

HG ENERGY

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

Slot: Slot #03
 Well: Long 409 S-3H
 Wellbore: Long 409 S-3H PWB

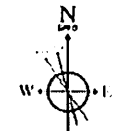
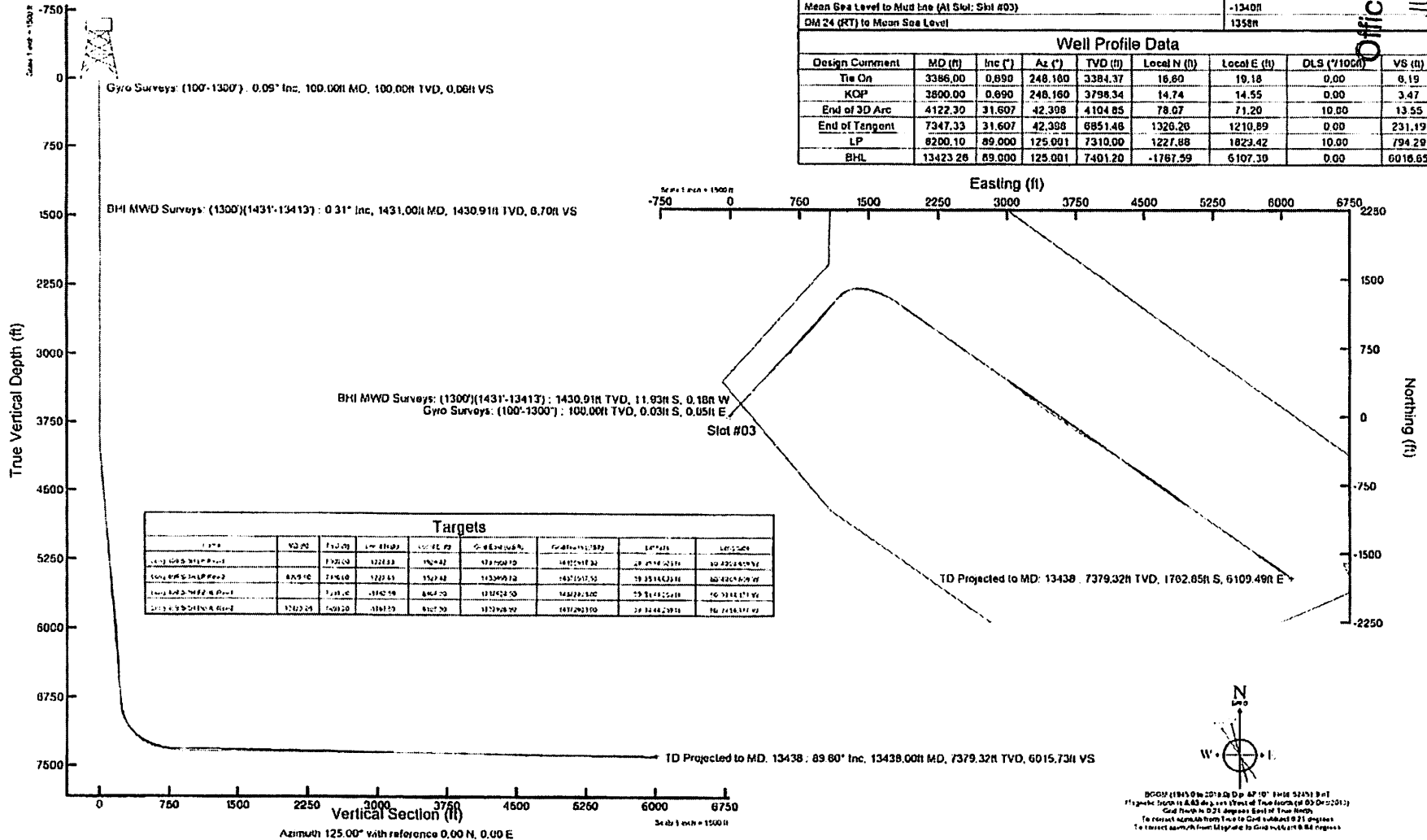


Received Office
 July 15 2016

Plot reference xref path is Long 409 S-3H PWP Rev. C.0	
True vertical depths are referenced to DM 24 (RT)	Gnd 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 #03): -1340 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: fnsjml on 08/Duc/2013

