HG ENERGY

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

Slot: Slot #04
Well: Long 409 S-4H
Wellbore: Long 409 S-4H PWB

BAKER HUGHES

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Long 409 Pad			1731860.700	14374712.900	39°35'02.180"N	80°40'31.597"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #04	-30.61	-51.02	1731809.100	14374682.300	39°35'01.879"N	80°40'32.258"W

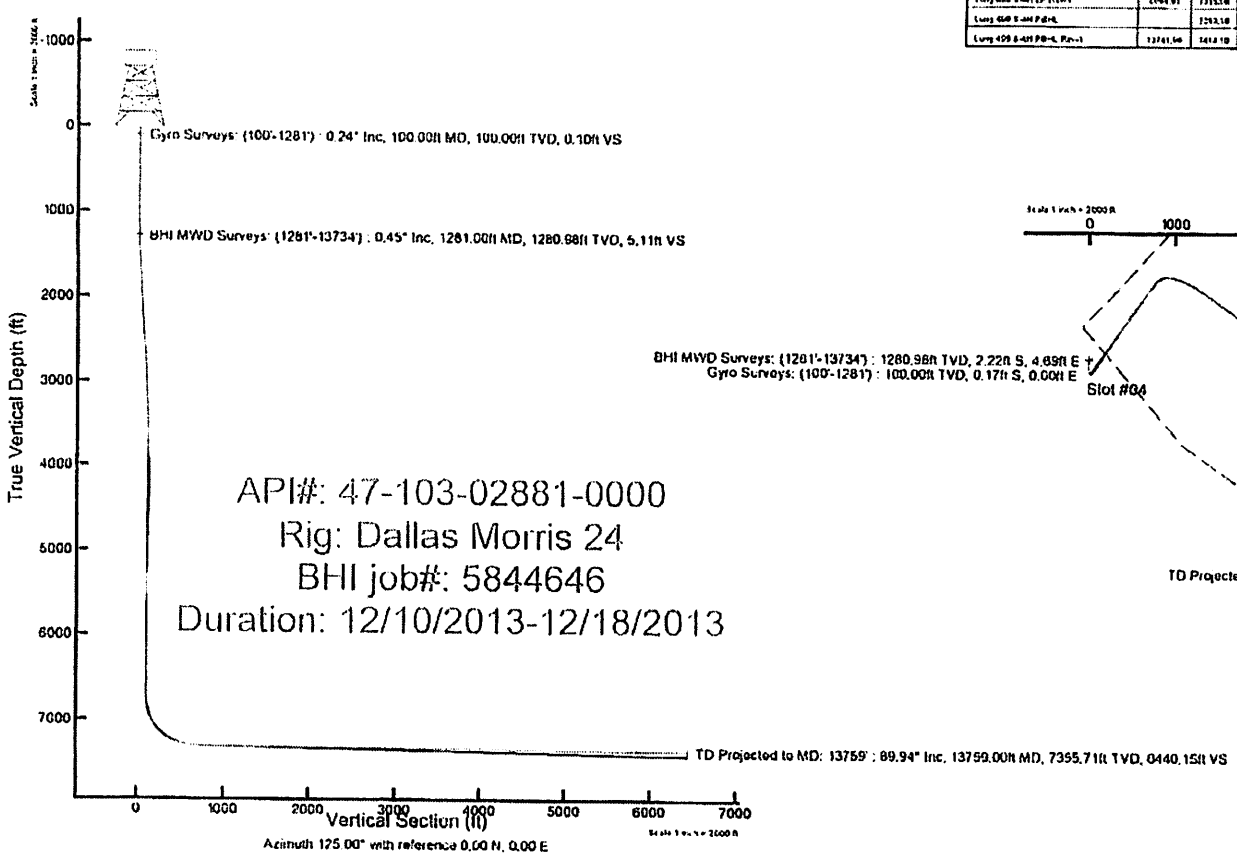
DM 24 (RT) to Mud line (At Slot: Slot #04)	18ft
Mean Sea Level to Mud line (At Slot: Slot #04)	-1340ft
DM 24 (RT) to Mean Sea Level	1358ft
Plot reference wellpath is Long 409 S-4H PWP Rev-C.0	
True vertical depths are referenced to DM 24 (RT)	Grid System: NAD27 / UTM Zone 17 North, US feet
Measured depths 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 #04): -1340 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: ftsjest on 19/Dec/2013

Well Profile Data

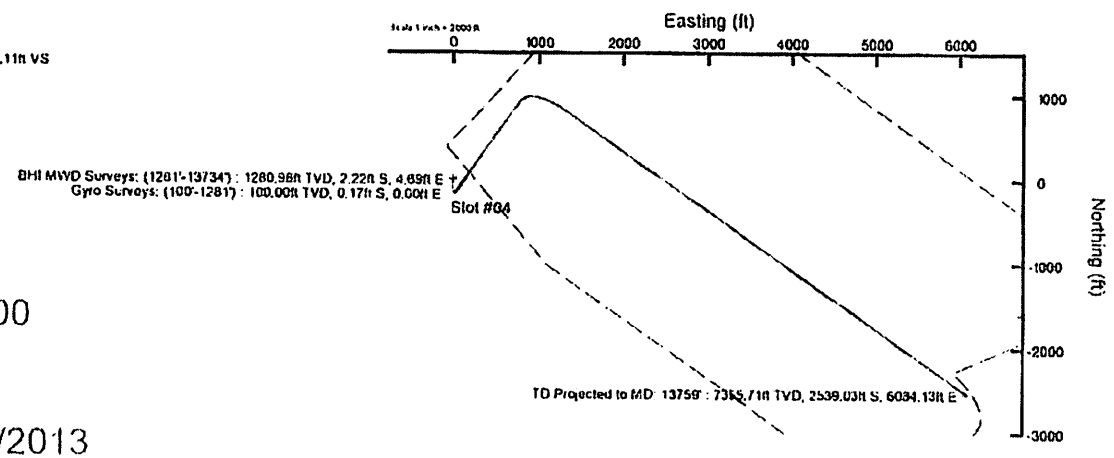
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	3415.00	2.000	163.490	3407.21	-167.93	11.04	0.00	168.31
Proj to BOH	3475.00	2.000	163.490	3467.18	-169.84	11.64	0.00	170.25
End of Drop	3575.00	0.000	34.812	3567.18	-171.51	12.13	2.00	169.31
End of Tangent	3600.00	0.000	34.812	3792.18	-171.51	12.13	0.00	169.31
End of Build	4052.40	25.240	34.812	4036.48	-126.60	43.36	10.00	169.14
End of Tangent	7074.18	25.240	34.812	6769.78	931.32	778.97	0.00	103.91
End of 3D Arc	7894.61	60.000	125.000	7297.77	828.14	1293.25	10.00	585.51
LP	8084.61	89.000	125.000	7315.00	723.48	1439.87	5.00	764.50
PBHL	13741.98	89.000	125.000	7414.10	-2532.39	6089.79	0.00	6440.99

