219.270 | 4452.47 | 37.53 | -96.04 | -21.43 | 1731761.88 | 14374570.99 | 39°35'00.780"N | 80°40'32.866"W | 98.40 | 192.578 | 0.95 |
| 4517.00 | 1.180 | 219.910 | 4515.45 | 37.41 | -97.21 | -22.40 | 1731760.91 | 14374569.83 | 39°35'00.769"N | 80°40'32.879"W | 99.76 | 192.973 | 0.64 |
| 4581.00 | 1.230 | 204.530 | 4579.44 | 37.48 | -98.34 | -23.16 | 1731760.21 | 14374568.70 | 39°35'00.757"N | 80°40'32.888"W | 101.02 | 193.220 | 0.51 |
| 4644.00 | 1.090 | 221.570 | 4642.42 | 37.54 | -99.41 | -23.78 | 1731759.53 | 14374567.63 | 39°35'00.747"N | 80°40'32.896"W | 102.21 | 193.454 | 0.59 |
| 4706.00 | 0.950 | 229.580 | 4704.41 | 37.34 | -100.18 | -24.56 | 1731758.75 | 14374566.86 | 39°35'00.739"N | 80°40'32.906"W | 103.15 | 193.777 | 0.32 |
| 4769.00 | 0.960 | 249.620 | 4767.41 | 36.99 | -100.79 | -25.42 | 1731757.89 | 14374566.25 | 39°35'00.733"N | 80°40'32.917"W | 103.94 | 194.154 | 0.27 |
| 4833.00 | 0.780 | 224.640 | 4831.40 | 36.69 | -101.37 | -26.19 | 1731757.12 | 14374565.67 | 39°35'00.728"N | 80°40'32.927"W | 104.70 | 194.484 | 0.45 |
| 4896.00 | 0.700 | 225.240 | 4894.39 | 36.57 | -101.95 | -26.75 | 1731756.56 | 14374565.09 | 39°35'00.722"N | 80°40'32.934"W | 105.40 | 194.702 | 0.13 |
| 4960.00 | 0.530 | 221.080 | 4958.39 | 36.48 | -102.46 | -27.21 | 1731756.10 | 14374564.58 | 39°35'00.717"N | 80°40'32.940"W | 106.01 | 194.874 | 0.27 |
| 5023.00 | 0.590 | 235.450 | 5021.39 | 36.33 | -102.86 | -27.67 | 1731755.64 | 14374564.18 | 39°35'00.713"N | 80°40'32.946"W | 106.52 | 195.057 | 0.24 |
| 5086.00 | 0.410 | 226.820 | 5084.38 | 36.17 | -103.20 | -28.10 | 1731755.21 | 14374563.84 | 39°35'00.710"N | 80°40'32.952"W | 106.96 | 195.243 | 0.31 |
| 5150.00 | 0.650 | 251.900 | 5148.38 | 35.91 | -103.47 | -28.62 | 1731754.70 | 14374563.57 | 39°35'00.707"N | 80°40'32.958"W | 107.36 | 195.459 | 0.51 |
| 5213.00 | 0.570 | 253.100 | 5211.38 | 35.50 | -103.67 | -29.25 | 1731754.06 | 14374563.37 | 39°35'00.705"N | 80°40'32.966"W | 107.72 | 195.758 | 0.13 |
| 5276.00 | 0.630 | 247.990 | 5274.37 | 35.12 | -103.90 | -29.88 | 1731753.44 | 14374563.15 | 39°35'00.703"N | 80°40'32.974"W | 108.11 | 196.043 | 0.13 |
| 5340.00 | 0.560 | 254.600 | 5338.37 | 34.73 | -104.11 | -30.50 | 1731752.81 | 14374562.93 | 39°35'00.701"N | 80°40'32.982"W | 108.49 | 196.330 | 0.15 |
| 5403.00 | 0.760 | 240.010 | 5401.37 | 34.36 | -104.40 | -31.16 | 1731752.15 | 14374562.64 | 39°35'00.698"N | 80°40'32.991"W | 108.95 | 196.620 | 0.41 |
| 5467.00 | 0.600 | 267.430 | 5465.36 | 33.91 | -104.63 | -31.86 | 1731751.45 | 14374562.41 | 39°35'00.696"N | 80°40'33.000"W | 109.37 | 196.938 | 0.56 |
| 5530.00 | 0.800 | 254.360 | 5528.36 | 33.37 | -104.76 | -32.62 | 1731750.70 | 14374562.28 | 39°35'00.694"N | 80°40'33.009"W | 109.72 | 197.294 | 0.40 |
| 5594.00 | 0.640 | 238.190 | 5592.35 | 32.95 | -105.07 | -33.35 | 1731749.96 | 14374561.97 | 39°35'00.691"N | 80°40'33.019"W | 110.24 | 197.611 | 0.40 |
| 5676.00 | 3.410 | 65.730 | 5674.31 | 34.01 | -104.31 | -31.52 | 1731751.80 | 14374562.73 | 39°35'00.699"N | 80°40'32.995"W | 108.97 | 196.812 | 1.93 |
| 5739.00 | 8.180 | 50.720 | 5736.97 | 36.19 | -100.70 | -26.34 | 1731756.97 | 14374566.34 | 39°35'00.734"N | 80°40'32.929"W | 104.09 | 194.656 | 7.88 |
| 5802.00 | 9.830 | 48.810 | 5799.20 | 38.68 | -94.32 | -18.82 | 1731764.49 | 14374572.72 | 39°35'00.797"N | 80°40'32.833"W | 96.18 | 191.284 | 2.66 |
| 5865.00 | 10.010 | 58.760 | 5861.26 | 42.17 | -87.94 | -10.09 | 1731773.21 | 14374579.10 | 39°35'00.860"N | 80°40'32.721"W | 88.51 | 186.546 | 2.73 |
| 5929.00 | 10.200 | 63.500 | 5924.27 | 47.12 | -82.52 | -0.26 | 1731783.04 | 14374584.51 | 39°35'00.913"N | 80°40'32.595"W | 82.52 | 180.183 | 1.33 |
| 5992.00 | 9.140 | 68.670 | 5986.37 | 52.55 | -78.22 | 9.39 | 1731792.69 | 14374588.82 | 39°35'00.955"N | 80°40'32.472"W | 78.78 | 173.154 | 2.17 |
| 6056.00 | 9.580 | 73.400 | 6049.52 | 58.68 | -74.84 | 19.23 | 1731802.52 | 14374592.18 | 39°35'00.988"N | 80°40'32.346"W | 77.28 | 165.591 | 1.38 |

