

Location: Weirzi County, WV
Field: Weirzi (UTM 17N NAD 27)
Facility: Long 408 Prod
Well: Long 408 S-1H
Wellbore: Long 408 S-1H PWB

HG ENERGY



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JUL 05 2016

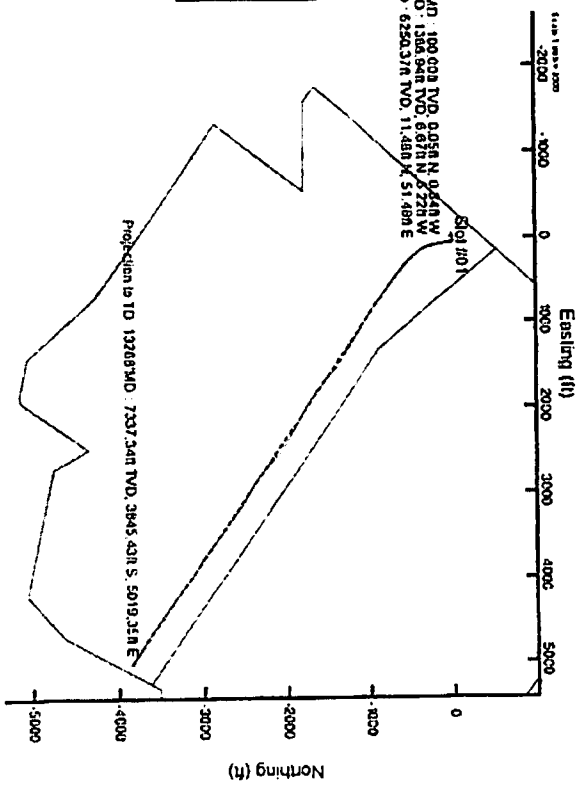
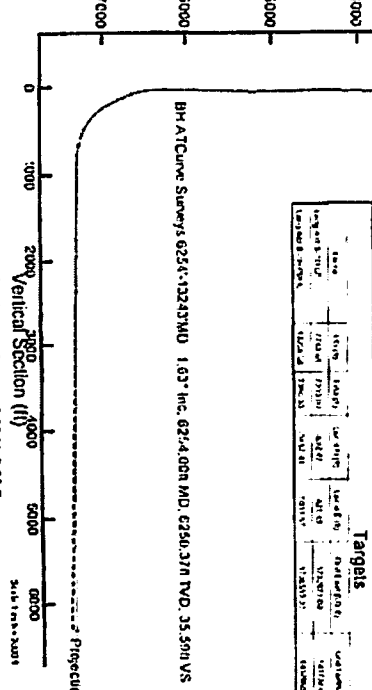
Plot reference wellpath is Long 408 S-1H (PWB) Rev.A.0
 Title: Weirzi County, WV
 Date: 07/05/2016
 User: J. H. HARRIS
 Project: Weirzi (UTM 17N NAD 27)
 Well: Long 408 S-1H
 Wellbore: Long 408 S-1H PWB
 Depth: 1337.26 ft
 Units: Feet
 Scale: 1 inch = 100 feet
 Projection: UTM 17N NAD 27
 Datum: NAD 83
 Spheroid: GRS 80
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 Scale: 1 inch = 100 feet
 Projection: UTM 17N NAD 27
 Datum: NAD 83
 Spheroid: GRS 80

Location Information
 Well Name: Long 408 S-1H
 Well ID: 12345678
 Well Type: Production
 Well Status: Active
 Well Path: Long 408 S-1H PWB
 Well Depth: 1337.26 ft
 Wellbore: Long 408 S-1H PWB
 Wellhead: Long 408 S-1H PWB
 Well Completion: Long 408 S-1H PWB
 Well Completion Date: 07/05/2016
 Well Completion By: J. H. HARRIS
 Well Completion Reason: New Well
 Well Completion Type: Production
 Well Completion Status: Active
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Well Profile Data

Depth (Feet)	True Vertical Depth (ft)	North (ft)	East (ft)	Depth (Feet)	True Vertical Depth (ft)	North (ft)	East (ft)
0	0	0	0	0	0	0	0
100	100	0	0	100	100	0	0
200	200	0	0	200	200	0	0
300	300	0	0	300	300	0	0
400	400	0	0	400	400	0	0
500	500	0	0	500	500	0	0
600	600	0	0	600	600	0	0
700	700	0	0	700	700	0	0
800	800	0	0	800	800	0	0
900	900	0	0	900	900	0	0
1000	1000	0	0	1000	1000	0	0
1100	1100	0	0	1100	1100	0	0
1200	1200	0	0	1200	1200	0	0
1300	1300	0	0	1300	1300	0	0
1337.26	1337.26	0	0	1337.26	1337.26	0	0



Note: The well path is shown in red. The wellbore is shown in black. The wellhead is shown in blue. The well completion is shown in green. The well completion date is shown in yellow. The well completion by is shown in purple. The well completion reason is shown in orange. The well completion type is shown in pink. The well completion status is shown in light blue.