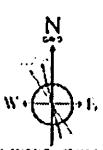
Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Long 409 S-4H LP		7300.00	723.48	1439.87	1733248.43	14375109.50	39°35'08.937"N	80°40'13.834"W
Long 409 S-4H LP Rev-1	8084.61	7315.00	723.48	1439.87	1733248.43	14375109.50	39°35'08.937"N	80°40'13.834"W
Long 409 S-4H PBHL		7293.10	-2532.39	6089.79	1737896.50	14372150.50	39°34'36.027"N	80°39'14.602"W
Long 409 S-4H PBHL Rev-1	13741.98	7414.10	-2532.39	6089.79	1737896.50	14372150.50	39°34'36.027"N	80°39'14.602"W



API#: 47-103-02881-0000
Rig: Dallas Morris 24
BHI job#: 5844646
Duration: 12/10/2013-12/18/2013





Magnetic North is 8.63 degrees West of True North (at 19-Dec-2013)
Grid North is 0.25 degrees East of True North
To convert a magnetic bearing to a Grid bearing add 8.38 degrees
To convert a magnetic bearing to a True bearing add 8.63 degrees

Office of Oil & Gas
2016

Actual Wellpath Report

Long 409 S-4H (AWP) Proj:13759'

BAKER HUGHES
Received Office of Oil & Gas
JUL 05 2016

REFERENCE WELLPATH IDENTIFICATION

Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

REPORT SETUP INFORMATION

Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 4.0.1
North Reference	Grid	User	Frisjest
Scale	0.99961	Report Generated	09/Jun/2014 at 15:49
Convergence at slot	0.21° East	Database/Source file	WA_EasternUS/Long_409_S-4H__AWB_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-30.61	-51.62	1731809.10	14374682.30	39°35'01.879"N	80°40'32.258"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 #04)	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-4H (AWP) Proj:13759'

BAKER HUGHES

Received Office of Oil & Gas JUL 05 2016

REFERENCE WELLPATH IDENTIFICATION			
Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

WELLPATH DATA (239 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 [°/100ft]
0.00†	0.000	178.700	0.00	0.00	0.00	0.00	1731809.10	14374682.30	39°35'01.879"N	80°40'32.258"W	0.00	0.000	0.00
18.00	0.000	178.700	18.00	0.00	0.00	0.00	1731809.10	14374682.30	39°35'01.879"N	80°40'32.258"W	0.00	0.000	0.00
100.00	0.240	178.700	100.00	0.10	-0.17	0.00	1731809.10	14374682.13	39°35'01.877"N	80°40'32.258"W	0.17	178.700	0.29
200.00	0.110	38.000	200.00	0.23	-0.31	0.07	1731809.17	14374681.99	39°35'01.876"N	80°40'32.257"W	0.31	167.494	0.33
300.00	0.320	110.200	300.00	0.51	-0.33	0.39	1731809.49	14374681.97	39°35'01.876"N	80°40'32.253"W	0.51	129.989	0.30
400.00	0.220	218.500	400.00	0.76	-0.57	0.53	1731809.63	14374681.73	39°35'01.873"N	80°40'32.251"W	0.78	137.147	0.44
500.00	0.570	137.300	500.00	1.24	-1.09	0.75	1731809.85	14374681.21	39°35'01.868"N	80°40'32.248"W	1.32	145.462	0.58
600.00	0.330	120.100	599.99	2.01	-1.60	1.34	1731810.44	14374680.70	39°35'01.863"N	80°40'32.241"W	2.08	140.120	0.27
700.00	0.320	146.700	699.99	2.56	-1.98	1.74	1731810.84	14374680.32	39°35'01.859"N	80°40'32.236"W	2.63	138.670	0.15
800.00	0.130	114.000	799.99	2.93	-2.26	2.00	1731811.09	14374680.04	39°35'01.856"N	80°40'32.232"W	3.01	135.511	0.22
900.00	0.260	121.800	899.99	3.27	-2.42	2.29	1731811.39	14374679.88	39°35'01.855"N	80°40'32.229"W	3.33	136.581	0.13
1000.00	0.320	81.100	999.99	3.69	-2.50	2.76	1731811.86	14374679.80	39°35'01.854"N	80°40'32.223"W	3.72	132.145	0.21
1100.00	0.140	57.000	1099.99	3.91	-2.39	3.14	1731812.24	14374679.91	39°35'01.855"N	80°40'32.218"W	3.94	127.269	0.20
1200.00	0.750	93.600	1199.98	4.55	-2.36	3.89	1731812.99	14374679.94	39°35'01.855"N	80°40'32.208"W	4.56	121.247	0.64
1281.00	0.450	56.300	1280.93	5.11	-2.22	4.69	1731813.79	14374680.08	39°35'01.857"N	80°40'32.198"W	5.19	115.337	0.59