Location Information					
Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Long 409 Pad		1731660.700	14374712.900	39°35'02.160"N	-80°40'31.597"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude
Slot #03	-23.01	-38.72	1731622.000	14374669.900	39°35'01.954"N
DM 24 (RT) to Mud line (At Slot: Slot #03)				168	
Mean Sea Level to Mud line (At Slot: Slot #03)				-1340ft	
DM 24 (RT) to Mean Sea Level				1358ft	

Well Profile Data								
Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	3386.00	0.890	248.160	3384.37	16.80	19.18	0.00	6.19
KOP	3800.00	0.690	248.160	3798.34	14.74	14.55	0.00	3.47
End of 3D Arc	4122.30	31.607	42.308	4104.85	78.07	71.20	10.00	13.55
End of Tangent	7347.33	31.607	42.388	8851.48	1326.26	1210.89	0.00	231.19
LP	8200.10	89.000	125.001	7310.00	1227.88	1829.42	10.00	794.29
BHL	13423.26	89.000	125.001	7401.20	-1787.99	6107.30	0.00	6016.65



DGSU (1945) to 2013 (D) DP AP 10' 1416 52151 BHT
 11/24/16 10:00:11.843 11/24/16 10:00:11.843
 Grid North is 0.21 degrees East of True North
 To correct north from Magnetic to Grid add 0.21 degrees
 To correct north from Magnetic to True add 0.84 degrees

Actual Wellpath Report

Long 409 S-3H AWP Proj: 13438

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Office of Oil & Gas

JUL 05 2016

REFERENCE WELL PATH IDENTIFICATION

Operator	HG ENERGY	Slot	Slot #03
Area	Wetzel County, WV	Well	Long 409 S-3H
Field	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-3H AWB
Facility	Long 409 Pad		

REFERENCE POINT 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	06/Dec/2013 at 14:43
Convergence at slot	0.21° East	Database/Source file	WA_EasternUS/Long_409_S-3H_AWB.xml

WELLHEAD POINT COORDINATES

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-23.01	-38.72	1731822.00	14374689.90	39°35'01.954"N	80°40'32.092"W
Facility Reference Pt			1731860.70	14374712.90	39°35'02.180"N	80°40'31.592"W
Field Reference Pt			1731860.70	14374712.90	39°35'02.180"N	80°40'31.592"W

WELLHEAD 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 #03)	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-311 AWP Proj: 13438
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Client	IG ENERGY	Site	S-311	Shot	803
Area	Wetzel County, WV	Well	Wellbore	Shot	Long 409 S-311
Field	Wetzel (UTM 17N MAD 27)	Wellbore		Long	409 S-311 AWP
Facility	Long 409 Prod				