Actual Wellpath Report

Long 409 S-6H ST01 (AWB) Proj: 13100'
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| | | |
|--------------------------------|--|---|
| Operator: IIC ENERGY | | Slot: Slot #06 |
| Area: Wetzel County, WV | | Well: Long 409 S-6H ST01 |
| Field: Wetzel (UTM 17N NAD 27) | | Wellbore: Long 409 S-6H ST01 (AWB) |
| Facility: Long 409 Pad | | Sidetrack from: Long 409 S-6H (AWB) at 328083989501312370000.00 AID |

WELLPATH DATA (220 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVL [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [ft/100ft] |
|---------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|----------------|
| 6119.00 | 9.850 | 71.510 | 6111.62 | 65.14 | -71.64 | 29.36 | 1731812.65 | 14374595.39 | 39°35'01.019"N | 80°40'32.216"W | 77.12 | 157.712 | 0.66 |
| 6182.00 | 10.660 | 68.890 | 6173.61 | 71.60 | -67.83 | 39.91 | 1731823.19 | 14374599.20 | 39°35'01.057"N | 80°40'32.081"W | 78.70 | 149.528 | 1.48 |
| 6245.00 | 11.240 | 66.460 | 6235.46 | 78.05 | -63.28 | 50.98 | 1731834.26 | 14374603.75 | 39°35'01.101"N | 80°40'31.940"W | 81.26 | 141.147 | 1.18 |
| 6308.00 | 11.260 | 66.660 | 6297.25 | 84.49 | -58.39 | 62.25 | 1731845.53 | 14374608.63 | 39°35'01.149"N | 80°40'31.796"W | 85.35 | 133.167 | 0.07 |
| 6371.00 | 11.410 | 68.430 | 6359.02 | 91.15 | -53.66 | 73.69 | 1731856.97 | 14374613.36 | 39°35'01.196"N | 80°40'31.649"W | 91.16 | 126.061 | 0.60 |
| 6434.00 | 11.310 | 70.840 | 6420.79 | 98.20 | -49.34 | 85.33 | 1731868.59 | 14374617.68 | 39°35'01.238"N | 80°40'31.501"W | 98.57 | 120.041 | 0.77 |
| 6497.00 | 11.340 | 73.370 | 6482.56 | 105.66 | -45.54 | 97.10 | 1731880.36 | 14374621.47 | 39°35'01.275"N | 80°40'31.350"W | 107.25 | 115.130 | 0.79 |
| 6560.00 | 11.250 | 74.450 | 6544.34 | 113.41 | -42.12 | 108.95 | 1731892.21 | 14374624.89 | 39°35'01.308"N | 80°40'31.198"W | 116.81 | 111.138 | 0.36 |
| 6622.00 | 11.270 | 72.450 | 6605.15 | 120.94 | -38.68 | 120.55 | 1731903.81 | 14374628.34 | 39°35'01.342"N | 80°40'31.050"W | 126.61 | 107.787 | 0.63 |
| 6686.00 | 11.300 | 70.910 | 6667.91 | 128.42 | -34.74 | 132.44 | 1731915.69 | 14374632.27 | 39°35'01.380"N | 80°40'30.898"W | 136.92 | 104.698 | 0.47 |
| 6749.00 | 11.490 | 76.300 | 6729.28 | 132.36 | -32.96 | 138.50 | 1731927.75 | 14374634.05 | 39°35'01.398"N | 80°40'30.821"W | 142.37 | 103.386 | 3.38 |
| 6781.00 | 12.510 | 89.570 | 6790.61 | 137.13 | -32.20 | 144.86 | 1731938.10 | 14374634.81 | 39°35'01.405"N | 80°40'30.739"W | 148.40 | 102.533 | 9.46 |
| 6813.00 | 15.560 | 103.470 | 6760.66 | 143.95 | -33.18 | 152.50 | 1731935.74 | 14374633.84 | 39°35'01.395"N | 80°40'30.642"W | 156.07 | 102.273 | 14.14 |
| 6845.00 | 18.510 | 109.190 | 6791.26 | 152.84 | -35.85 | 161.48 | 1731944.71 | 14374631.17 | 39°35'01.368"N | 80°40'30.527"W | 165.41 | 102.516 | 10.59 |
| 6876.00 | 21.130 | 110.640 | 6821.36 | 163.31 | -39.55 | 171.67 | 1731954.91 | 14374627.47 | 39°35'01.332"N | 80°40'30.397"W | 176.17 | 102.973 | 8.33 |
| 6907.00 | 22.580 | 110.510 | 6850.13 | 174.49 | -43.61 | 182.48 | 1731965.71 | 14374623.41 | 39°35'01.291"N | 80°40'30.259"W | 187.62 | 103.440 | 4.68 |
| 6907.00 | 23.630 | 111.340 | 6878.64 | 186.29 | -47.95 | 193.84 | 1731977.06 | 14374619.07 | 39°35'01.248"N | 80°40'30.115"W | 199.68 | 103.895 | 3.55 |
| 6939.00 | 24.620 | 111.070 | 6907.85 | 198.99 | -52.68 | 206.03 | 1731989.25 | 14374614.34 | 39°35'01.200"N | 80°40'29.959"W | 212.66 | 104.343 | 3.11 |
| 6971.00 | 25.780 | 110.750 | 6936.80 | 212.20 | -57.54 | 218.76 | 1732001.97 | 14374609.48 | 39°35'01.152"N | 80°40'29.797"W | 226.20 | 104.738 | 3.65 |
| 7002.00 | 26.670 | 111.140 | 6964.61 | 225.49 | -62.44 | 231.55 | 1732014.76 | 14374604.58 | 39°35'01.103"N | 80°40'29.633"W | 239.82 | 105.092 | 2.92 |
| 7034.00 | 27.830 | 111.220 | 6993.06 | 239.72 | -67.74 | 245.22 | 1732028.42 | 14374599.29 | 39°35'01.050"N | 80°40'29.459"W | 254.40 | 105.442 | 3.63 |