True Vertical Depth (ft) vs. Easting (ft) vs. Northing (ft)
 Projection is TD: 13268 NAD, 30.28° Inc, 13268.00N NAD, 7337.34N NAD, 6317.26N VS
 Azimuth: 125.00° with reference 0.00 N, 0.00 E

Actual Wellpath Report

Long 408 S-1H AWP Proj:13268'
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REFERENCE WELL PATH IDENTIFICATION			
Operator	HG ENERGY	Slot	Slot #01
Area	Wezel County, WV	Well	Long 408 S-1H
Field	Wezel (UTM 17N NAD 27)	Wellbore	Long 408 S-1H AWP
Facility	Long 408 Pad		

REPORT SETUP INFORMATION			
Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 4.0.1
North Reference	Grid	User	
Scale	0.99961	Report Generated	4/7/2014 at 10:52:40 AM
Convergence at slot	0.21° East	Database/Source file	WA_PALong_408 S-1H_AWP.xml

	Local coordinates		Grid coordinates		Geographic coordinates		
	North(ft)	East(ft)	Easting(US ft)	Northing(US ft)	Latitude	Longitude	
Slot Location	0.00	0.00	1731579.70	14374541.60	39°35'00.496"N	80°40'35.195"W	
Facility Reference Pt			1731579.70	14374541.60	39°35'00.496"N	80°40'35.195"W	
Field Reference Pt			1731860.70	14374712.90	39°35'02.180"N	80°40'31.597"W	

WELLBORE IDENTIFICATION			
Calculation method	Minimum curvature	HAD 105 (RT) to Facility Vertical Datum	17,00ft
Horizontal Reference Pt	Slot	HAD 105 (RT) to Mean Sea Level	1358.50ft
Vertical Reference Pt	HAD 105 (RT)	HAD 105 (RT) to Mud Line at Slot (Slot #01)	17,00ft
M/D Reference Pt	HAD 105 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	125,00°

Actual Wellpath Report

Long 408 S-1H AWP Proj:13268'
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07/08/2016

OPERATOR		HG ENERGY		Slot	Slot #01
AREA		Weizel County, WY		Well	Long 408 S-1H
FIELD		Weizel (UTM 17N NAD 27)		Wellbore	Long 408 S-1H AWP
FACILITY		Long 408 Pad			