MD	Topo	Asimuth	YD	Vert	North	East	Grid	Grid	Latitude	Longitude	Course	Course	Dip
ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
132.06	0.790	231.150	3121.37	6.66	16.87	19.05	1731841.94	14374706.77	39°35'02.120°N	80°40'31.817°W	26.13	40.762	0.10
1380.00	0.690	248.166	3458.37	6.18	16.60	19.18	1731841.17	14374706.99	39°35'02.117°N	80°40'31.847°W	25.36	40.134	0.17
1460.00	0.450	250.000	3458.37	5.78	16.13	18.49	1731840.49	14374706.22	39°35'02.114°N	80°40'31.856°W	24.67	48.557	0.33
3523.00	0.000	151.166	3521.36	5.64	16.25	18.26	1731840.26	14374706.14	39°35'02.113°N	80°40'31.858°W	24.44	48.345	0.71
3530.00	0.070	116.966	3585.16	5.60	16.27	18.24	1731840.23	14374706.17	39°35'02.114°N	80°40'31.859°W	24.43	48.253	0.11
3530.00	0.010	22.180	3648.16	5.56	16.32	18.22	1731840.21	14374706.21	39°35'02.114°N	80°40'31.859°W	24.46	48.146	0.18
3712.00	0.040	51.350	3710.36	5.56	16.35	18.24	1731840.23	14374706.24	39°35'02.114°N	80°40'31.859°W	24.49	48.132	0.03
3725.00	0.010	254.050	3721.36	5.56	16.35	18.24	1731840.23	14374706.25	39°35'02.114°N	80°40'31.859°W	24.50	48.118	0.11
3839.00	1.940	31.970	3837.11	5.51	16.17	19.43	1731841.45	14374708.07	39°35'02.115°N	80°40'31.841°W	26.62	46.945	6.19
3871.00	7.610	30.480	3869.15	5.52	20.92	21.14	1731841.13	14374710.81	39°35'02.159°N	80°40'31.822°W	29.74	45.306	11.53
3902.00	11.090	30.490	3899.73	4.79	25.32	23.88	1731845.57	14374715.21	39°35'02.203°N	80°40'31.797°W	31.60	42.958	11.30
3913.00	14.600	30.490	3929.94	4.11	31.34	26.97	1731848.56	14374721.21	39°35'02.262°N	80°40'31.747°W	31.60	42.958	11.30
3964.00	17.270	31.720	3960.67	4.69	38.80	31.74	1731851.72	14374728.77	39°35'02.317°N	80°40'31.685°W	30.20	40.311	13.75
3986.00	20.160	37.590	3989.97	4.83	47.09	37.69	1731859.64	14374738.77	39°35'02.418°N	80°40'31.607°W	30.20	39.217	8.89
4038.00	22.620	40.970	4019.75	4.73	56.15	45.08	1731867.06	14374746.02	39°35'02.507°N	80°40'31.514°W	32.00	38.645	9.41
4039.00	25.020	45.010	4048.11	6.49	65.28	53.63	1731875.61	14374755.16	39°35'02.607°N	80°40'31.405°W	34.49	38.762	8.03
4090.00	27.130	48.860	4075.93	9.33	74.60	63.63	1731885.69	14374764.47	39°35'02.689°N	80°40'31.276°W	38.05	40.464	9.23
4122.00	29.260	48.550	4104.64	13.09	81.30	75.21	1731897.18	14374774.45	39°35'02.781°N	80°40'31.128°W	41.18	41.641	7.66
4154.00	30.350	48.180	4131.73	16.93	85.14	82.28	1731909.25	14374785.00	39°35'02.891°N	80°40'30.973°W	42.91	42.553	2.91
4281.00	31.170	41.560	4240.82	27.26	141.77	132.55	1731929.20	14374807.30	39°35'03.100°N	80°40'30.679°W	49.108	43.188	1.82
4314.00	31.440	42.350	4291.73	31.17	141.77	132.55	1731934.49	14374821.61	39°35'03.150°N	80°40'30.591°W	49.108	42.974	1.85
4406.00	31.590	42.740	4347.59	35.48	189.99	176.35	1731976.08	14374855.63	39°35'03.187°N	80°40'30.116°W	52.58	42.344	0.67
4409.00	31.400	41.950	4385.82	22.94	117.44	110.24	1731992.28	14374879.81	39°35'03.825°N	80°40'29.831°W	52.58	42.344	0.67
4532.00	31.300	40.110	4455.06	41.11	238.99	219.98	1732020.37	14375004.06	39°35'04.604°N	80°40'29.272°W	52.01	42.627	0.67
4609.00	31.430	45.690	4569.70	43.80	264.67	241.24	1732064.14	14375054.46	39°35'04.507°N	80°40'28.999°W	358.11	42.348	2.10
4690.00	31.340	41.670	4639.48	48.89	289.65	262.50	1732081.49	14374979.43	39°35'04.807°N	80°40'28.727°W	359.90	42.185	1.92
4722.00	31.280	41.990	4617.31	53.35	311.65	284.75	1732126.64	14375005.43	39°35'05.043°N	80°40'28.441°W	423.63	42.344	1.92
4786.00	30.110	42.440	4672.29	58.61	337.53	307.19	1732166.61	14375022.29	39°35'05.278°N	80°40'28.153°W	456.39	42.306	1.96
4849.00	29.340	41.410	4726.94	61.82	360.84	328.12	1732190.00	14375030.99	39°35'05.508°N	80°40'27.885°W	481.72	42.282	1.74
4911.00	30.470	41.170	4780.69	65.75	381.69	348.93	1732170.79	14375031.44	39°35'05.733°N	80°40'27.618°W	518.61	42.283	2.31
4975.00	30.550	45.020	4858.83	70.88	407.03	371.54	1732190.79	14375036.77	39°35'05.963°N	80°40'27.328°W	518.61	42.283	1.47
5018.00	29.140	44.530	4890.47	76.21	429.28	393.62	1732215.46	14375119.01	39°35'06.182°N	80°40'27.015°W	583.42	42.319	2.27
5101.00	29.350	44.410	4945.44	81.27	451.24	415.18	1732237.02	14375140.97	39°35'06.398°N	80°40'26.769°W	611.19	42.617	0.35
5163.00	31.270	44.720	4988.82	86.50	473.71	432.20	1732259.12	14375163.42	39°35'06.620°N	80°40'26.485°W	644.69	42.711	3.91
5227.00	31.990	43.770	5055.17	91.91	491.93	460.86	1732282.68	14375187.64	39°35'06.858°N	80°40'26.181°W	678.18	42.786	0.82
5290.00	31.760	42.210	5106.67	96.55	522.26	481.86	1732305.56	14375211.96	39°35'07.096°N	80°40'25.882°W	711.74	42.786	1.34
5353.00	31.080	41.930	5160.43	100.43	546.75	505.44	1732327.21	14375236.43	39°35'07.337°N	80°40'25.612°W	741.56	42.752	1.30
5415.00	30.610	40.940	5213.66	103.83	570.69	529.10	1732348.15	14375260.36	39°35'07.581°N	80°40'25.343°W	776.36	42.686	0.83
5428.00	30.620	41.550	5267.82	107.53	593.88	542.58	1732369.41	14375284.49	39°35'07.817°N	80°40'25.072°W	808.45	42.629	0.51
5485.00	30.410	46.200	5326.59	111.66	617.97	570.10	1732391.87	14375308.73	39°35'08.057°N	80°40'24.807°W	841.95	42.641	2.68
5608.00	30.710	47.820	5430.34	124.33	645.81	616.58	1732418.24	14375333.45	39°35'08.297°N	80°40'24.547°W	874.50	42.888	1.39
5712.00	47.050	54.850	5485.94	131.34	683.34	640.56	1732462.31	14375375.47	39°35'08.540°N	80°40'24.287°W	918.45	43.045	0.73
5795.00	31.760	37.620	5519.91	135.44	709.86	662.39	1732484.13	14375399.88	39°35'08.785°N	80°40'24.020°W	970.90	43.019	7.99