1285.00	0.890	111.900	1284.98	5.15	-2.22	4.73	1731813.83	14374680.08	39°35'01.857"N	80°40'32.197"W	5.23	115.169	13.41
1350.00	0.600	142.000	1349.97	5.97	-2.68	5.41	1731814.51	14374679.62	39°35'01.852"N	80°40'32.189"W	6.04	116.354	0.71
1412.00	1.670	167.900	1411.96	6.94	-3.82	5.80	1731814.89	14374678.48	39°35'01.841"N	80°40'32.184"W	6.94	123.371	1.87
1491.00	2.550	175.260	1490.91	8.91	-6.70	6.18	1731815.28	14374675.61	39°35'01.812"N	80°40'32.179"W	9.11	137.275	1.16
1523.00	2.990	167.140	1522.87	9.98	-8.22	6.43	1731815.53	14374674.08	39°35'01.797"N	80°40'32.176"W	10.43	141.968	1.84
1538.00	3.230	157.700	1537.85	10.63	-8.99	6.68	1731815.77	14374673.31	39°35'01.790"N	80°40'32.173"W	11.20	143.406	1.76
1652.00	4.230	182.520	1651.61	15.61	-16.21	7.71	1731816.80	14374666.09	39°35'01.718"N	80°40'32.160"W	17.95	154.574	1.68
1683.00	4.690	192.990	1682.52	16.71	-18.60	7.37	1731816.47	14374663.70	39°35'01.695"N	80°40'32.164"W	20.01	158.384	1.95
1715.00	5.150	188.150	1714.40	17.85	-21.30	6.87	1731815.97	14374661.01	39°35'01.668"N	80°40'32.171"W	22.38	162.114	1.94
1746.00	5.760	194.760	1745.26	19.01	-24.18	6.28	1731815.38	14374658.13	39°35'01.640"N	80°40'32.179"W	24.98	165.441	2.82
1778.00	6.470	190.670	1777.08	20.31	-27.51	5.54	1731814.64	14374654.80	39°35'01.607"N	80°40'32.188"W	28.06	168.617	2.60
1810.00	6.710	191.930	1808.86	21.79	-31.11	4.82	1731813.92	14374651.21	39°35'01.571"N	80°40'32.198"W	31.48	171.197	0.88
1873.00	6.700	187.950	1871.43	24.90	-38.35	3.55	1731812.65	14374643.97	39°35'01.500"N	80°40'32.214"W	38.51	174.714	0.74
1937.00	6.750	188.180	1934.99	28.30	-45.77	2.50	1731811.60	14374636.55	39°35'01.426"N	80°40'32.228"W	45.84	176.878	0.09
1999.00	6.890	187.520	1996.55	31.66	-53.06	1.49	1731810.59	14374629.26	39°35'01.354"N	80°40'32.241"W	53.08	178.390	0.26
2062.00	6.540	181.640	2059.12	35.37	-60.39	0.89	1731809.99	14374621.93	39°35'01.282"N	80°40'32.249"W	60.40	179.152	1.22
2125.00	6.110	185.180	2121.74	39.01	-67.32	0.49	1731809.59	14374615.01	39°35'01.214"N	80°40'32.255"W	67.32	179.581	0.92
2188.00	6.050	181.920	2184.38	42.49	-73.98	0.07	1731809.17	14374608.35	39°35'01.148"N	80°40'32.260"W	73.98	179.942	0.56
2251.00	5.860	180.770	2247.04	46.11	-80.51	-0.08	1731809.02	14374601.82	39°35'01.083"N	80°40'32.262"W	80.51	180.057	0.36
2313.00	6.080	178.200	2308.71	49.86	-86.96	-0.02	1731809.08	14374595.38	39°35'01.019"N	80°40'32.262"W	86.96	180.016	0.55
2376.00	6.260	182.800	2371.34	53.68	-93.72	-0.09	1731809.01	14374588.61	39°35'00.953"N	80°40'32.263"W	93.72	180.056	0.82
2439.00	6.120	178.220	2433.98	57.52	-100.51	-0.16	1731808.94	14374581.83	39°35'00.886"N	80°40'32.264"W	100.51	180.089	0.81
2502.00	6.080	175.960	2496.62	61.64	-107.20	0.18	1731809.28	14374575.15	39°35'00.819"N	80°40'32.260"W	107.20	179.902	0.39
2565.00	6.360	174.080	2559.25	66.02	-113.99	0.78	1731809.88	14374568.35	39°35'00.752"N	80°40'32.253"W	114.00	179.609	0.55
2628.00	6.170	172.310	2621.87	70.60	-120.82	1.59	1731810.69	14374561.53	39°35'00.685"N	80°40'32.243"W	120.83	179.245	0.43
2691.00	5.630	173.010	2684.54	74.97	-127.24	2.42	1731811.52	14374555.11	39°35'00.621"N	80°40'32.233"W	127.27	178.910	0.86
2754.00	5.030	172.010	2747.27	78.92	-133.05	3.18	1731812.28	14374549.31	39°35'00.564"N	80°40'32.223"W	133.08	178.631	0.96
2816.00	4.640	167.240	2809.05	82.63	-138.18	4.11	1731813.21	14374544.17	39°35'00.513"N	80°40'32.212"W	138.24	178.295	0.90
2879.00	4.140	167.900	2871.86	86.18	-142.89	5.15	1731814.25	14374539.46	39°35'00.466"N	80°40'32.198"W	142.98	177.935	0.80
2943.00	3.670	168.300	2935.71	89.36	-147.16	6.05	1731815.15	14374535.20	39°35'00.424"N	80°40'32.187"W	147.28	177.645	0.74