WELLPATH DATA (189 stations) ± = interpolated/extrapolated station															
MID	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	D1S	Build Rate	Turn Rate
101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
0.001	0.000	278.760	0.00	0.00	0.00	0.00	1731579.70	14374541.60	39°35'00.496"N	80°40'35.195"W	0.00	0.000	0.00	0.00	0.00
17.00	0.000	278.760	17.00	0.00	0.00	0.00	1731579.70	14374541.60	39°35'00.496"N	80°40'35.195"W	0.00	0.000	0.00	0.00	0.00
100.00	0.479	278.760	100.00	-0.31	0.05	-0.34	1731579.36	14374541.65	39°35'00.496"N	80°40'35.199"W	0.34	278.760	0.57	0.00	0.00
200.00	0.730	170.350	200.00	-0.23	-0.51	-0.64	1731579.07	14374541.09	39°35'00.491"N	80°40'35.203"W	0.82	231.029	0.99	0.26	-108.41
300.00	0.580	237.350	299.99	0.03	-1.41	-0.95	1731578.75	14374540.19	39°35'00.482"N	80°40'35.207"W	1.71	214.003	0.73	-0.15	67.00
400.00	0.570	305.390	399.99	-0.66	-1.40	-1.79	1731577.91	14374540.20	39°35'00.482"N	80°40'35.218"W	2.27	231.913	0.64	-0.01	68.04
500.00	0.660	306.930	499.98	-1.73	-0.77	-2.65	1731577.05	14374540.83	39°35'00.488"N	80°40'35.229"W	2.76	253.895	0.09	0.09	1.54
600.00	0.560	330.550	599.98	-2.75	0.01	-3.35	1731576.35	14374541.61	39°35'00.496"N	80°40'35.238"W	3.35	270.101	0.27	-0.10	23.62
700.00	0.670	332.110	699.97	-3.71	0.95	-3.87	1731575.84	14374542.55	39°35'00.505"N	80°40'35.245"W	3.98	283.779	0.11	0.11	1.56
800.00	0.710	354.540	799.96	-4.63	2.08	-4.20	1731575.50	14374543.68	39°35'00.517"N	80°40'35.249"W	4.69	296.372	0.27	0.04	22.43
900.00	0.330	324.870	899.96	-5.11	2.93	-4.12	1731575.28	14374545.13	39°35'00.525"N	80°40'35.252"W	5.31	303.555	0.45	-0.38	-29.67
1000.00	0.600	314.400	999.95	-6.09	3.54	-4.96	1731574.74	14374545.13	39°35'00.531"N	80°40'35.258"W	6.09	305.466	0.28	0.27	-10.47
1100.00	0.630	343.490	1099.95	-7.04	4.43	-5.49	1731574.21	14374546.03	39°35'00.540"N	80°40'35.265"W	7.06	308.878	0.31	0.03	29.09
1200.00	0.520	7.000	1173.95	-7.32	5.15	-5.57	1731574.13	14374546.75	39°35'00.547"N	80°40'35.266"W	7.59	312.780	0.35	-0.15	31.77
1300.00	0.410	20.860	1366.94	-8.10	6.67	-6.22	1731574.49	14374548.26	39°35'00.562"N	80°40'35.261"W	8.46	321.964	0.08	-0.06	7.18
1400.00	0.390	75.270	1408.94	-8.04	6.84	-5.02	1731574.68	14374548.44	39°35'00.564"N	80°40'35.259"W	8.49	323.719	0.87	-0.05	129.55
1452.00	0.710	71.360	1451.94	-7.79	6.97	-4.63	1731575.07	14374548.56	39°35'00.565"N	80°40'35.254"W	8.36	326.391	0.75	0.74	-9.09
1497.00	1.030	92.240	1496.93	-7.28	7.04	-3.96	1731575.74	14374548.64	39°35'00.566"N	80°40'35.245"W	8.08	330.631	0.99	0.71	-46.40
1542.00	1.730	90.510	1511.92	-6.38	7.02	-2.88	1731576.82	14374548.62	39°35'00.565"N	80°40'35.232"W	7.59	337.700	1.56	1.56	-3.84
1584.00	2.560	84.940	1583.89	-5.14	7.09	-1.31	1731578.39	14374548.69	39°35'00.566"N	80°40'35.212"W	7.21	349.539	2.04	1.98	-13.26
1626.00	3.160	83.940	1625.84	-3.55	7.30	0.78	1731580.48	14374548.90	39°35'00.568"N	80°40'35.185"W	7.34	6.064	1.43	1.43	-2.38
1669.00	3.430	82.070	1668.76	-1.72	7.60	3.23	1731582.93	14374549.20	39°35'00.571"N	80°40'35.154"W	8.26	23.007	0.68	0.63	-4.35
1713.00	3.520	87.640	1712.68	0.32	7.84	5.88	1731585.58	14374549.44	39°35'00.573"N	80°40'35.120"W	9.80	36.878	0.79	0.70	12.66
1756.00	3.850	88.610	1755.59	2.53	7.92	8.64	1731588.34	14374549.53	39°35'00.574"N	80°40'35.084"W	11.73	47.469	0.78	0.77	2.26
1800.00	4.150	87.650	1799.49	4.99	8.03	11.71	1731591.41	14374549.74	39°35'00.576"N	80°40'35.005"W	14.20	55.562	0.70	0.68	-2.18
1843.00	4.290	88.130	1842.37	7.48	8.15	14.84	1731594.53	14374549.86	39°35'00.577"N	80°40'34.967"W	16.93	61.238	0.14	0.12	-1.12
1884.00	4.260	87.460	1883.26	9.89	8.26	17.86	1731597.55	14374549.94	39°35'00.578"N	80°40'34.925"W	19.68	65.177	0.19	0.15	-1.63
1928.00	4.270	89.700	1927.14	12.53	8.34	21.13	1731600.82	14374549.94	39°35'00.578"N	80°40'34.879"W	22.72	68.456	0.38	0.02	5.09
1973.00	4.830	88.990	1972.00	15.42	8.38	24.70	1731604.39	14374549.98	39°35'00.578"N	80°40'34.830"W	26.09	71.250	1.25	1.24	-1.58
2018.00	5.100	88.850	2016.83	18.57	8.46	28.60	1731608.28	14374550.06	39°35'00.579"N	80°40'34.830"W	29.82	73.522	0.60	0.60	-0.31

Actual Wellpath Report

Long 408 S-1H AWP Proj:13268'
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REFERENCE WELLPATH IDENTIFICATION		Operator	Area	Field	Facility	Slot	Slot #01
		HG ENERGY	Wetzel County, WV	Wetzel (UTM 17N NAD 27)	Long 408 Pad	Well	Long 408 S-1H
						Wellbore	Long 408 S-1H AWB

WELLPATH DATA (189 stations)