| 7065.00 | 29.360 | 111.570 | 7020.28 | 254.14 | -73.15 | 259.03 | 1732042.23 | 14374593.88 | 39°35'00.996"N | 80°40'29.283"W | 269.16 | 105.769 | 4.96 |
| 7096.00 | 32.630 | 111.330 | 7046.85 | 269.66 | -78.98 | 273.89 | 1732057.08 | 14374588.05 | 39°35'00.938"N | 80°40'29.094"W | 285.05 | 106.087 | 10.56 |
| 7128.00 | 36.100 | 111.590 | 7073.26 | 287.22 | -85.59 | 290.69 | 1732073.88 | 14374581.44 | 39°35'00.872"N | 80°40'28.879"W | 303.03 | 106.407 | 10.85 |
| 7159.00 | 40.140 | 112.170 | 7097.64 | 305.85 | -92.73 | 308.45 | 1732091.62 | 14374574.31 | 39°35'00.801"N | 80°40'28.653"W | 322.08 | 106.732 | 13.08 |
| 7191.00 | 43.560 | 113.680 | 7121.47 | 326.73 | -101.05 | 328.10 | 1732111.27 | 14374565.99 | 39°35'00.718"N | 80°40'28.402"W | 343.31 | 107.118 | 11.14 |
| 7223.00 | 47.360 | 115.100 | 7143.92 | 349.14 | -110.48 | 348.87 | 1732132.03 | 14374556.57 | 39°35'00.624"N | 80°40'28.137"W | 365.94 | 107.571 | 12.29 |
| 7255.00 | 50.740 | 116.010 | 7164.89 | 372.98 | -120.91 | 370.66 | 1732153.82 | 14374546.14 | 39°35'00.520"N | 80°40'27.860"W | 389.88 | 108.066 | 10.79 |
| 7286.00 | 54.370 | 117.250 | 7183.73 | 397.33 | -131.95 | 392.65 | 1732175.80 | 14374535.10 | 39°35'00.410"N | 80°40'27.579"W | 414.23 | 108.575 | 12.11 |
| 7318.00 | 57.010 | 117.560 | 7201.77 | 423.52 | -144.12 | 416.12 | 1732199.25 | 14374522.94 | 39°35'00.289"N | 80°40'27.280"W | 440.37 | 109.103 | 8.29 |
| 7349.00 | 59.790 | 117.710 | 7218.01 | 449.71 | -156.36 | 439.50 | 1732222.63 | 14374510.70 | 39°35'00.167"N | 80°40'26.982"W | 466.49 | 109.584 | 8.98 |
| 7380.00 | 61.690 | 118.460 | 7233.16 | 476.55 | -169.10 | 463.36 | 1732246.48 | 14374497.97 | 39°35'00.041"N | 80°40'26.678"W | 493.25 | 110.019 | 6.48 |
| 7411.00 | 65.130 | 119.500 | 7247.03 | 504.12 | -182.53 | 487.61 | 1732270.72 | 14374484.54 | 39°34'59.907"N | 80°40'26.369"W | 520.65 | 110.523 | 11.49 |
| 7443.00 | 68.970 | 120.950 | 7259.51 | 533.48 | -197.36 | 513.06 | 1732296.16 | 14374469.71 | 39°34'59.760"N | 80°40'26.044"W | 549.71 | 111.041 | 12.70 |
| 7474.00 | 72.330 | 120.950 | 7269.78 | 562.65 | -212.40 | 538.14 | 1732321.23 | 14374454.68 | 39°34'59.610"N | 80°40'25.725"W | 578.54 | 111.539 | 10.84 |
| 7506.00 | 74.520 | 121.690 | 7278.91 | 593.25 | -228.35 | 564.34 | 1732347.42 | 14374438.74 | 39°34'59.452"N | 80°40'25.391"W | 608.79 | 112.029 | 7.19 |
| 7537.00 | 77.220 | 122.250 | 7286.48 | 623.27 | -244.26 | 589.84 | 1732372.91 | 14374422.83 | 39°34'59.293"N | 80°40'25.066"W | 638.42 | 112.495 | 8.88 |
| 7569.00 | 78.350 | 121.950 | 7293.25 | 654.51 | -260.88 | 616.34 | 1732399.39 | 14374406.23 | 39°34'59.128"N | 80°40'24.728"W | 669.27 | 112.952 | 3.66 |
| 7609.00 | 78.200 | 120.810 | 7299.55 | 684.80 | -276.68 | 642.25 | 1732425.30 | 14374390.43 | 39°34'58.971"N | 80°40'24.398"W | 699.31 | 113.306 | 3.57 |
| 7631.00 | 80.290 | 120.650 | 7305.33 | 715.17 | -292.24 | 668.43 | 1732451.47 | 14374374.88 | 39°34'58.816"N | 80°40'24.064"W | 729.52 | 113.615 | 6.76 |
| 7663.00 | 83.220 | 121.140 | 7309.92 | 746.75 | -308.50 | 695.60 | 1732478.63 | 14374358.62 | 39°34'58.655"N | 80°40'23.718"W | 760.94 | 113.917 | 9.28 |
| 7694.00 | 85.630 | 121.340 | 7312.93 | 777.54 | -324.50 | 721.98 | 1732505.00 | 14374342.63 | 39°34'58.496"N | 80°40'23.382"W | 791.55 | 114.202 | 7.80 |
| 7726.00 | 87.540 | 122.590 | 7314.84 | 809.43 | -341.41 | 749.08 | 1732532.08 | 14374325.73 | 39°34'58.328"N | 80°40'23.037"W | 823.21 | 114.502 | 7.13 |
| 7757.00 | 87.230 | 122.970 | 7316.25 | 840.38 | -358.17 | 775.11 | 1732558.11 | 14374308.97 | 39°34'58.161"N | 80°40'22.705"W | 853.87 | 114.801 | 1.58 |
| 7820.00 | 88.800 | 124.660 | 7318.43 | 903.32 | -393.21 | 827.42 | 1732610.40 | 14374273.94 | 39°34'57.813"N | 80°40'22.038"W | 916.10 | 115.418 | 3.66 |