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ACTUAL WELLPATH DATA (228 stations)

Operator: HG ENERGY
 Area: Wetzel County, WV
 Field: Wetzel (ETM ETN NAD 27)
 Facility: Long 409 Prod

Actual Wellpath Report
 Long 409 S-3H AWP Prof: 13438
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Well ID	Elevation [ft]	Acq. Hgt [ft]	YVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [ft US 83]	Grid North [ft US 83]	Latitude	Longitude	Course Dist [ft]	Course Btr [ft]	UTS [ft]
5858.00	32.810	38.370	5593.12	117.20	736.17	631.10	1732501.81	14375425.98	39°35'09.2077N	80°40'21.5347W	1008.43	42.851	1.78
5921.00	12.680	45.660	5636.18	141.35	761.65	705.87	1732537.60	14375451.25	39°35'09.4567N	80°40'21.0427W	1008.43	42.823	6.20
5984.00	12.030	51.030	5699.24	149.19	784.23	731.25	1732552.96	14375473.82	39°35'09.6787N	80°40'22.7177W	1072.20	42.998	4.60
6017.00	31.160	48.330	5752.75	157.64	805.75	756.63	1732578.33	14375495.33	39°35'09.8907N	80°40'22.3917W	1102.31	43.199	3.25
6110.00	31.130	48.270	5806.61	162.89	829.10	779.39	1732601.77	14375518.67	39°35'10.1207N	80°40'22.1007W	1117.92	43.370	6.68
6171.00	29.250	56.250	5861.01	161.73	854.02	799.08	1732620.77	14375543.58	39°35'10.3657N	80°40'21.8477W	1169.56	43.677	4.56
6235.00	28.330	48.480	5916.22	168.56	876.35	819.40	1732641.08	14375565.91	39°35'10.5857N	80°40'21.5867W	1199.76	43.017	9.42
6300.00	28.560	50.400	5972.55	176.16	896.17	842.56	1732664.23	14375585.72	39°35'10.7807N	80°40'21.2907W	1230.05	43.214	1.47
6363.00	31.430	41.010	6028.04	181.72	916.96	861.90	1732685.57	14375610.37	39°35'10.9857N	80°40'21.0167W	1259.82	43.294	7.08
6426.00	31.430	39.370	6082.73	184.54	940.84	884.06	1732705.71	14375636.47	39°35'11.2077N	80°40'20.7577W	1291.02	43.218	5.51
6488.00	32.130	40.920	6135.38	187.48	965.86	905.12	1732726.82	14375665.28	39°35'11.4677N	80°40'20.4877W	1323.72	43.142	1.96
6555.00	32.130	40.420	6189.46	190.86	991.82	927.48	1732749.82	14375694.33	39°35'11.7237N	80°40'20.2017W	1357.91	43.060	0.42
6616.00	42.110	41.280	6243.61	194.34	1017.64	940.80	1732771.42	14375720.14	39°35'11.9777N	80°40'19.9147W	1392.01	43.025	0.78
6679.00	33.400	41.650	6298.61	198.17	1041.15	972.14	1732791.96	14375747.64	39°35'12.2287N	80°40'19.6257W	1426.05	42.988	1.88
6742.00	33.250	39.940	6349.28	204.57	1069.30	994.91	1732812.55	14375778.78	39°35'12.4867N	80°40'19.3357W	1469.59	42.917	1.45
6806.00	33.240	39.460	6402.79	204.57	1096.31	1017.38	1732838.98	14375815.78	39°35'12.7527N	80°40'19.0477W	1495.64	42.861	0.46
6869.00	33.350	38.380	6455.84	206.93	1121.21	1039.12	1732862.71	14375851.69	39°35'13.0177N	80°40'18.7697W	1530.17	42.772	0.95
6931.00	33.810	38.260	6508.76	208.99	1151.00	1061.07	1732882.65	14375880.45	39°35'13.2917N	80°40'18.4877W	1565.46	42.722	0.20
6995.00	33.850	38.490	6561.09	211.06	1178.49	1082.85	1732904.42	14375910.91	39°35'13.5627N	80°40'18.2077W	1606.44	42.598	0.20
7059.00	34.430	38.760	6613.25	213.30	1206.11	1104.92	1732926.49	14375945.51	39°35'13.8147N	80°40'17.9247W	1645.51	42.493	0.95
7122.00	34.560	42.170	6665.22	216.65	1231.18	1128.01	1732949.56	14375972.60	39°35'14.1017N	80°40'17.6287W	1671.27	42.350	3.06