Mid [ft]	Inchation [ft]	Azimuth [°]	TVD [ft]	Vert Seet [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Built Rate [°/100ft]	Turn Rate [°/100ft]
2063.00	4.470	93.580	2001.67	21.68	8.39	32.35	1731612.03	14374549.99	39°35'00.578"N	80°40'34.782"W	33.42	75.460	1.65	-1.40	10.51
2107.00	4.220	96.670	2105.55	24.57	8.09	35.66	1731615.35	14374549.69	39°35'00.575"N	80°40'34.739"W	36.57	77.213	0.78	-0.57	7.02
2150.00	3.770	98.050	2148.44	27.22	7.71	38.64	1731618.32	14374549.31	39°35'00.571"N	80°40'34.701"W	39.40	78.711	1.07	-1.05	3.21
2192.00	2.940	97.870	2190.37	29.41	7.37	41.07	1731620.55	14374548.77	39°35'00.567"N	80°40'34.670"W	41.73	79.825	1.98	-1.98	-0.43
2237.00	1.680	94.760	2235.33	31.01	7.16	42.87	1731622.55	14374548.76	39°35'00.565"N	80°40'34.647"W	43.46	80.520	2.81	-2.80	-6.91
2282.00	1.190	98.950	2280.32	32.00	7.03	43.99	1731623.67	14374548.63	39°35'00.564"N	80°40'34.633"W	44.55	80.919	1.11	-1.09	9.31
2326.00	1.450	99.720	2324.31	32.91	6.87	44.99	1731624.67	14374548.46	39°35'00.562"N	80°40'34.620"W	45.51	81.323	0.59	0.59	1.75
2368.00	1.350	97.840	2366.29	33.84	6.71	46.00	1731625.69	14374548.31	39°35'00.561"N	80°40'34.607"W	46.49	81.703	0.26	-0.24	-4.48
2412.00	1.520	92.050	2410.28	34.79	6.62	47.10	1731626.78	14374548.21	39°35'00.560"N	80°40'34.593"W	47.56	82.002	0.51	0.39	-13.16
2456.00	1.650	103.930	2454.26	35.87	6.44	48.30	1731627.98	14374548.04	39°35'00.558"N	80°40'34.578"W	48.73	82.400	0.80	0.30	27.00
2499.00	1.520	103.780	2497.25	36.98	6.16	49.45	1731629.13	14374547.76	39°35'00.555"N	80°40'34.563"W	49.83	82.901	0.30	-0.30	-0.55
2544.00	1.580	100.400	2542.23	38.16	5.90	50.64	1731630.32	14374547.50	39°35'00.552"N	80°40'34.548"W	50.99	83.349	0.24	0.13	-7.51
2587.00	1.520	111.520	2585.21	39.19	5.59	51.76	1731631.44	14374547.19	39°35'00.549"N	80°40'34.534"W	52.06	83.857	0.71	-0.14	25.86
2632.00	1.490	114.590	2630.20	40.35	5.13	52.84	1731632.52	14374546.72	39°35'00.545"N	80°40'34.520"W	53.09	84.459	0.19	-0.07	6.82
2674.00	1.590	111.200	2672.18	41.45	4.69	53.88	1731633.56	14374546.29	39°35'00.540"N	80°40'34.507"W	54.09	85.027	0.32	0.24	-8.07
2719.00	1.190	119.390	2717.17	42.52	4.23	54.87	1731634.55	14374545.83	39°35'00.536"N	80°40'34.494"W	55.04	85.588	0.99	-0.89	18.20
2763.00	1.070	124.680	2761.16	43.39	3.78	55.61	1731635.29	14374545.37	39°35'00.531"N	80°40'34.485"W	55.74	86.116	0.36	-0.27	12.02
2808.00	1.140	121.470	2806.15	44.25	3.30	56.34	1731636.01	14374544.90	39°35'00.527"N	80°40'34.476"W	56.43	86.645	0.21	0.16	-7.13
2852.00	0.930	115.660	2850.15	45.04	2.92	57.03	1731636.71	14374544.52	39°35'00.523"N	80°40'34.467"W	57.11	87.070	0.53	-0.48	-13.20
2895.00	0.900	135.700	2893.14	45.72	2.53	57.58	1731637.26	14374544.13	39°35'00.519"N	80°40'34.460"W	57.64	87.487	0.74	-0.07	46.60
2937.00	0.740	142.560	2935.14	46.30	2.08	57.98	1731637.65	14374543.67	39°35'00.514"N	80°40'34.455"W	58.01	87.950	0.45	-0.38	16.53
2980.00	0.780	119.840	2978.13	47.46	1.71	58.40	1731638.08	14374543.31	39°35'00.511"N	80°40'34.449"W	58.42	88.324	0.70	0.09	-52.84
3024.00	0.800	121.110	3022.13	48.04	1.40	58.92	1731638.80	14374543.00	39°35'00.508"N	80°40'34.443"W	58.94	88.638	0.06	0.05	2.89
3070.00	0.690	144.920	3068.12	48.04	1.01	59.36	1731639.03	14374542.61	39°35'00.504"N	80°40'34.437"W	59.36	89.026	0.71	-0.24	51.76
3113.00	0.770	119.580	3111.12	48.57	0.65	59.76	1731639.43	14374542.25	39°35'00.500"N	80°40'34.432"W	59.76	89.373	0.77	0.19	-58.93
3463.00	4.230	167.380	3460.75	60.45	-13.11	64.62	1731644.30	14374548.50	39°35'00.564"N	80°40'34.370"W	65.94	101.466	1.07	0.99	13.66
3506.00	3.870	167.140	3503.65	62.70	-16.07	65.29	1731644.97	14374545.54	39°35'00.560"N	80°40'34.362"W	67.24	103.827	0.84	-0.84	-0.56
3593.00	1.050	93.430	3590.57	65.56	-18.98	66.74	1731646.42	14374542.63	39°35'00.506"N	80°40'34.344"W	69.39	105.875	4.27	-3.24	-84.72
3638.00	0.710	99.860	3635.57	66.16	-19.05	67.43	1731647.10	14374542.55	39°35'00.505"N	80°40'34.335"W	70.07	105.779	0.79	-0.76	14.29
3682.00	0.570	351.080	3679.56	66.26	-18.88	67.66	1731647.34	14374542.72	39°35'00.507"N	80°40'34.332"W	70.25	105.594	2.37	-0.32	-247.23