Actual Wellpath Report

Long 409 S-6H ST01 (AWB) Proj: 13100'
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Received
 Office of Oil
 JUL 05 2011

REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|-------------------------|----------------|--|
| Operator | HIG ENERGY | Slot | Slot #06 |
| Area | Wetzel County, WV | Well | Long 409 S-6H ST01 |
| Field | Wetzel (UTM 17N NAD 27) | Wellbore | Long 409 S-6H ST01 (AWB) |
| Facility | Long 409 Pad | Sidetrack from | Long 409 S-6H (AWB) at 328083989501.312370000.00 MID |

WELLPATH DATA (220 stations)

| MID [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [ft/100ft] |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|----------------|
| 7884.00 | 88.800 | 125.670 | 7319.77 | 967.31 | -430.06 | 879.73 | 1732662.68 | 14374237.11 | 39°34'57.447"N | 80°40'21.372"W | 979.22 | 116.052 | 1.58 |
| 7917.00 | 89.480 | 125.110 | 7320.72 | 1030.30 | -466.54 | 931.08 | 1732714.02 | 14374200.61 | 39°34'57.084"N | 80°40'20.718"W | 1041.43 | 116.614 | 1.40 |
| 8010.00 | 89.290 | 125.800 | 7321.40 | 1093.29 | -503.09 | 982.40 | 1732765.31 | 14374164.11 | 39°34'56.721"N | 80°40'20.064"W | 1103.72 | 117.117 | 1.14 |
| 8073.00 | 89.050 | 123.800 | 7322.31 | 1156.28 | -539.04 | 1034.12 | 1732817.01 | 14374128.18 | 39°34'56.364"N | 80°40'19.405"W | 1166.18 | 117.531 | 3.20 |
| 8137.00 | 89.230 | 123.750 | 7323.27 | 1220.26 | -574.61 | 1087.31 | 1732870.19 | 14374092.61 | 39°34'56.011"N | 80°40'18.728"W | 1229.81 | 117.855 | 0.29 |
| 8199.00 | 89.260 | 122.270 | 7324.09 | 1282.21 | -608.38 | 1139.30 | 1732922.15 | 14374058.85 | 39°34'55.675"N | 80°40'18.065"W | 1291.56 | 118.102 | 2.39 |
| 8262.00 | 89.510 | 122.890 | 7324.76 | 1345.15 | -642.31 | 1192.38 | 1732975.21 | 14374024.95 | 39°34'55.338"N | 80°40'17.389"W | 1354.37 | 118.310 | 1.06 |
| 8325.00 | 89.320 | 124.500 | 7325.40 | 1408.13 | -677.25 | 1244.79 | 1733027.60 | 14373990.01 | 39°34'54.990"N | 80°40'16.721"W | 1417.10 | 118.549 | 2.57 |
| 8389.00 | 89.820 | 124.860 | 7325.89 | 1472.13 | -713.67 | 1297.42 | 1733080.21 | 14373953.61 | 39°34'54.629"N | 80°40'16.051"W | 1480.75 | 118.814 | 0.96 |
| 8451.00 | 89.850 | 124.380 | 7326.06 | 1534.13 | -748.89 | 1348.44 | 1733131.21 | 14373918.40 | 39°34'54.279"N | 80°40'15.401"W | 1542.45 | 119.047 | 0.78 |
| 8514.00 | 89.910 | 124.230 | 7326.20 | 1597.12 | -784.40 | 1400.48 | 1733183.23 | 14373882.91 | 39°34'53.926"N | 80°40'14.738"W | 1605.19 | 119.253 | 0.26 |
| 8577.00 | 89.820 | 124.650 | 7326.34 | 1660.12 | -820.03 | 1452.44 | 1733235.17 | 14373847.29 | 39°34'53.572"N | 80°40'14.076"W | 1667.94 | 119.448 | 0.68 |
| 8640.00 | 89.290 | 127.290 | 7326.83 | 1723.10 | -857.03 | 1503.42 | 1733286.13 | 14373810.31 | 39°34'53.204"N | 80°40'13.426"W | 1730.54 | 119.685 | 4.27 |
| 8703.00 | 89.290 | 128.980 | 7327.61 | 1786.00 | -895.93 | 1552.97 | 1733335.66 | 14373771.43 | 39°34'52.818"N | 80°40'12.795"W | 1792.87 | 119.981 | 2.68 |
| 8765.00 | 89.660 | 128.170 | 7328.18 | 1847.88 | -934.58 | 1601.44 | 1733384.11 | 14373732.78 | 39°34'52.434"N | 80°40'12.178"W | 1854.20 | 120.267 | 1.44 |
| 8828.00 | 89.780 | 128.450 | 7328.49 | 1910.77 | -973.64 | 1650.87 | 1733433.52 | 14373693.74 | 39°34'52.047"N | 80°40'11.549"W | 1916.60 | 120.531 | 0.48 |
| 8891.00 | 89.880 | 127.380 | 7328.68 | 1973.69 | -1012.35 | 1700.57 | 1733483.21 | 14373655.05 | 39°34'51.662"N | 80°40'10.916"W | 1979.09 | 120.765 | 1.71 |
| 8955.00 | 89.690 | 124.970 | 7328.92 | 2037.67 | -1050.12 | 1752.23 | 1733534.84 | 14373567.29 | 39°34'51.287"N | 80°40'10.258"W | 2042.81 | 120.935 | 3.78 |
| 9018.00 | 89.600 | 123.700 | 7329.31 | 2100.66 | -1085.66 | 1801.25 | 1733586.84 | 14373581.77 | 39°34'50.934"N | 80°40'09.595"W | 2105.70 | 121.036 | 2.02 |
| 9081.00 | 89.780 | 124.000 | 7329.65 | 2163.65 | -1120.75 | 1856.57 | 1733639.14 | 14373546.69 | 39°34'50.585"N | 80°40'08.929"W | 2168.62 | 121.118 | 0.56 |