7185.00	34.330	43.150	6717.25	221.47	1259.28	1152.12	1732973.67	14375998.68	39°35'14.3587N	80°40'17.3197W	1706.80	42.186	1.03
7248.00	34.310	41.600	6769.25	227.01	1284.87	1176.80	1732998.31	14376024.56	39°35'14.6107N	80°40'17.0027W	1742.34	42.186	1.16
7311.00	34.270	45.250	6821.27	231.14	1310.95	1201.90	1733023.45	14376050.42	39°35'14.8587N	80°40'16.6817W	1777.85	42.186	0.62
7344.00	34.340	46.430	6873.71	236.53	1332.59	1224.84	1733046.36	14376076.92	39°35'14.9817N	80°40'16.3427W	1795.85	42.508	2.12
7375.00	34.530	50.000	6874.10	240.67	1334.64	1228.33	1733049.85	14376082.02	39°35'15.1007N	80°40'16.3427W	1813.85	42.625	6.30
7407.00	34.960	54.460	6900.40	246.07	1345.80	1232.74	1733064.25	14376093.17	39°35'15.2107N	80°40'16.1577W	1831.81	42.720	8.05
7439.00	35.420	59.300	6925.56	252.96	1355.86	1238.19	1733079.69	14376104.52	39°35'15.3087N	80°40'15.9607W	1849.70	42.801	8.97
7470.00	35.540	62.900	6951.80	260.76	1364.66	1241.87	1733099.37	14376116.03	39°35'15.3957N	80°40'15.7597W	1864.81	43.029	4.90
7502.00	35.980	64.230	6977.77	269.57	1373.11	1250.55	1733112.04	14376128.48	39°35'15.4787N	80°40'15.5337W	1884.40	43.225	4.30
7534.00	36.170	69.700	7002.83	279.23	1380.25	1257.34	1733128.82	14376140.91	39°35'15.5487N	80°40'15.3117W	1907.11	43.416	10.41
7565.00	36.710	73.780	7028.57	290.60	1386.30	1262.39	1733146.87	14376153.56	39°35'15.6067N	80°40'15.1007W	1917.87	44.175	7.81
7597.00	38.090	77.910	7053.89	301.33	1390.91	1264.23	1733165.72	14376166.30	39°35'15.6527N	80°40'14.8597W	1934.35	44.022	8.86
7629.00	39.160	81.250	7078.95	312.44	1394.37	1264.91	1733185.40	14376178.82	39°35'15.6867N	80°40'14.6077W	1950.61	44.306	8.07
7660.00	41.240	86.150	7102.60	322.56	1396.57	1261.91	1733205.33	14376191.92	39°35'15.7067N	80°40'14.3527W	1966.08	44.718	11.00
7692.00	43.170	89.560	7126.31	330.70	1397.56	1255.34	1733226.79	14376204.66	39°35'15.7137N	80°40'14.0787W	1981.82	45.161	9.16
7723.00	46.190	93.870	7148.35	339.69	1398.69	1247.12	1733248.56	14376218.01	39°35'15.7067N	80°40'13.8007W	1996.85	45.617	13.72
7755.00	48.760	96.010	7169.58	348.52	1394.66	1234.61	1733272.01	14376232.02	39°35'15.6857N	80°40'13.5007W	2012.30	46.126	9.48
7786.00	52.020	99.670	7189.75	357.99	1391.59	1214.76	1733295.68	14376246.91	39°35'15.6487N	80°40'13.1987W	2027.17	46.656	13.90
7817.00	51.930	100.640	7208.70	367.38	1387.03	1208.61	1733320.05	14376262.38	39°35'15.6087N	80°40'12.8877W	2041.95	47.215	6.62
7849.00	56.400	105.440	7226.70	376.38	1381.09	1208.61	1733345.38	14376278.44	39°35'15.5457N	80°40'12.5617W	2056.58	47.820	14.54
7880.00	58.680	107.990	7243.54	381.21	1373.56	1208.61	1733370.62	14376294.77	39°35'15.3817N	80°40'12.2117W	2070.45	48.440	10.11
7912.00	62.110	110.390	7259.14	387.98	1364.40	1208.61	1733395.88	14376311.33	39°35'15.3127N	80°40'11.9067W	2084.18	49.107	12.60
7943.00	65.030	110.720	7272.94	393.86	1351.66	1201.48	1733422.56	14376328.41	39°35'15.2447N	80°40'11.5757W	2097.58	49.713	9.11
7975.00	68.460	114.130	7285.99	399.56	1343.39	1208.62	1733449.98	14376346.26	39°35'15.1727N	80°40'11.2297W	2111.18	50.482	15.01