Actual Wellpath Report

Long 408 S-1H AWP Proj:13268'
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REFERENCE WELLPATH IDENTIFICATION		Operator	Wetzel County, WV	Slot	Slot #01
Area	Wetzel	Wetzel County, WV	Well	Long 408 S-1H	
Field	Wetzel (UTM 17N NAD 27)		Wellbore	Long 408 S-1H AWP	
Facility	Long 408 Pad				

WELLPATH DATA (189 stations)

Stn	Incination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closest Dist [ft]	Closest Dir [°]	DLS [ft/100ft]	Build Rate [ft/100ft]	Turn Rate [°/100ft]
3770.00	1.020	336.560	3767.55	65.29	-17.73	67.28	1731646.04	14374523.87	39°35'00.318"N	80°40'34.337"W	69.58	104.765	0.56	0.51	-16.50
3858.00	1.600	330.650	3855.53	63.51	-15.94	66.37	1731646.04	14374525.66	39°35'00.336"N	80°40'34.348"W	68.26	103.508	0.68	0.66	-6.72
3946.00	1.770	327.640	3943.49	61.15	-13.72	65.04	1731644.72	14374527.88	39°35'00.358"N	80°40'34.365"W	66.47	101.915	0.72	0.19	-3.42
4031.00	1.560	315.890	4028.46	58.80	-11.78	63.53	1731643.21	14374529.82	39°35'00.377"N	80°40'34.384"W	64.62	100.509	0.47	-0.25	-13.82
4116.00	1.540	316.330	4113.43	56.55	-10.13	61.94	1731641.61	14374531.48	39°35'00.394"N	80°40'34.405"W	62.76	99.287	0.03	-0.02	-0.52
4204.00	1.780	286.930	4201.39	54.09	-8.87	59.81	1731639.49	14374533.73	39°35'00.406"N	80°40'34.432"W	60.47	98.439	0.99	0.27	-33.41
4294.00	1.690	272.860	4287.35	51.74	-8.42	57.27	1731638.80	14374535.18	39°35'00.411"N	80°40'34.464"W	57.89	98.366	0.50	-0.10	-16.36
4374.00	0.529	228.890	4371.34	50.60	-8.61	55.75	1731635.42	14374533.99	39°35'00.409"N	80°40'34.484"W	56.41	98.781	1.62	-1.39	-52.35
4462.00	0.270	97.520	4459.34	50.69	-8.90	55.65	1731635.33	14374532.70	39°35'00.406"N	80°40'34.485"W	56.36	99.087	0.83	-0.28	-149.28
4548.00	0.640	61.110	4545.33	51.08	-8.70	56.27	1731635.95	14374532.91	39°35'00.408"N	80°40'34.477"W	56.94	98.784	0.53	0.43	-42.34
4633.00	1.740	35.740	4630.31	51.31	-7.42	57.44	1731637.12	14374534.18	39°35'00.421"N	80°40'34.462"W	57.92	97.359	1.40	1.29	-29.85
4721.00	2.070	34.640	4718.26	51.32	-5.03	59.13	1731638.80	14374536.58	39°35'00.444"N	80°40'34.440"W	59.34	94.859	0.38	0.37	-1.25
4808.00	1.100	73.450	4805.23	51.83	-3.50	60.82	1731640.50	14374538.11	39°35'00.459"N	80°40'34.419"W	60.92	93.290	1.60	-1.11	-44.61
4897.00	1.640	73.300	4894.21	53.15	-2.89	62.86	1731642.53	14374538.71	39°35'00.465"N	80°40'34.393"W	62.92	93.102	2.00	0.26	-68.17