| 9144.00 | 89.850 | 126.310 | 7329.85 | 2226.64 | -1157.02 | 1908.08 | 1733690.63 | 14373510.44 | 39°34'50.225"N | 80°40'08.272"W | 2231.47 | 121.232 | 3.67 |
| 9208.00 | 89.660 | 129.200 | 7330.13 | 2290.56 | -1196.20 | 1958.67 | 1733741.20 | 14373471.27 | 39°34'49.836"N | 80°40'07.628"W | 2295.06 | 121.413 | 4.53 |
| 9271.00 | 89.820 | 130.760 | 7330.41 | 2353.32 | -1236.68 | 2006.94 | 1733789.46 | 14373430.81 | 39°34'49.434"N | 80°40'07.014"W | 2357.37 | 121.641 | 2.49 |
| 9335.00 | 89.690 | 130.660 | 7330.69 | 2417.00 | -1278.42 | 2055.46 | 1733837.95 | 14373389.08 | 39°34'49.020"N | 80°40'06.396"W | 2420.59 | 121.880 | 0.26 |
| 9397.00 | 89.750 | 126.330 | 7330.99 | 2478.87 | -1317.00 | 2103.97 | 1733886.44 | 14373350.51 | 39°34'48.637"N | 80°40'05.778"W | 2482.17 | 122.045 | 6.98 |
| 9461.00 | 89.600 | 125.940 | 7331.35 | 2542.86 | -1354.74 | 2155.66 | 1733938.11 | 14373312.79 | 39°34'48.262"N | 80°40'05.120"W | 2546.01 | 122.148 | 0.65 |
| 9524.00 | 89.750 | 126.260 | 7331.71 | 2605.85 | -1391.86 | 2206.56 | 1733988.99 | 14373275.69 | 39°34'47.893"N | 80°40'04.471"W | 2608.87 | 122.243 | 0.56 |
| 9587.00 | 89.780 | 124.640 | 7331.97 | 2668.84 | -1428.40 | 2257.88 | 1734040.29 | 14373239.16 | 39°34'47.530"N | 80°40'03.818"W | 2671.77 | 122.319 | 2.57 |
| 9650.00 | 89.850 | 123.030 | 7332.17 | 2731.83 | -1463.48 | 2310.21 | 1734092.60 | 14373204.10 | 39°34'47.181"N | 80°40'03.151"W | 2734.74 | 122.354 | 2.56 |
| 9713.00 | 89.780 | 121.260 | 7332.37 | 2794.75 | -1496.99 | 2363.55 | 1734145.92 | 14373170.59 | 39°34'46.848"N | 80°40'02.471"W | 2797.74 | 122.349 | 2.81 |
| 9775.00 | 89.630 | 118.880 | 7332.69 | 2856.51 | -1528.06 | 2417.20 | 1734199.55 | 14373139.54 | 39°34'46.539"N | 80°40'01.788"W | 2859.69 | 122.299 | 3.85 |
| 9839.00 | 88.950 | 119.530 | 7333.49 | 2920.18 | -1559.28 | 2473.06 | 1734255.39 | 14373108.23 | 39°34'46.229"N | 80°40'01.076"W | 2923.59 | 122.232 | 1.47 |
| 9903.00 | 88.950 | 119.250 | 7334.66 | 2983.86 | -1590.69 | 2528.81 | 1734311.12 | 14373076.94 | 39°34'45.916"N | 80°40'00.365"W | 2987.50 | 122.171 | 0.44 |
| 9965.00 | 88.860 | 123.550 | 7335.84 | 3045.71 | -1622.97 | 2581.71 | 1734364.00 | 14373044.66 | 39°34'45.595"N | 80°39'59.691"W | 3049.47 | 122.155 | 6.94 |
| 10029.00 | 88.980 | 124.750 | 7337.05 | 3109.69 | -1658.89 | 2634.66 | 1734416.93 | 14373008.76 | 39°34'45.238"N | 80°39'59.017"W | 3113.42 | 122.196 | 1.88 |
| 10092.00 | 88.950 | 125.400 | 7338.19 | 3172.68 | -1695.09 | 2686.21 | 1734468.46 | 14372972.57 | 39°34'44.879"N | 80°39'58.360"W | 3176.33 | 122.253 | 1.03 |
| 10156.00 | 89.110 | 126.320 | 7339.27 | 3236.67 | -1732.58 | 2738.08 | 1734520.30 | 14372935.10 | 39°34'44.506"N | 80°39'57.699"W | 3240.20 | 122.324 | 1.46 |
| 10219.00 | 89.880 | 125.860 | 7340.27 | 3299.65 | -1769.68 | 2788.98 | 1734571.18 | 14372898.01 | 39°34'44.138"N | 80°39'57.051"W | 3303.06 | 122.396 | 0.73 |
| 10283.00 | 89.320 | 125.700 | 7341.16 | 3363.63 | -1807.10 | 2840.90 | 1734623.08 | 14372860.61 | 39°34'43.766"N | 80°39'56.390"W | 3366.94 | 122.461 | 0.45 |
| 10346.00 | 89.570 | 126.310 | 7341.77 | 3426.62 | -1844.13 | 2891.86 | 1734674.02 | 14372823.39 | 39°34'43.398"N | 80°39'55.741"W | 3429.82 | 122.526 | 1.05 |
| 10409.00 | 89.780 | 126.810 | 7342.13 | 3489.60 | -1881.66 | 2942.46 | 1734724.61 | 14372786.08 | 39°34'43.025"N | 80°39'55.096"W | 3492.66 | 122.598 | 0.86 |
| 10473.00 | 89.780 | 125.030 | 7342.37 | 3553.59 | -1919.20 | 2994.29 | 1734776.41 | 14372748.55 | 39°34'42.652"N | 80°39'54.436"W | 3556.56 | 122.658 | 2.78 |
| 10535.00 | 89.660 | 124.130 | 7342.68 | 3615.58 | -1954.39 | 3045.33 | 1734827.44 | 14372713.38 | 39°34'42.303"N | 80°39'53.786"W | 3618.52 | 122.691 | 1.46 |
| 10598.00 | 89.450 | 123.100 | 7343.17 | 3678.56 | -1989.26 | 3097.80 | 1734879.88 | 14372678.52 | 39°34'41.956"N | 80°39'53.118"W | 3681.51 | 122.707 | 1.67 |
| 10661.00 | 89.420 | 122.760 | 7343.79 | 3741.52 | -2023.51 | 3150.67 | 1734932.73 | 14372644.28 | 39°34'41.616"N | 80°39'52.444"W | 3744.51 | 122.711 | 0.54 |