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HEALTH, SAFETY AND ENVIRONMENTAL SERVICES

Operator	HIG ENERGY
Location	Wellcat County, WV
Field	Wellcat (TMI 17N NAD 27)
Facility	Long 409 Pad

WELLPATH DATA (228 stations)

MD [ft]	Horizontal [ft]	Vertical [ft]	YVD [ft]	North [ft]	East [ft]	Grid East [ft]	Grid North [ft]	Longitude	Latitude	Client Dist [ft]	Course Dist [ft]	DLS [ft/1000ft]
8506.00	71.860	7296.11	592.28	1150.98	1682.43	173170.36	1437620.36	39°31'5.04"N	79°35'14.91"W	212.81	51.93	12.01
8038.00	71.880	7305.21	622.63	1317.24	1709.19	173350.52	1437606.63	39°31'14.91"N	79°35'14.91"W	216.75	51.94	10.72
8669.00	71.850	7312.47	652.50	1303.39	1707.19	173350.52	1437592.78	39°31'14.91"N	79°35'14.91"W	219.46	51.94	8.96
8101.00	80.830	7318.38	683.74	1288.33	1706.80	173355.82	1437597.74	39°31'14.91"N	79°35'14.91"W	215.48	51.99	11.38
8133.00	83.160	7322.76	715.13	1272.42	1704.21	173355.82	1437596.82	39°31'14.91"N	79°35'14.91"W	217.19	51.99	8.86
8165.00	85.720	7325.77	747.13	1255.65	1701.29	173361.29	1437594.96	39°31'14.91"N	79°35'14.91"W	218.55	51.970	9.60
8197.00	85.850	7328.13	779.02	1238.19	1698.18	173369.29	1437592.61	39°31'14.91"N	79°35'14.91"W	219.61	51.942	2.28
8228.00	85.970	7330.34	809.04	1220.86	1693.61	173366.89	1437591.28	39°31'13.95"N	79°35'13.95"W	2211.20	56.487	1.78
8260.00	86.150	7332.54	841.87	1202.70	1689.87	173369.13	1437589.13	39°31'13.95"N	79°35'13.95"W	2221.26	57.251	0.58
8292.00	87.220	7334.25	873.82	1184.58	1686.18	173371.41	1437587.01	39°31'13.95"N	79°35'13.95"W	2232.79	58.066	4.94
8323.00	88.690	7335.16	904.80	1167.28	1681.69	173373.14	1437585.82	39°31'13.95"N	79°35'13.95"W	2248.60	58.272	5.07
8386.00	88.900	7336.39	937.74	1153.62	1674.74	173375.93	1437582.47	39°31'13.95"N	79°35'13.95"W	2276.70	60.135	1.41
8449.00	88.890	7337.61	1009.72	1097.87	1663.22	173378.21	1437578.34	39°31'12.86"N	79°35'12.86"W	2303.23	61.559	4.49
8512.00	89.420	7338.53	1093.70	1060.92	1658.03	173389.21	1437570.41	39°31'12.86"N	79°35'12.86"W	2331.19	62.954	2.04
8575.00	89.420	7339.17	1156.67	1024.33	1652.88	173391.74	1437571.83	39°31'11.90"N	79°35'11.90"W	2361.79	64.324	0.44
8639.00	89.830	7339.83	1219.63	985.42	1648.69	173400.64	1437567.93	39°31'11.90"N	79°35'11.90"W	2391.76	65.665	0.69
8701.00	89.350	7340.53	1282.59	947.53	1642.36	173405.36	1437564.08	39°31'11.90"N	79°35'11.90"W	2422.26	66.972	0.83
8765.00	89.300	7341.23	1346.57	909.72	1638.85	173410.55	1437559.26	39°31'10.86"N	79°35'10.86"W	2453.57	68.255	1.39
8828.00	89.350	7341.93	1409.56	873.16	1634.24	173415.24	1437556.72	39°31'10.86"N	79°35'10.86"W	2490.25	69.474	1.05
8891.00	89.420	7342.60	1472.55	836.47	1629.36	173420.43	1437552.61	39°31'10.86"N	79°35'10.86"W	2525.88	70.661	1.51
8955.00	89.180	7343.23	1536.54	798.82	1624.11	173425.15	1437548.40	39°31'09.80"N	79°35'09.80"W	2562.78	71.838	0.18