Actual Wellpath Report

Long 409 S-4H (AWP) Proj:13759'

Office of Oil & Gas
JUL 05 2016

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

WELLPATH DATA (239 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 [°/100ft]
3006.00	3.350	171.090	2998.59	92.11	-150.95	6.75	1731815.84	14374531.41	39°35'00.387"N	80°40'32.178"W	151.10	177.441	0.58
3069.00	2.820	162.670	3061.50	94.61	-154.25	7.49	1731816.59	14374528.11	39°35'00.354"N	80°40'32.169"W	154.43	177.219	1.10
3132.00	2.310	160.610	3124.44	96.87	-156.92	8.38	1731817.47	14374525.44	39°35'00.328"N	80°40'32.158"W	157.15	176.945	0.82
3195.00	2.430	165.590	3187.38	98.94	-159.44	9.14	1731818.21	14374522.92	39°35'00.303"N	80°40'32.148"W	159.70	176.721	0.43
3257.00	2.090	171.460	3249.34	100.73	-161.86	9.64	1731818.73	14374520.50	39°35'00.279"N	80°40'32.142"W	162.15	176.593	0.73
3321.00	2.350	173.740	3313.29	102.40	-164.32	9.95	1731819.05	14374518.05	39°35'00.255"N	80°40'32.138"W	164.62	176.534	0.43
3384.00	2.300	155.070	3376.24	104.35	-166.75	10.63	1731819.72	14374515.62	39°35'00.230"N	80°40'32.130"W	167.09	176.353	1.20
3415.00	2.000	163.490	3407.21	105.31	-167.83	11.04	1731820.14	14374514.54	39°35'00.220"N	80°40'32.124"W	168.19	176.236	1.40
3523.00	1.750	187.650	3515.16	107.54	-171.27	11.36	1731820.45	14374511.10	39°35'00.186"N	80°40'32.120"W	171.65	176.206	0.76
3586.00	0.170	222.490	3578.15	107.97	-172.29	11.17	1731820.26	14374510.07	39°35'00.176"N	80°40'32.123"W	172.66	176.291	2.56
3649.00	0.100	41.410	3641.15	107.97	-172.32	11.14	1731820.24	14374510.05	39°35'00.175"N	80°40'32.123"W	172.68	176.301	0.43
3712.00	0.030	152.440	3704.15	107.99	-172.30	11.18	1731820.28	14374510.07	39°35'00.176"N	80°40'32.123"W	172.66	176.286	0.18
3775.00	0.040	352.360	3767.15	107.99	-172.29	11.19	1731820.29	14374510.08	39°35'00.176"N	80°40'32.123"W	172.65	176.284	0.11
3807.00	1.090	77.280	3799.15	108.18	-172.21	11.49	1731820.58	14374510.16	39°35'00.176"N	80°40'32.119"W	172.59	176.184	3.40
3839.00	3.650	92.620	3831.12	109.25	-172.19	12.80	1731821.89	14374510.18	39°35'00.177"N	80°40'32.102"W	172.66	175.749	8.17
3870.00	7.020	97.980	3861.98	111.77	-172.50	15.66	1731824.76	14374509.87	39°35'00.173"N	80°40'32.066"W	173.21	174.812	10.98
3901.00	10.010	92.720	3892.63	115.74	-172.89	20.23	1731829.32	14374509.48	39°35'00.169"N	80°40'32.007"W	174.07	173.326	9.96
3933.00	13.260	79.610	3923.98	120.67	-172.36	26.62	1731835.71	14374510.01	39°35'00.174"N	80°40'31.926"W	174.40	171.220	13.03
3964.00	16.440	67.790	3953.94	125.54	-170.06	34.18	1731843.27	14374512.31	39°35'00.197"N	80°40'31.829"W	173.46	168.635	14.12
3996.00	19.680	55.560	3984.37	129.89	-165.30	42.82	1731851.91	14374517.07	39°35'00.244"N	80°40'31.718"W	170.75	165.475	15.53
4027.00	21.730	47.150	4013.38	132.93	-158.44	51.34	1731860.42	14374523.92	39°35'00.311"N	80°40'31.609"W	166.55	162.016	11.63
4058.00	23.900	37.710	4041.96	134.44	-149.56	59.39	1731868.47	14374532.79	39°35'00.399"N	80°40'31.506"W	160.93	158.342	13.71
4090.00	24.570	33.580	4071.14	134.58	-138.89	67.04	1731876.11	14374543.46	39°35'00.504"N	80°40'31.408"W	154.22	154.236	5.70
4122.00	25.770	31.970	4100.10	134.05	-127.45	74.40	1731883.47	14374554.90	39°35'00.617"N	80°40'31.313"W	147.58	149.725	4.32
4153.00	26.950	31.460	4127.88	133.26	-115.74	81.63	1731890.70	14374566.61	39°35'00.732"N	80°40'31.220"W	141.63	144.804	3.88
4216.00	26.660	30.940	4184.11	131.37	-91.44	96.35	1731905.41	14374590.90	39°35'00.972"N	80°40'31.031"W	132.83	133.501	0.59
4279.00	26.860	32.080	4240.36	129.65	-67.26	111.18	1731920.23	14374615.07	39°35'01.210"N	80°40'30.841"W	129.94	121.172	0.87
4343.00	26.820	33.630	4297.47	128.57	-42.98	126.85	1731935.90	14374639.33	39°35'01.450"N	80°40'30.639"W	133.94	108.719	1.10
4406.00	26.820	33.800	4353.69	127.93	-19.34	142.63	1731951.67	14374662.97	39°35'01.683"N	80°40'30.437"W	143.94	97.722	0.12
4469.00	26.330	34.060	4410.04	127.40	4.04	158.36	1731967.40	14374686.34	39°35'01.913"N	80°40'30.235"W	158.41	88.537	0.80
4532.00	24.890	31.890	4466.85	126.45	26.88	173.19	1731982.22	14374709.17	39°35'02.138"N	80°40'30.044"W	175.26	81.179	2.73
4595.00	26.430	29.530	4523.63	124.40	50.34	187.11	1731996.13	14374732.62	39°35'02.370"N	80°40'29.866"W	193.76	74.943	2.93
4658.00	26.220	29.670	4580.10	121.77	74.63	200.91	1732009.93	14374756.90	39°35'02.609"N	80°40'29.688"W	214.32	69.622	0.35
4721.00	25.020	29.410	4636.90	119.18	98.33	214.34	1732023.35	14374780.59	39°35'02.843"N	80°40'29.516"W	235.82	65.357	1.91
4784.00	23.490	30.450	4694.34	116.88	120.76	227.24	1732036.26	14374803.01	39°35'03.064"N	80°40'29.350"W	257.34	62.014	2.52
4847.00	24.490	33.280	4751.90	115.50	142.50	240.77	1732049.78	14374824.74	39°35'03.279"N	80°40'29.176"W	279.78	59.381	2.42
4910.00	25.620	34.170	4808.97	114.91	164.69	255.59	1732064.59	14374846.92	39°35'03.497"N	80°40'28.986"W	304.05	57.205	1.89
4973.00	26.100	33.460	4865.66	114.34	187.52	270.88	1732079.87	14374869.74	39°35'03.722"N	80°40'28.789"W	329.45	55.307	0.91
5036.00	25.670	34.510	4922.34	113.85	210.32	286.25	1732095.24	14374892.54	39°35'03.947"N	80°40'28.592"W	355.21	53.694	1.00
5099.00	25.720	35.860	4979.11	113.94	232.65	301.99	1732110.97	14374914.85	39°35'04.167"N	80°40'28.390"W	381.21	52.390	0.93
5162.00	26.200	36.220	5035.76	114.44	254.94	318.22	1732127.19	14374937.14	39°35'04.387"N	80°40'28.182"W	407.75	51.299	0.80
5226.00	25.150	34.070	5093.44	114.52	277.61	334.18	1732143.15	14374959.80	39°35'04.611"N	80°40'27.977"W	434.45	50.283	2.19
5289.00	25.770	29.580	5150.32	113.01	300.61	348.45	1732157.41	14374982.79	39°35'04.837"N	80°40'27.793"W	460.20	49.215	3.22
5351.00	25.190	27.430	5206.30	110.00	324.01	361.18	1732170.14	14375006.22	39°35'05.069"N	80°40'27.630"W	485.23	48.102	1.76
5415.00	25.700	30.870	5264.09	107.20	348.04	374.57	1732183.53	14375030.21	39°35'05.305"N	80°40'27.458"W	511.31	47.102	2.44

Actual Wellpath Report

Long 409 S-4H (AWP) Proj:13759'

BAKER HUGHES

Received Office of Oil & Gas JUL 05 2016

REFERENCE WELLPATH IDENTIFICATION			
Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