Actual Wellpath Report

Long 409 S-6H S101 (AWB) Proj: 13100'
Page 6 of 8



REFERENCE WELL PATH IDENTIFICATION

| | | | |
|----------|-------------------------|----------------|--|
| Operator | HIG ENERGY | Slot | Slot #06 |
| Area | Wetzel County, WV | Well | Long 409 S-6H S101 |
| Field | Wetzel (UTM 17N NAD 27) | Wellbore | Long 409 S-6H S101 (AWB) |
| Facility | Long 409 Pad | Sidetrack from | Long 409 S-6H (AWB) at 328083989501312370000.00 MD |

WELLPATH DATA (220 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Closure Dist [ft] | Closure Dir [°] | DLS [ft/100ft] |
|----------|-----------------|-------------|----------|----------------|------------|-----------|-------------------|--------------------|----------------|----------------|-------------------|-----------------|----------------|
| 10724.00 | 89.450 | 122.580 | 7344.41 | 3804.46 | -2057.52 | 3203.70 | 1734985.74 | 14372610.29 | 39°34'41.278"N | 80°39'51.768"W | 3807.50 | 122.710 | 0.29 |
| 10787.00 | 89.450 | 124.240 | 7345.01 | 3867.43 | -2092.20 | 3256.29 | 1735058.31 | 14372575.62 | 39°34'40.933"N | 80°39'51.098"W | 3870.49 | 122.721 | 2.63 |
| 10850.00 | 89.260 | 125.650 | 7345.72 | 3930.43 | -2128.29 | 3307.92 | 1735089.92 | 14372539.55 | 39°34'40.574"N | 80°39'50.441"W | 3933.44 | 122.757 | 2.26 |
| 10912.00 | 89.290 | 128.830 | 7346.51 | 3992.37 | -2165.80 | 3357.27 | 1735139.25 | 14372502.05 | 39°34'40.202"N | 80°39'49.812"W | 3995.24 | 122.826 | 5.13 |
| 10974.00 | 89.170 | 127.460 | 7347.34 | 4054.27 | -2204.09 | 3406.03 | 1735187.99 | 14372463.78 | 39°34'39.822"N | 80°39'49.192"W | 4056.97 | 122.907 | 2.22 |
| 11038.00 | 89.350 | 124.030 | 7348.17 | 4118.25 | -2241.47 | 3457.96 | 1735239.90 | 14372426.41 | 39°34'39.450"N | 80°39'48.530"W | 4120.88 | 122.952 | 5.37 |
| 11102.00 | 89.750 | 122.540 | 7348.67 | 4182.21 | -2276.59 | 3511.46 | 1735293.38 | 14372391.31 | 39°34'39.101"N | 80°39'47.849"W | 4184.87 | 122.957 | 2.41 |
| 11165.00 | 89.690 | 121.540 | 7348.98 | 4245.15 | -2310.01 | 3564.86 | 1735346.76 | 14372357.90 | 39°34'38.769"N | 80°39'47.168"W | 4247.86 | 122.943 | 1.59 |
| 11228.00 | 89.570 | 119.150 | 7349.39 | 4307.91 | -2341.83 | 3619.22 | 1735401.10 | 14372326.08 | 39°34'38.452"N | 80°39'46.475"W | 4310.79 | 122.905 | 3.80 |
| 11291.00 | 90.150 | 123.260 | 7349.54 | 4370.76 | -2374.47 | 3673.09 | 1735454.95 | 14372293.46 | 39°34'38.128"N | 80°39'45.789"W | 4373.75 | 122.881 | 6.59 |
| 11354.00 | 90.400 | 127.020 | 7349.24 | 4433.75 | -2410.72 | 3724.60 | 1735506.44 | 14372257.22 | 39°34'37.768"N | 80°39'45.133"W | 4436.69 | 122.913 | 5.98 |
| 11417.00 | 89.850 | 127.240 | 7349.10 | 4496.71 | -2448.75 | 3774.83 | 1735556.65 | 14372219.21 | 39°34'37.390"N | 80°39'44.493"W | 4499.52 | 122.972 | 0.94 |
| 11481.00 | 89.820 | 126.750 | 7349.28 | 4560.67 | -2487.26 | 3825.95 | 1735607.74 | 14372180.71 | 39°34'37.007"N | 80°39'43.842"W | 4563.37 | 123.028 | 0.77 |
| 11543.00 | 89.820 | 125.230 | 7349.48 | 4622.65 | -2523.69 | 3876.11 | 1735657.89 | 14372144.30 | 39°34'36.645"N | 80°39'43.203"W | 4625.28 | 123.068 | 2.45 |
| 11606.00 | 89.630 | 126.120 | 7349.78 | 4685.65 | -2560.43 | 3927.29 | 1735709.04 | 14372107.57 | 39°34'36.280"N | 80°39'42.552"W | 4688.22 | 123.103 | 1.44 |
| 11669.00 | 89.420 | 128.530 | 7350.30 | 4748.59 | -2598.63 | 3977.38 | 1735759.12 | 14372069.39 | 39°34'35.901"N | 80°39'41.914"W | 4751.04 | 123.159 | 3.84 |
| 11732.00 | 89.380 | 127.570 | 7350.96 | 4811.50 | -2637.46 | 4026.99 | 1735808.71 | 14372030.58 | 39°34'35.515"N | 80°39'41.282"W | 4813.81 | 123.223 | 1.53 |