4986.00	1.870	133.970	4983.17	55.37	-3.53	65.12	1731644.80	14374538.07	39°35'00.459"N	80°40'34.364"W	65.22	92.629	0.61	0.61	-0.17
5074.00	3.470	185.240	5071.08	58.19	-7.19	66.01	1731645.68	14374534.42	39°35'00.423"N	80°40'34.352"W	66.40	96.213	3.02	1.82	55.99
5163.00	2.500	165.070	5159.96	61.09	-11.75	66.35	1731646.03	14374539.70	39°35'00.376"N	80°40'34.348"W	67.39	100.042	1.51	-1.09	-20.42
5252.00	2.290	345.860	5248.94	61.23	-11.90	66.42	1731646.09	14374533.27	39°35'00.377"N	80°40'34.347"W	67.48	100.159	5.38	-0.24	-20.42
5341.00	2.520	340.590	5337.86	58.30	-8.33	65.33	1731645.01	14374533.27	39°35'00.411"N	80°40'34.361"W	65.86	97.267	0.36	0.26	-5.92
5427.00	3.130	346.720	5423.76	55.01	-4.26	64.17	1731643.84	14374537.34	39°35'00.452"N	80°40'34.376"W	64.31	93.801	0.79	0.71	7.13
5513.00	2.430	324.130	5509.66	51.53	-0.50	62.56	1731640.00	14374544.33	39°35'00.521"N	80°40'34.425"W	60.39	87.411	0.19	0.16	2.62
5603.00	2.570	326.490	5599.57	47.85	2.73	60.33	1731638.42	14374546.74	39°35'00.545"N	80°40'34.445"W	58.97	84.999	1.54	-1.54	1.06
5690.00	1.230	327.410	5686.52	45.17	5.14	58.75	1731638.42	14374546.74	39°35'00.558"N	80°40'34.469"W	57.20	83.795	1.55	0.71	-53.97
5777.00	1.850	280.460	5775.49	43.03	6.18	56.86	1731630.54	14374547.78	39°35'00.563"N	80°40'34.508"W	54.19	82.651	0.53	0.48	6.15
5866.00	2.280	285.930	5862.43	40.05	6.93	53.75	1731633.43	14374548.53	39°35'00.567"N	80°40'34.527"W	52.77	81.980	2.90	-2.41	206.16
5952.00	0.650	103.230	5948.41	38.58	7.36	52.26	1731631.94	14374549.31	39°35'00.570"N	80°40'34.529"W	52.68	81.582	0.96	0.51	-164.00
6038.00	0.210	322.190	6034.41	38.26	7.71	52.11	1731631.39	14374550.35	39°35'00.581"N	80°40'34.534"W	52.45	80.596	0.52	0.27	34.07
6124.00	0.880	351.490	6120.40	37.34	8.75	51.71	1731631.31	14374551.99	39°35'00.597"N	80°40'34.537"W	52.57	78.592	0.46	0.45	4.27
6212.00	1.280	355.250	6208.39	36.25	10.40	51.53	1731631.29	14374553.06	39°35'00.607"N	80°40'34.537"W	52.74	77.446	0.85	0.83	7.43

Actual Wellpath Report
 Long 408 S-1H AWP Proj:13268'
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REFERENCE WELLPATH IDENTIFICATION

Operator	HG ENERGY	Slot	Slot #01
Area	Wetzel County, WV	Well	Long 408 S-1H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 408 S-1H AWP
Facility	Long 408 Pad		

WELLPATH DATA (189 stations)