WELLPATH DATA (239 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 [°/100ft]
5478.00	25.800	35.650	5320.84	106.37	370.91	389.57	1732198.52	14375053.07	39°35'05.531"N	80°40'27.265"W	537.91	46.406	3.30
5540.00	24.780	37.010	5376.90	106.98	392.25	405.26	1732214.20	14375074.40	39°35'05.741"N	80°40'27.064"W	564.00	45.934	1.89
5604.00	24.800	34.510	5435.00	107.34	414.02	420.94	1732229.87	14375096.16	39°35'05.956"N	80°40'26.862"W	590.43	45.474	1.64
5666.00	24.640	30.580	5491.32	105.23	435.87	434.88	1732243.81	14375118.00	39°35'06.171"N	80°40'26.683"W	615.71	44.935	2.66
5730.00	24.590	29.700	5549.51	103.97	458.92	448.27	1732257.19	14375141.04	39°35'06.398"N	80°40'26.511"W	641.52	44.327	0.58
5793.00	25.310	30.480	5606.63	101.70	481.91	461.59	1732270.51	14375164.02	39°35'06.625"N	80°40'26.340"W	667.31	43.766	1.26
5856.00	25.090	31.590	5663.63	99.84	504.90	475.42	1732284.33	14375187.00	39°35'06.852"N	80°40'26.162"W	693.50	43.278	0.83
5920.00	25.650	33.800	5721.46	98.75	527.97	490.23	1732299.14	14375210.06	39°35'07.079"N	80°40'25.972"W	720.47	42.878	1.72
5983.00	25.770	35.690	5778.23	98.63	550.42	505.81	1732314.71	14375232.50	39°35'07.301"N	80°40'25.772"W	747.53	42.581	1.32
6046.00	25.730	36.240	5834.97	99.09	572.57	521.88	1732330.78	14375254.65	39°35'07.519"N	80°40'25.566"W	774.73	42.348	0.38
6109.00	25.770	35.520	5891.71	99.51	594.75	537.92	1732346.81	14375276.81	39°35'07.738"N	80°40'25.360"W	801.93	42.128	0.50
6172.00	25.700	34.600	5948.47	99.54	617.14	553.64	1732362.52	14375299.20	39°35'07.958"N	80°40'25.158"W	829.08	41.895	0.64
6235.00	25.590	35.290	6005.26	99.51	639.49	569.25	1732378.13	14375321.54	39°35'08.179"N	80°40'24.957"W	856.15	41.675	0.51
6298.00	25.630	36.080	6062.07	99.84	661.61	585.14	1732394.01	14375343.65	39°35'08.397"N	80°40'24.754"W	883.24	41.490	0.55
6361.00	25.600	36.400	6118.88	100.42	683.57	601.24	1732410.10	14375365.61	39°35'08.613"N	80°40'24.547"W	910.36	41.333	0.22
6424.00	25.600	36.870	6175.69	101.20	705.42	617.48	1732426.34	14375387.44	39°35'08.829"N	80°40'24.338"W	937.50	41.197	0.32
6488.00	25.680	37.540	6233.39	102.27	727.47	634.23	1732443.08	14375409.49	39°35'09.046"N	80°40'24.124"W	965.12	41.083	0.47
6550.00	25.330	36.820	6289.35	103.28	748.74	650.36	1732459.21	14375430.75	39°35'09.256"N	80°40'23.916"W	991.76	40.978	0.75
6613.00	25.390	35.060	6346.28	103.73	770.59	666.20	1732475.04	14375452.59	39°35'09.471"N	80°40'23.713"W	1018.64	40.844	1.20
6676.00	25.390	34.120	6403.20	103.53	792.83	681.53	1732490.37	14375474.81	39°35'09.690"N	80°40'23.516"W	1045.49	40.683	0.64
6739.00	25.070	34.490	6460.19	103.21	815.01	696.67	1732505.49	14375496.99	39°35'09.909"N	80°40'23.322"W	1072.19	40.524	0.57
6803.00	24.940	37.270	6518.19	103.62	836.92	712.52	1732521.34	14375518.89	39°35'10.125"N	80°40'23.119"W	1099.15	40.410	1.85
6867.00	24.840	39.400	6576.25	105.19	858.05	729.22	1732538.03	14375540.01	39°35'10.333"N	80°40'22.904"W	1126.06	40.360	1.41
6929.00	24.970	39.400	6632.48	107.19	878.22	745.79	1732554.60	14375560.18	39°35'10.532"N	80°40'22.692"W	1152.17	40.338	0.21
6992.00	24.970	37.670	6689.59	108.83	899.03	762.36	1732571.16	14375580.97	39°35'10.737"N	80°40'22.479"W	1178.74	40.297	1.16
7055.00	24.910	38.000	6746.72	110.14	920.01	778.65	1732587.45	14375601.95	39°35'10.944"N	80°40'22.270"W	1205.29	40.243	0.24
7086.00	24.080	45.630	6774.93	111.65	929.58	787.26	1732595.99	14375611.51	39°35'11.038"N	80°40'22.160"W	1218.11	40.259	10.54
7117.00	23.400	54.630	6803.32	114.89	937.56	796.74	1732605.53	14375619.50	39°35'11.116"N	80°40'22.038"W	1230.37	40.358	11.88
7149.00	23.770	65.230	6832.66	120.27	943.95	807.78	1732616.57	14375625.88	39°35'11.179"N	80°40'21.897"W	1242.40	40.555	13.29
7181.00	24.490	71.060	6861.87	127.42	948.80	819.91	1732628.69	14375630.73	39°35'11.227"N	80°40'21.742"W	1253.99	40.832	7.78
7212.00	26.050	67.850	6889.90	134.90	953.46	832.30	1732641.07	14375635.38	39°35'11.272"N	80°40'21.583"W	1265.62	41.119	6.70
7244.00	27.130	65.540	6918.52	142.42	959.13	845.45	1732654.22	14375641.05	39°35'11.328"N	80°40'21.415"W	1278.56	41.395	4.67
7276.00	26.630	69.080	6947.06	150.15	964.71	858.80	1732667.56	14375646.63	39°35'11.382"N	80°40'21.244"W	1291.59	41.676	5.20
7307.00	26.220	75.350	6974.82	158.49	968.93	871.93	1732680.69	14375650.85	39°35'11.424"N	80°40'21.076"W	1303.49	41.984	9.14
7339.00	27.140	81.030	7003.41	168.32	971.85	885.98	1732694.73	14375653.77	39°35'11.452"N	80°40'20.897"W	1315.09	42.354	8.46
7370.00	30.240	83.750	7030.61	179.28	973.81	900.73	1732709.48	14375655.73	39°35'11.471"N	80°40'20.708"W	1326.50	42.767	10.85
7402.00	34.030	87.550	7057.70	192.45	975.07	917.69	1732726.43	14375656.99	39°35'11.483"N	80°40'20.491"W	1339.00	43.264	13.42
7434.00	36.340	93.030	7083.86	207.61	974.95	936.11	1732744.85	14375656.87	39°35'11.481"N	80°40'20.256"W	1351.61	43.836	12.22
7466.00	39.120	99.850	7109.18	224.81	972.71	955.54	1732764.27	14375654.63	39°35'11.458"N	80°40'20.008"W	1363.54	44.490	15.71
7498.00	42.230	104.700	7133.45	244.04	968.25	975.90	1732784.61	14375650.17	39°35'11.413"N	80°40'19.748"W	1374.73	45.225	13.81
7529.00	46.440	107.070	7155.62	264.51	962.31	996.72	1732805.43	14375644.23	39°35'11.354"N	80°40'19.483"W	1385.46	46.096	14.59
7561.00	49.510	106.540	7177.04	287.09	955.44	1019.48	1732828.18	14375637.36	39°35'11.285"N	80°40'19.192"W	1397.21	46.857	9.67
7592.00	53.420	106.590	7196.35	310.09	948.53	1042.71	1732851.40	14375630.45	39°35'11.216"N	80°40'18.896"W	1409.59	47.708	12.61
7624.00	56.820	108.780	7214.65	335.15	940.54	1067.72	1732876.40	14375622.47	39°35'11.136"N	80°40'18.577"W	1422.90	48.623	12.02
7655.00	60.740	111.470	7230.71	360.76	931.41	1092.59	1732901.27	14375613.35	39°35'11.045"N	80°40'18.260"W	1435.72	49.553	14.66

Actual Wellpath Report

Long 409 S-4H (AWP) Proj:13759'

BAKER HUGHES

Received Office of Oil & Gas JUL 05 2016

REFERENCE WELLPATH IDENTIFICATION			
Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