| 11795.00 | 89.320 | 126.620 | 7351.68 | 4874.45 | -2675.45 | 4077.23 | 1735858.93 | 14371992.60 | 39°34'35.138"N | 80°39'40.612"W | 4876.67 | 123.273 | 1.51 |
| 11859.00 | 89.720 | 127.100 | 7352.21 | 4938.41 | -2713.84 | 4128.44 | 1735910.12 | 14371954.22 | 39°34'34.757"N | 80°39'39.990"W | 4940.54 | 123.319 | 0.98 |
| 11922.00 | 89.750 | 125.770 | 7352.51 | 5001.39 | -2751.26 | 4179.12 | 1735960.78 | 14371916.82 | 39°34'34.385"N | 80°39'39.345"W | 5003.45 | 123.358 | 2.11 |
| 11984.00 | 89.820 | 124.370 | 7352.74 | 5063.39 | -2786.88 | 4229.86 | 1736011.50 | 14371881.22 | 39°34'34.031"N | 80°39'38.698"W | 5065.42 | 123.379 | 2.26 |
| 12047.00 | 89.850 | 123.620 | 7352.92 | 5126.38 | -2822.10 | 4282.10 | 1736063.72 | 14371846.00 | 39°34'33.681"N | 80°39'38.033"W | 5128.41 | 123.387 | 1.19 |
| 12110.00 | 89.910 | 122.310 | 7353.05 | 5189.34 | -2856.38 | 4334.95 | 1736116.55 | 14371811.74 | 39°34'33.340"N | 80°39'37.360"W | 5191.41 | 123.382 | 2.08 |
| 12173.00 | 89.910 | 122.610 | 7353.15 | 5252.28 | -2890.19 | 4388.11 | 1736169.69 | 14371777.94 | 39°34'33.004"N | 80°39'36.683"W | 5254.40 | 123.371 | 0.48 |
| 12236.00 | 90.000 | 123.330 | 7353.20 | 5315.24 | -2924.48 | 4440.96 | 1736222.52 | 14371743.67 | 39°34'32.663"N | 80°39'36.009"W | 5317.40 | 123.366 | 1.15 |
| 12299.00 | 89.940 | 123.850 | 7353.23 | 5378.22 | -2959.33 | 4493.44 | 1736274.98 | 14371708.83 | 39°34'32.317"N | 80°39'35.341"W | 5380.40 | 123.368 | 0.83 |
| 12361.00 | 89.880 | 126.200 | 7353.33 | 5440.21 | -2994.91 | 4544.21 | 1736325.73 | 14371673.26 | 39°34'31.963"N | 80°39'34.694"W | 5442.37 | 123.387 | 3.79 |
| 12425.00 | 89.820 | 126.700 | 7353.50 | 5504.19 | -3032.94 | 4595.69 | 1736377.19 | 14371635.25 | 39°34'31.586"N | 80°39'34.039"W | 5506.28 | 123.423 | 0.79 |
| 12488.00 | 89.820 | 126.370 | 7353.70 | 5567.17 | -3070.44 | 4646.31 | 1736427.79 | 14371597.76 | 39°34'31.213"N | 80°39'33.394"W | 5569.18 | 123.458 | 0.52 |
| 12551.00 | 90.000 | 124.680 | 7353.79 | 5630.16 | -3107.05 | 4697.58 | 1736479.04 | 14371561.17 | 39°34'30.849"N | 80°39'32.741"W | 5632.14 | 123.481 | 2.70 |
| 12615.00 | 89.970 | 123.140 | 7353.81 | 5694.15 | -3142.75 | 4750.69 | 1736532.13 | 14371525.48 | 39°34'30.495"N | 80°39'32.064"W | 5696.14 | 123.486 | 2.41 |
| 12678.00 | 90.000 | 126.090 | 7353.83 | 5757.14 | -3178.54 | 4802.54 | 1736583.95 | 14371489.71 | 39°34'30.139"N | 80°39'31.404"W | 5759.12 | 123.498 | 4.68 |
| 12740.00 | 90.000 | 127.750 | 7353.83 | 5819.10 | -3215.78 | 4852.10 | 1736633.50 | 14371452.48 | 39°34'29.769"N | 80°39'30.773"W | 5821.01 | 123.535 | 2.68 |
| 12804.00 | 89.970 | 128.460 | 7353.84 | 5883.01 | -3255.27 | 4902.46 | 1736683.84 | 14371413.01 | 39°34'29.377"N | 80°39'30.132"W | 5884.81 | 123.584 | 1.11 |
| 12867.00 | 89.820 | 127.950 | 7353.96 | 5945.91 | -3294.24 | 4951.97 | 1736733.33 | 14371374.06 | 39°34'28.990"N | 80°39'29.501"W | 5947.60 | 123.633 | 0.84 |
| 12930.00 | 89.910 | 126.630 | 7354.11 | 6008.86 | -3332.40 | 5002.09 | 1736783.43 | 14371335.90 | 39°34'28.611"N | 80°39'28.863"W | 6010.47 | 123.672 | 2.10 |
| 12993.00 | 89.850 | 126.400 | 7354.24 | 6071.84 | -3369.89 | 5052.72 | 1736834.04 | 14371298.43 | 39°34'28.238"N | 80°39'28.218"W | 6073.40 | 123.701 | 0.38 |
| 13057.00 | 89.940 | 123.490 | 7354.36 | 6135.83 | -3406.54 | 5105.18 | 1736886.47 | 14371261.79 | 39°34'27.874"N | 80°39'27.550"W | 6137.38 | 123.714 | 4.55 |
| 13075.00 | 89.880 | 123.430 | 7354.39 | 6153.82 | -3416.47 | 5120.19 | 1736901.48 | 14371251.87 | 39°34'27.775"N | 80°39'27.359"W | 6155.38 | 123.713 | 0.47 |
| 13100.00 | 89.880 | 123.430 | 7354.44 | 6178.81 | -3430.24 | 5141.06 | 1736922.34 | 14371238.10 | 39°34'27.639"N | 80°39'27.093"W | 6180.38 | 123.712 | 0.00 |