9018.00	89.880	7343.88	1599.53	762.58	1618.64	173430.66	1437542.19	39°31'09.80"N	79°35'09.80"W	2600.94	72.951	2.80
9081.00	89.180	7344.56	1662.52	727.40	1613.99	173435.90	1437537.02	39°31'09.80"N	79°35'09.80"W	2641.91	74.013	0.80
9144.00	89.420	7345.22	1725.48	691.08	1609.72	173441.20	1437532.71	39°31'08.76"N	79°35'08.76"W	2682.79	75.028	2.10
9207.00	89.450	7345.84	1788.44	655.52	1604.39	173446.35	1437528.16	39°31'08.76"N	79°35'08.76"W	2723.15	76.016	2.94
9270.00	89.450	7346.46	1851.44	622.81	1599.20	173451.24	1437523.49	39°31'07.62"N	79°35'07.62"W	2763.30	77.077	0.91
9333.00	89.510	7347.03	1914.41	589.24	1593.88	173456.50	1437517.91	39°31'07.62"N	79°35'07.62"W	2803.43	78.093	1.77
9396.00	89.600	7347.57	1977.42	549.73	1588.22	173461.92	1437512.89	39°31'06.53"N	79°35'06.53"W	2843.79	79.188	2.24
9459.00	89.510	7348.13	2040.41	514.51	1581.15	173467.03	1437507.21	39°31'06.53"N	79°35'06.53"W	2884.20	79.271	2.02
9522.00	89.510	7348.65	2103.40	478.47	1573.81	173472.67	1437501.18	39°31'06.53"N	79°35'06.53"W	2924.81	80.340	1.89
9585.00	89.510	7349.16	2166.39	441.29	1566.66	173477.51	1437494.51	39°31'05.28"N	79°35'05.28"W	2965.45	81.503	0.86
9648.00	89.880	7349.61	2229.29	404.54	1559.22	173482.14	1437487.28	39°31'05.28"N	79°35'05.28"W	3006.17	82.566	6.59
9711.00	89.880	7350.24	2292.94	369.59	1551.65	173487.43	1437480.35	39°31'05.28"N	79°35'05.28"W	3047.13	83.561	2.87
9774.00	89.570	7350.91	2355.68	329.04	1543.85	173492.61	1437472.81	39°31'05.28"N	79°35'05.28"W	3088.28	84.106	5.75
9837.00	89.080	7351.63	2419.63	281.51	1535.91	173497.70	1437464.30	39°31'04.24"N	79°35'04.24"W	3129.31	84.895	1.98
9900.00	89.410	7352.30	2483.58	241.09	1527.11	173502.86	1437454.98	39°31'04.24"N	79°35'04.24"W	3170.31	85.659	1.55
9963.00	89.600	7352.92	2548.52	205.32	1517.27	173507.60	1437445.14	39°31'03.86"N	79°35'03.86"W	3211.37	86.387	1.58
10026.00	88.850	7353.50	2609.50	168.62	1505.92	173512.39	1437434.96	39°31'03.86"N	79°35'03.86"W	3252.75	87.078	6.56
10090.00	89.140	7354.04	2672.45	131.52	1493.55	173517.33	1437423.37	39°31'03.86"N	79°35'03.86"W	3294.49	87.755	10.09
10153.00	88.150	7354.67	2735.27	91.62	1480.30	173522.36	1437411.48	39°31'02.73"N	79°35'02.73"W	3336.61	88.458	0.92
10218.00	88.150	7355.24	2798.21	54.20	1463.93	173527.57	1437400.00	39°31'02.73"N	79°35'02.73"W	3379.15	89.101	9.43
10281.00	88.650	7355.80	2861.08	20.86	1450.25	173532.97	1437387.75	39°31'02.03"N	79°35'02.03"W	3421.41	89.659	5.21
10344.00	90.030	7356.32	2923.98	-12.47	1438.10	173538.40	1437372.44	39°31'01.70"N	79°35'01.70"W	3464.15	90.201	5.55
10407.00	90.030	7356.79	2986.97	-48.91	1426.12	173543.25	1437356.10	39°31'01.70"N	79°35'01.70"W	3507.30	90.776	5.73
10470.00	90.950	7357.25	3049.90	-87.32	1414.36	173548.66	1437338.66	39°31'00.95"N	79°35'00.95"W	3550.92	91.346	1.95