ID	Inclination [°]	Azimuth [°]	EVD [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]	Braid Rate [°/100ft]	Turn Rate [°/100ft]
6299.00	1.660	342.500	6295.36	34.69	12.72	51.26	1731630.94	14374554.32	39°35'00.620"N	80°40'34.540"W	52.82	76.060	1.01	0.07	-55.27
6343.00	0.880	180.480	6339.35	34.38	12.99	51.07	1731630.75	14374554.59	39°35'00.623"N	80°40'34.542"W	52.70	75.724	5.71	-1.77	-368.23
6387.00	5.220	166.130	6383.28	36.08	10.71	51.55	1731631.23	14374552.31	39°35'00.600"N	80°40'34.536"W	52.65	78.260	9.94	9.86	-42.61
6429.00	8.910	167.340	6424.95	39.92	5.68	52.72	1731632.40	14374547.28	39°35'00.550"N	80°40'34.522"W	53.02	83.848	8.79	8.79	2.88
6473.00	11.360	168.110	6468.26	45.61	-1.88	54.36	1731634.04	14374539.72	39°35'00.475"N	80°40'34.501"W	54.39	91.985	5.58	5.57	1.75
6517.00	13.070	170.760	6511.27	52.24	-11.04	56.05	1731635.73	14374530.57	39°35'00.385"N	80°40'34.480"W	57.12	101.139	4.09	3.89	6.02
6561.00	15.920	171.360	6553.86	59.88	-21.91	57.75	1731637.43	14374519.69	39°35'00.277"N	80°40'34.459"W	61.77	110.779	6.49	6.48	1.36
6602.00	19.770	169.510	6592.88	68.71	-34.30	59.86	1731639.54	14374507.32	39°35'00.155"N	80°40'34.432"W	68.99	119.809	9.49	9.39	-4.51
6646.00	24.540	167.150	6633.62	80.80	-50.53	63.25	1731642.93	14374491.09	39°34'59.994"N	80°40'34.390"W	80.96	128.622	11.03	10.84	-5.36
6686.00	28.690	164.720	6669.38	94.35	-67.90	67.63	1731647.30	14374473.73	39°34'59.822"N	80°40'34.335"W	95.84	135.114	10.72	10.37	-6.08
6729.00	32.210	163.770	6706.44	111.23	-88.87	73.56	1731653.23	14374452.77	39°34'59.615"N	80°40'34.260"W	115.36	140.385	8.26	8.19	-2.21
6774.00	31.960	164.780	6744.57	129.73	-111.87	80.03	1731659.70	14374429.77	39°34'59.387"N	80°40'34.178"W	137.56	144.420	1.32	-0.56	2.24
6819.00	32.440	167.480	6782.65	147.78	-135.15	85.78	1731665.44	14374406.50	39°34'59.157"N	80°40'34.106"W	160.07	147.597	3.37	1.07	6.00
6862.00	32.850	169.960	6818.86	164.54	-157.89	90.31	1731669.98	14374383.77	39°34'58.932"N	80°40'34.049"W	181.90	150.231	3.25	0.95	5.77
6903.00	33.250	170.900	6853.22	180.23	-179.94	94.03	1731673.69	14374361.73	39°34'58.714"N	80°40'34.003"W	203.03	152.411	1.59	0.98	2.29
6946.00	33.630	172.050	6889.10	196.55	-203.38	97.54	1731677.20	14374338.30	39°34'58.482"N	80°40'33.959"W	225.56	154.378	1.72	0.88	2.67
6988.00	33.830	172.310	6924.03	212.40	-226.48	100.71	1731680.37	14374315.21	39°34'58.254"N	80°40'33.919"W	247.86	156.026	0.59	0.48	0.62
7033.00	34.680	169.470	6960.40	229.64	-250.93	104.64	1731684.30	14374290.77	39°34'58.012"N	80°40'33.870"W	271.87	157.363	4.11	1.93	-6.45
7075.00	37.370	163.070	6995.19	248.66	-275.45	110.65	1731690.33	14374266.26	39°34'57.770"N	80°40'33.794"W	296.86	158.109	10.75	6.26	-14.88
7120.00	41.250	155.080	7030.02	272.15	-302.09	120.70	1731700.36	14374239.63	39°34'57.506"N	80°40'33.667"W	325.31	158.220	13.18	8.62	-15.76
7162.00	44.640	151.030	7060.77	297.29	-327.66	133.49	1731713.14	14374214.07	39°34'57.253"N	80°40'33.505"W	353.81	157.833	11.38	8.07	-11.79
7204.00	48.390	146.910	7089.67	325.13	-353.74	149.22	1731728.86	14374188.00	39°34'56.995"N	80°40'33.306"W	383.93	157.128	11.41	8.93	-9.81
7248.00	52.290	143.700	7117.75	350.60	-381.57	168.52	1731748.15	14374160.18	39°34'56.719"N	80°40'33.060"W	417.12	156.172	10.49	8.26	-7.30
7291.00	56.260	140.850	7142.86	390.23	-409.15	189.89	1731769.51	14374132.61	39°34'56.445"N	80°40'32.789"W	451.07	155.104	10.68	9.23	-6.63
7336.00	59.270	138.620	7166.86	427.03	-438.18	214.49	1731794.11	14374103.59	39°34'56.158"N	80°40'32.476"W	487.86	153.918	7.89	6.69	-4.96
7381.00	60.570	136.920	7189.42	465.01	-467.01	240.66	1731820.27	14374074.77	39°34'55.872"N	80°40'32.143"W	525.38	152.737	4.36	2.89	-3.78
7426.00	65.430	134.200	7209.84	504.41	-495.61	268.74	1731848.33	14374046.18	39°34'55.588"N	80°40'31.786"W	563.78	151.532	12.07	10.80	-6.04
7468.00	69.420	132.150	7225.96	542.79	-522.13	297.02	1731876.60	14374019.67	39°34'55.325"N	80°40'31.426"W	600.70	150.366	10.51	9.50	-4.88
7514.00	70.750	131.650	7241.65	585.72	-551.02	329.21	1731908.78	14373990.80	39°34'55.038"N	80°40'31.016"W	641.87	149.143	3.07	2.89	-1.09
7556.00	72.330	131.440	7254.93	625.30	-577.44	359.03	1731938.59	14373964.39	39°34'54.776"N	80°40'30.636"W	679.95	148.128	3.79	3.76	-0.50