WELLPATH DATA (239 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 [°/100ft]
7687.00	64.180	113.600	7245.51	358.47	920.53	1118.79	1732927.45	14375602.47	39°35'10.936"N	80°40'17.925"W	1448.82	50.553	12.26
7719.00	68.260	115.660	7258.41	417.26	908.33	1145.40	1732954.05	14375590.27	39°35'10.815"N	80°40'17.586"W	1461.85	51.585	14.04
7750.00	72.340	118.830	7268.86	446.17	894.96	1171.33	1732979.97	14375576.91	39°35'10.682"N	80°40'17.256"W	1474.10	52.618	16.30
7781.00	76.400	120.790	7277.21	475.90	880.12	1197.23	1733005.86	14375562.07	39°35'10.534"N	80°40'16.926"W	1485.92	53.679	14.44
7813.00	79.200	122.620	7283.97	507.12	863.68	1223.83	1733032.45	14375545.64	39°35'10.371"N	80°40'16.587"W	1497.90	54.789	10.38
7844.00	78.320	122.890	7290.02	537.50	847.23	1249.40	1733058.01	14375529.20	39°35'10.207"N	80°40'16.261"W	1509.57	55.858	2.96
7876.00	78.720	123.430	7296.39	568.84	830.08	1275.66	1733084.26	14375512.05	39°35'10.037"N	80°40'15.926"W	1521.95	56.948	2.07
7907.00	80.760	123.800	7301.91	599.34	813.19	1301.06	1733109.65	14375495.17	39°35'09.869"N	80°40'15.603"W	1534.28	57.994	6.68
7938.00	81.470	123.720	7306.70	629.96	796.17	1326.52	1733135.10	14375478.16	39°35'09.700"N	80°40'15.278"W	1547.11	59.028	2.30
7970.00	82.940	123.700	7311.04	661.65	778.58	1352.89	1733161.46	14375460.57	39°35'09.525"N	80°40'14.942"W	1560.93	60.080	4.59
8002.00	85.100	123.710	7314.37	693.47	760.92	1379.37	1733187.93	14375442.92	39°35'09.350"N	80°40'14.605"W	1575.32	61.117	6.75
8033.00	87.690	124.900	7316.32	724.40	743.48	1404.92	1733213.47	14375425.49	39°35'09.176"N	80°40'14.279"W	1589.52	62.112	9.19
8065.00	88.030	125.740	7316.95	756.39	724.98	1431.02	1733239.56	14375407.00	39°35'08.993"N	80°40'13.947"W	1604.19	63.132	7.77
8129.00	90.090	126.370	7316.89	820.38	687.32	1482.77	1733291.28	14375369.35	39°35'08.618"N	80°40'13.288"W	1634.32	65.131	9.99
8191.00	89.780	125.660	7316.96	882.37	650.86	1532.91	1733341.41	14375332.91	39°35'08.256"N	80°40'12.649"W	1665.37	66.994	1.25
8255.00	89.820	124.820	7317.18	946.37	613.93	1585.19	1733393.66	14375295.99	39°35'07.889"N	80°40'11.983"W	1699.92	68.829	1.31
8317.00	89.750	122.820	7317.41	1008.35	579.43	1636.69	1733445.15	14375261.50	39°35'07.547"N	80°40'11.327"W	1736.23	70.505	3.23
8381.00	89.570	121.790	7317.79	1072.28	545.23	1690.78	1733499.22	14375227.31	39°35'07.207"N	80°40'10.637"W	1776.52	72.127	1.63
8443.00	89.570	121.840	7318.26	1134.18	512.54	1743.47	1733551.88	14375194.64	39°35'06.882"N	80°40'09.966"W	1817.24	73.618	0.08
8506.00	89.600	120.560	7318.72	1197.04	479.91	1797.35	1733605.75	14375162.02	39°35'06.557"N	80°40'09.279"W	1860.32	75.050	2.03
8569.00	89.600	121.900	7319.16	1259.90	447.24	1851.22	1733659.59	14375129.37	39°35'06.232"N	80°40'08.593"W	1904.48	76.418	2.13
8632.00	89.600	125.070	7319.59	1322.87	412.49	1903.76	1733712.11	14375094.63	39°35'05.887"N	80°40'07.923"W	1947.93	77.775	5.03
8695.00	89.600	127.180	7320.03	1385.85	375.35	1954.64	1733762.97	14375057.51	39°35'05.518"N	80°40'07.275"W	1990.35	79.130	3.35
8758.00	89.660	127.330	7320.44	1448.80	337.22	2004.78	1733813.10	14375019.38	39°35'05.139"N	80°40'06.637"W	2032.95	80.452	0.26
8821.00	90.220	130.120	7320.51	1511.66	297.81	2053.93	1733862.22	14374979.99	39°35'04.748"N	80°40'06.011"W	2075.41	81.750	4.52
8885.00	90.030	130.560	7320.37	1575.39	256.38	2102.71	1733910.98	14374938.58	39°35'04.337"N	80°40'05.390"W	2118.28	83.048	0.75
8948.00	89.420	130.290	7320.67	1638.10	215.53	2150.67	1733958.92	14374897.74	39°35'03.931"N	80°40'04.779"W	2161.44	84.277	1.06
9011.00	89.570	129.110	7321.23	1700.89	175.29	2199.14	1734007.37	14374857.52	39°35'03.532"N	80°40'04.162"W	2206.11	85.443	1.89
9075.00	89.350	124.750	7321.83	1764.81	136.85	2250.28	1734058.50	14374819.09	39°35'03.150"N	80°40'03.511"W	2254.44	86.520	6.82
9139.00	89.540	122.110	7322.45	1828.80	101.59	2303.69	1734111.88	14374783.85	39°35'02.800"N	80°40'02.830"W	2305.93	87.475	4.14
9202.00	88.920	119.780	7323.30	1891.63	69.20	2357.71	1734165.89	14374751.47	39°35'02.478"N	80°40'02.142"W	2358.73	88.319	3.83
9264.00	89.350	119.450	7324.23	1953.35	38.57	2411.60	1734219.76	14374720.85	39°35'02.173"N	80°40'01.455"W	2411.91	89.084	0.87
9328.00	89.170	122.530	7325.06	2017.18	5.62	2466.46	1734274.59	14374687.92	39°35'01.845"N	80°40'00.756"W	2466.46	89.869	4.82
9391.00	89.050	125.410	7326.04	2080.16	-29.57	2518.69	1734326.81	14374652.74	39°35'01.496"N	80°40'00.090"W	2518.87	90.673	4.57
9454.00	89.630	125.620	7326.76	2143.15	-66.17	2569.97	1734378.06	14374616.16	39°35'01.132"N	80°39'59.437"W	2570.82	91.475	0.98
9517.00	89.540	124.380	7327.22	2206.15	-102.30	2621.57	1734429.65	14374580.04	39°35'00.773"N	80°39'58.780"W	2623.57	92.235	1.97
9580.00	89.600	123.790	7327.69	2269.14	-137.61	2673.75	1734481.80	14374544.75	39°35'00.422"N	80°39'58.115"W	2677.29	92.946	0.94
9644.00	89.480	122.480	7328.21	2333.10	-172.59	2727.34	1734535.37	14374509.78	39°35'00.074"N	80°39'57.432"W	2732.79	93.621	2.06
9707.00	89.570	123.510	7328.73	2396.06	-206.90	2780.18	1734588.18	14374475.49	39°34'59.733"N	80°39'56.759"W	2787.86	94.256	1.64
9769.00	88.620	121.600	7329.71	2457.99	-240.25	2832.42	1734640.41	14374442.14	39°34'59.402"N	80°39'56.093"W	2842.60	94.848	3.44
9832.00	89.540	122.810	7330.72	2520.90	-273.82	2885.72	1734693.69	14374408.58	39°34'59.068"N	80°39'55.414"W	2898.69	95.420	2.41
9895.00	89.690	124.500	7331.14	2583.88	-308.73	2938.16	1734746.11	14374373.69	39°34'58.721"N	80°39'54.746"W	2954.34	95.998	2.69
9958.00	89.660	126.480	7331.50	2646.88	-345.31	2989.45	1734797.38	14374337.13	39°34'58.358"N	80°39'54.093"W	3009.33	96.589	3.14
10021.00	89.720	128.020	7331.84	2709.83	-383.44	3039.60	1734847.51	14374299.01	39°34'57.979"N	80°39'53.454"W	3063.69	97.190	2.45
10083.00	89.480	128.470	7332.27	2771.72	-421.82	3088.29	1734896.18	14374260.65	39°34'57.598"N	80°39'52.834"W	3116.96	97.778	0.82