Actual Wellpath Report

Long 409 S-6H ST01 (AWB) Proj: 13100'
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Received
 Office of Oil & Gas
 JUL 05 2018

REFERENCE WELL: W011025113(CARBON)

| | | | |
|----------|-------------------------|----------------|--|
| Operator | JIG ENERGY | Slot | Slot #06 |
| Area | Wetzel County, WV | Well | Long 409 S-6H ST01 |
| Field | Wetzel (UTM 17N NAD 27) | Wellbore | Long 409 S-6H ST01 (AWB) |
| Facility | Long 409 Pad | Sidetrack from | Long 409 S-6H (AWB) at 328083989501312370000.00 MD |

TARGETS

| Name | MD [ft] | TVD [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Shape |
|--------------------|---------|----------|------------|-----------|-------------------|--------------------|----------------|----------------|-------|
| Long 409 S-6H LP | | 7300.00 | -285.21 | 660.86 | 1732443.90 | 14374381.90 | 39°34'58.886"N | 80°40'24.161"W | point |
| Long 409 S-6H PBH1 | | 7395.60 | -3426.04 | 5146.02 | 1736927.30 | 14371242.30 | 39°34'27.680"N | 80°39'27.030"W | point |

WELLPATH COMPOSITION - Ref Wellbore: Long 409 S-6H ST01 (AWB) Ref Wellpath: Long 409 S-6H ST01 (AWB) Proj: 13100'

| Start MD [ft] | End MD [ft] | Positional Uncertainty Model | Log Name/Comment | Wellbore |
|---------------|-------------|--|--|--------------------------|
| 18.00 | 1249.00 | Genetic gyro - northseeking (Standard) | 01_DDC Gyro Surveys 17 1/2" (100'-1249') | Long 409 S-6H (AWB) |
| 1249.00 | 3384.00 | NavTrak (MagCorr) | 02_BHI APS 12 1/4" (1368'-3384') | Long 409 S-6H (AWB) |
| 3384.00 | 5594.00 | NavTrak (MagCorr) | 03_BHI MWD Surveys <8-3/4"> (3384')(3142'-7237') | Long 409 S-6H (AWB) |
| 5594.00 | 13075.00 | NavTrak (MagCorr) | 01_BHI MWD 8 1/2" (5594')(5676'-13057') | Long 409 S-6H ST01 (AWB) |
| 13075.00 | 13100.00 | Blind Drilling (std) | Projection to bit | Long 409 S-6H ST01 (AWB) |

Actual Wellpath Report
 Long 409 S-6H ST01 (AWB) Proj: 13100'
 Page 8 of 8



Received
 Office of Oil &
 JUL 05 2016

REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|-------------------------|----------------|--|
| Operator | HIG ENERGY | Slot | Slot #06 |
| Area | Wetzel County, WV | Well | Long 409 S-6H ST01 |
| Field | Wetzel (UTM 17N NAD 27) | Wellbore | Long 409 S-6H ST01 (AWB) |
| Facility | Long 409 Pad | Sidetrack from | Long 409 S-6H (AWB) at 328083989501312370000.00 MD |

COMMENTS

Wellpath general comments
 API# 47-103-02883-0100
 Rig: Dallas Morris 24
 BHI Job#: 5844995A
 Duration: 01/25/14-02/25/14
 DDC Gyro Surveys OH (100'-1249')
 BHI APS Surveys OH (1368'-3384')
 BHI ATCurve Surveys OH (3384')(3442'-7237')
 BHI A Curve Surveys ST01 (5594')(5676'-13057')
 TD Projected to MD 13100'