Actual Wellpath Report

Long 408 S-1H AWP Proj:13268'
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Office of Oil & Gas

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07/08/2016

REFERENCE WELLPATH IDENTIFICATION

Operator	HIG ENERGY	Slot	Slot #01
Area	Wetzel County, WV	Well	Long 408 S-1H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 408 S-1H AWP
Facility	Long 408 Pad		

WELLPATH DATA (189 stations)

MID (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)
12638.00	89.780	125.620	7337.51	5687.65	-3501.50	491.57	1736069.50	14371041.48	39°34'25.726"N	80°39'37.998"W	5695.14	127.939	0.98	0.07	-0.98
12728.00	89.780	123.310	7337.85	5777.64	-3552.43	4565.76	1736143.67	14370990.57	39°34'25.220"N	80°39'37.053"W	5784.98	127.885	2.57	0.00	-2.57
12816.00	89.880	122.920	7338.11	5865.60	-3600.50	4639.47	1736217.35	14370942.51	39°34'24.742"N	80°39'36.144"W	5872.67	127.814	0.46	0.11	-0.44
12905.00	89.850	122.830	7338.32	5954.53	-3648.81	4714.22	1736292.07	14370894.22	39°34'24.262"N	80°39'35.162"W	5961.35	127.740	0.11	-0.03	-0.16
12989.00	90.060	122.780	7338.39	6038.47	-3694.32	4784.82	1736362.64	14370848.73	39°34'23.810"N	80°39'34.262"W	6045.04	127.671	0.26	0.25	-0.06
13075.00	90.120	122.590	7338.25	6124.40	-3740.76	4857.20	1736435.60	14370802.31	39°34'23.348"N	80°39'33.340"W	6130.72	127.602	0.23	0.07	-0.22
13160.00	90.340	122.460	7337.91	6209.32	-3786.46	4928.87	1736506.64	14370756.62	39°34'22.894"N	80°39'32.427"W	6215.39	127.532	0.30	0.26	-0.15
13243.00	90.280	123.490	7337.46	6292.27	-3831.64	4998.50	1736576.24	14370711.47	39°34'22.445"N	80°39'31.540"W	6298.13	127.472	1.24	-0.07	-1.24
13268.00	90.280	123.490	7337.34	6317.26	-3845.43	5019.35	1736597.08	14370697.68	39°34'22.308"N	80°39'31.275"W	6323.07	127.457	0.00	0.00	0.00

TARGETS

Name	MID (ft)	TVD (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Shape
Long 408 S-1H LP		7300.00	-692.47	491.49	1732071.00	14373849.40	39°34'53.635"N	80°40'28.950"W	point
Long 408 S-1H PRBH		7306.30	-3857.41	5011.57	1736589.30	14370685.70	39°34'22.189"N	80°39'31.375"W	point

WELLPATH COMPOSITION - Ref Wellbore: Long 408 S-1H AWP RetWellbore: Long 408 S-1H AWP Proj:13268'

Start MID (ft)	End MID (ft)	Positional Uncertainty Model	Log Name/Comment	Wellbore
17.00	1174.00	Generic Gyro - northseeking (Standard)	DDG Gyro Surveys 17 1/2" (Correct)(100-1174)	Long 408 S-1H AWP
1174.00	6212.00	ISCVSA MWD, Rev. 2 (Standard)	Weatherford MWD Surveys 12 1/4" (1367-6212) Proj:6315'	Long 408 S-1H AWP
6212.00	13243.00	Navitrak (AT Curve Short Spaced)	BIH AT Curve 8 1/2" (6212)(6254-13243)	Long 408 S-1H AWP
13243.00	13268.00	Blind Drilling (sid)	Projection to bit	Long 408 S-1H AWP