Actual Wellpath Report

Long 409 S-4H (AWP) Proj:13759'

BAKER HUGHES

Received Office of Oil & Gas JUL 05 2016

REFERENCE WELLPATH IDENTIFICATION

Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

WELLPATH DATA (239 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 [°/100ft]
10146.00	89.600	128.180	7332.78	2834.62	-469.88	3137.71	1734945.58	14374221.60	39°34'57.210"N	80°39'52.205"W	3171.38	98.356	0.50
10209.00	91.170	130.950	7332.36	2897.41	-501.01	3186.27	1734994.12	14374181.49	39°34'56.812"N	80°39'51.586"W	3225.42	98.936	5.05
10272.00	89.690	128.960	7331.88	2960.16	-541.46	3234.56	1735042.39	14374141.05	39°34'56.410"N	80°39'50.972"W	3279.57	99.504	3.94
10335.00	89.280	125.950	7332.17	3023.10	-579.64	3284.66	1735092.47	14374102.89	39°34'56.031"N	80°39'50.334"W	3335.42	100.008	5.26
10397.00	89.600	124.990	7332.51	3085.10	-615.48	3335.25	1735143.04	14374067.06	39°34'55.675"N	80°39'49.689"W	3391.57	100.456	1.10
10461.00	89.540	126.180	7332.99	3149.10	-652.72	3387.30	1735195.07	14374029.84	39°34'55.305"N	80°39'49.026"W	3449.61	100.907	1.86
10524.00	89.660	126.300	7333.43	3212.08	-689.96	3438.11	1735245.86	14373992.61	39°34'54.935"N	80°39'48.379"W	3506.66	101.347	0.27
10587.00	89.910	125.700	7333.67	3275.07	-726.99	3489.08	1735296.81	14373955.59	39°34'54.567"N	80°39'47.730"W	3564.01	101.770	1.03
10650.00	89.850	123.590	7333.80	3338.06	-762.81	3540.90	1735348.61	14373919.79	39°34'54.211"N	80°39'47.070"W	3622.13	102.157	3.35
10713.00	90.000	122.470	7333.88	3401.03	-797.14	3593.72	1735401.41	14373885.47	39°34'53.870"N	80°39'46.397"W	3681.07	102.507	1.79
10776.00	90.250	122.120	7333.74	3463.96	-830.80	3646.97	1735454.64	14373851.82	39°34'53.535"N	80°39'45.718"W	3740.41	102.833	0.68
10840.00	89.880	121.070	7333.67	3527.84	-864.33	3701.49	1735509.13	14373818.31	39°34'53.202"N	80°39'45.024"W	3801.06	103.144	1.74
10903.00	89.820	122.450	7333.84	3590.74	-897.49	3755.05	1735562.68	14373785.16	39°34'52.872"N	80°39'44.341"W	3860.82	103.442	2.19
10966.00	89.690	125.180	7334.11	3653.72	-932.55	3807.39	1735614.99	14373750.12	39°34'52.524"N	80°39'43.674"W	3919.93	103.763	4.34
11030.00	89.600	129.720	7334.50	3717.64	-971.46	3858.18	1735665.77	14373711.23	39°34'52.137"N	80°39'43.028"W	3978.61	104.133	7.10
11092.00	89.720	131.730	7334.87	3779.33	-1011.90	3905.17	1735712.73	14373670.79	39°34'51.736"N	80°39'42.429"W	4034.14	104.527	3.25
11156.00	89.780	131.310	7335.15	3842.91	-1054.33	3953.08	1735760.63	14373628.39	39°34'51.315"N	80°39'41.820"W	4091.27	104.934	0.66
11219.00	89.600	128.050	7335.49	3905.69	-1094.55	4001.56	1735809.09	14373588.18	39°34'50.916"N	80°39'41.202"W	4148.56	105.298	5.18
11282.00	90.340	125.120	7335.52	3968.66	-1132.09	4052.14	1735859.65	14373550.65	39°34'50.543"N	80°39'40.558"W	4207.32	105.609	4.80
11345.00	89.480	121.790	7335.62	4031.63	-1166.82	4104.70	1735912.19	14373515.94	39°34'50.197"N	80°39'39.889"W	4267.32	105.869	5.46
11407.00	89.260	122.040	7336.30	4093.54	-1199.59	4157.32	1735964.79	14373483.18	39°34'49.872"N	80°39'39.218"W	4326.93	106.095	0.54
11470.00	89.320	122.820	7337.08	4156.47	-1233.37	4210.49	1736017.94	14373449.41	39°34'49.536"N	80°39'38.541"W	4387.42	106.327	1.24
11533.00	89.420	128.290	7337.78	4219.44	-1269.99	4261.72	1736069.15	14373412.81	39°34'49.172"N	80°39'37.888"W	4446.93	106.594	8.68
11596.00	89.380	128.400	7338.44	4282.33	-1309.07	4311.13	1736118.54	14373373.74	39°34'48.784"N	80°39'37.259"W	4505.50	106.891	0.19
11659.00	89.320	124.750	7339.15	4345.29	-1346.61	4361.71	1736169.10	14373336.22	39°34'48.411"N	80°39'36.615"W	4564.85	107.157	5.79
11721.00	89.200	120.790	7339.95	4407.22	-1380.15	4413.83	1736221.20	14373302.69	39°34'48.077"N	80°39'35.951"W	4624.58	107.364	6.39
11785.00	89.290	118.600	7340.80	4470.94	-1411.55	4469.42	1736276.77	14373271.00	39°34'47.762"N	80°39'35.242"W	4687.11	107.531	3.42
11848.00	89.260	117.170	7341.59	4533.45	-1441.32	4525.10	1736332.42	14373241.55	39°34'47.469"N	80°39'34.533"W	4749.10	107.668	2.27
11911.00	88.860	116.260	7342.63	4595.78	-1469.63	4581.37	1736388.67	14373213.24	39°34'47.187"N	80°39'33.816"W	4811.31	107.785	1.58
11974.00	88.770	118.490	7343.93	4658.21	-1498.59	4637.29	1736444.57	14373184.29	39°34'46.899"N	80°39'33.103"W	4873.43	107.909	3.54
12037.00	88.830	125.610	7345.25	4721.07	-1532.00	4690.65	1736497.91	14373150.90	39°34'46.566"N	80°39'32.423"W	4934.49	108.087	11.30
12100.00	88.890	126.590	7346.51	4784.05	-1569.11	4741.54	1736548.78	14373113.81	39°34'46.198"N	80°39'31.775"W	4994.43	108.311	1.56
12163.00	88.950	128.520	7347.69	4846.97	-1607.50	4791.47	1736598.69	14373075.43	39°34'45.816"N	80°39'31.139"W	5053.94	108.546	3.06
12226.00	89.020	128.770	7348.81	4909.83	-1646.84	4840.67	1736647.87	14373036.11	39°34'45.426"N	80°39'30.512"W	5113.14	108.789	0.41
12289.00	89.200	125.760	7349.79	4972.77	-1684.97	4890.80	1736697.98	14372997.99	39°34'45.047"N	80°39'29.874"W	5172.91	109.010	4.79
12352.00	89.320	123.350	7350.60	5035.76	-1720.70	4942.67	1736749.83	14372962.27	39°34'44.692"N	80°39'29.213"W	5233.63	109.195	3.83
12415.00	89.200	125.590	7351.42	5098.74	-1756.35	4994.60	1736801.74	14372926.64	39°34'44.338"N	80°39'28.552"W	5294.42	109.374	3.56
12477.00	89.080	128.530	7352.35	5160.69	-1793.71	5044.07	1736851.19	14372889.29	39°34'43.967"N	80°39'27.922"W	5353.51	109.576	4.75
12540.00	89.200	130.800	7353.29	5223.47	-1833.92	5092.56	1736899.66	14372849.10	39°34'43.567"N	80°39'27.305"W	5412.71	109.805	3.61
12603.00	89.290	129.500	7354.12	5286.21	-1874.53	5140.71	1736947.79	14372808.50	39°34'43.164"N	80°39'26.692"W	5471.81	110.034	2.07
12667.00	89.350	128.230	7354.88	5350.06	-1914.69	5190.53	1736997.60	14372768.36	39°34'42.765"N	80°39'26.057"W	5532.42	110.248	1.99
12730.00	89.690	130.280	7355.41	5412.88	-1954.55	5239.31	1737046.36	14372728.52	39°34'42.370"N	80°39'25.436"W	5592.02	110.458	3.30
12792.00	89.850	126.940	7355.66	5474.75	-1993.23	5287.75	1737094.78	14372689.85	39°34'41.985"N	80°39'24.820"W	5650.96	110.654	5.39
12856.00	89.780	120.020	7355.87	5538.68	-2028.52	5341.10	1737148.11	14372654.58	39°34'41.635"N	80°39'24.140"W	5713.34	110.796	10.81
12920.00	90.180	116.170	7335.89	5602.22	-2058.75	5397.50	1737204.48	14372624.36	39°34'41.334"N	80°39'23.421"W	5776.80	110.878	5.74

Actual Wellpath Report

Long 409 S-4H (AWP) Proj:13759'

BAKER HUGHES

Received Office of Oil & Gas JUL 05 2016

REFERENCE WELLPATH IDENTIFICATION

Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

WELLPATH DATA (239 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 [°/100ft]
12982.00	90.120	119.940	7355.71	5663.75	-2087.81	5452.26	1737259.22	14372595.31	39°34'41.045"N	80°39'22.723"W	5838.33	110.953	5.11
13046.00	90.060	121.950	7355.62	5727.56	-2120.53	5507.26	1737314.20	14372562.61	39°34'40.719"N	80°39'22.023"W	5901.40	111.059	3.77
13109.00	90.180	124.390	7355.49	5790.53	-2154.99	5559.99	1737366.91	14372528.15	39°34'40.377"N	80°39'21.351"W	5963.01	111.186	3.88
13173.00	90.220	124.870	7355.27	5854.53	-2191.36	5612.65	1737419.55	14372491.80	39°34'40.015"N	80°39'20.680"W	6025.27	111.327	0.75
13236.00	90.180	124.830	7355.05	5917.52	-2227.36	5664.35	1737471.23	14372455.81	39°34'39.657"N	80°39'20.022"W	6086.54	111.466	0.09
13300.00	90.220	125.520	7354.83	5981.52	-2264.23	5716.66	1737523.52	14372418.96	39°34'39.291"N	80°39'19.355"W	6148.74	111.607	1.08
13363.00	90.090	126.070	7354.66	6044.52	-2301.08	5767.76	1737574.60	14372382.13	39°34'38.925"N	80°39'18.704"W	6209.83	111.750	0.90
13426.00	89.940	128.010	7354.64	6107.47	-2339.02	5818.05	1737624.86	14372344.19	39°34'38.548"N	80°39'18.064"W	6270.62	111.902	3.09
13488.00	89.720	129.350	7354.82	6169.34	-2377.77	5866.45	1737673.24	14372305.46	39°34'38.163"N	80°39'17.448"W	6330.01	112.064	2.19
13551.00	89.720	127.820	7355.13	6232.22	-2417.06	5915.69	1737722.47	14372266.19	39°34'37.773"N	80°39'16.821"W	6390.43	112.224	2.43
13614.00	89.750	126.650	7355.42	6295.17	-2455.18	5965.85	1737772.61	14372228.08	39°34'37.394"N	80°39'16.182"W	6451.30	112.369	1.86
13677.00	89.910	125.570	7355.61	6358.16	-2492.31	6016.74	1737823.48	14372190.97	39°34'37.025"N	80°39'15.534"W	6512.51	112.501	1.73
13734.00	89.940	124.290	7355.68	6415.15	-2524.94	6063.47	1737870.19	14372158.35	39°34'36.701"N	80°39'14.939"W	6568.18	112.608	2.25
13759.00	89.940	124.290	7355.71	6440.15	-2539.03	6084.13	1737890.84	14372144.27	39°34'36.561"N	80°39'14.676"W	6592.67	112.652	0.00

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Long 409 S-4H LP		7300.00	723.48	1439.87	1733248.40	14375405.50	39°35'08.977"N	80°40'13.834"W	point
Long 409 S-4H LP:Rev-1		7315.00	723.48	1439.87	1733248.40	14375405.50	39°35'08.977"N	80°40'13.834"W	point
Long 409 S-4H PBHL		7399.10	-2532.39	6089.79	1737896.50	14372150.90	39°34'36.627"N	80°39'14.603"W	point
Long 409 S-4H PBHL:Rev-1		7411.10	-2532.39	6089.79	1737896.50	14372150.90	39°34'36.627"N	80°39'14.603"W	point

WELLPATH COMPOSITION - Ref Wellbore: Long 409 S-4H (AWB) Ref Wellpath: Long 409 S-4H (AWP) Proj:13759'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.00	1281.00	Generic gyro - northseeking (Standard)	Gyro Surveys 17 1/2" Section (100'-1281')	Long 409 S-4H (AWB)
1281.00	3415.00	ISCWSA MWD, Rev. 2 (Standard)	BHI APS Surveys 12 1/4" Section (1281')(1285'-3415')	Long 409 S-4H (AWB)
3415.00	13734.00	NavTrak (AT Curve Short Spaced)	BHI ATCurve 8 1/2" Section (3415')(3460'-13734')	Long 409 S-4H (AWB)
13734.00	13759.00	Blind Drilling (std)	Projection to bit	Long 409 S-4H (AWB)

Actual Wellpath Report

Long 409 S-4H (AWP) Proj:13759'

BAKER HUGHES

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Office of Oil & Gas
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REFERENCE WELLPATH IDENTIFICATION			
Operator	HG ENERGY	Slot	Slot #04
Area	Wetzel County, WV	Well	Long 409 S-4H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-4H (AWB)
Facility	Long 409 Pad		

COMMENTS

Wellpath general comments
API#: 47-103-02881-0000
Rig: Dallas Morris 24
BHI job#: 5844646
Duration: 12/10/2013-12/18/2013
Gyro Surveys: (100'-1281')
BHI MWD Surveys: (1281'-13734')
TD Projected to MD: 13759'