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Operator HG ENERGY	Site Long 409 S-3H
Area Wetzel County, WV	Well Long 409 S-3H AWP
Field Wetzel (UTM 17N NAD 27)	Wellbore Long 409 S-3H AWP
Facility Long 409 Pad	

WELLPATH DATA (228 stations)											
ID	Induction	Actuach	TVD	VertSet	North	East	Grid East	Grid North	Latitude	Longitude	Chouse Dir
[I]	[I]	[F]	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]	[US ft]	[US ft]	[ft]
13476.00	89.720	125.610	7378.93	5953.74	-1727.55	6058.53	1337838.15	14372951.02	39°34'41.657"N	80°57'14.795"W	6160.01
13411.00	89.600	124.120	7479.15	5990.74	-1748.76	6088.55	14372908.46	14372941.81	39°34'44.446"N	80°49'14.412"W	6133.01
13438.00	89.600	124.120	7379.12	6013.73	-1762.85	6109.49	14372927.71	14372927.71	39°34'44.308"N	80°39'14.149"W	6358.71

TARGETS											
Name	ID	TVD	North	East	Grid East	Grid North	Latitude	Longitude	Chouse Dir	Shape	
	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]	[US ft]	[US ft]	[ft]		
Long 409 S-3H L1F-Rev-1		7100.00	1227.85	1829.42	1734650.70	14375917.20	39°35'14.023"N	80°49'08.607"W	point		
Long 409 S-3H L1F-Rev-2		7310.00	1227.83	1829.42	1734650.70	14375917.20	39°35'14.023"N	80°49'08.607"W	point		
Long 409 S-3H P00H-Rev-1		7201.20	-1767.59	6107.30	1734926.90	14372921.00	39°34'44.259"N	80°39'14.177"W	point		
Long 409 S-3H P00H-Rev-2		7401.20	-1767.59	6107.30	1734926.90	14372921.00	39°34'44.259"N	80°39'14.177"W	point		

WELLPATH COMPOSITION - Ref Wellbore: Long 409 S-3H AWP Ref Wellpath: Long 409 S-3H AWP Proj: 13438											
Start MID	End MID	Positional Uncertainty Model	Log Name/Comment	Wellbore							
[ft]	[ft]										
18.00	1300.00	Constant Error - nonlocking (Standard)	Geo Survey 1 (1300)	Long 409 S-3H AWP							
1300.00	1386.00	ISCVSA AWP, Rev 2 (Standard)	BH 12.1/2" AFS Survey 1 (1300) (1317-1386)	Long 409 S-3H AWP							
1386.00	13413.00	NavTeq (Mag Cur)	BH A/C Curve 8 1/2" Section (1460-13413)	Long 409 S-3H AWP							
13413.00	13438.00	Blind Drilling (nd)	Projection to bit	Long 409 S-3H AWP							



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REFERENCE WELLPATH IDENTIFICATION			
Operator	HG ENERGY	Slot	Slot #03
Area	Wetzel County, WV	Well	Long 409 S-3H
Fidht	Wetzel (UTM 17N NAD 27)	Wellbore	Long 409 S-3H AWB
Facility	Long 409 Pad		

COMMENTS

Wellpath general comments
Gyro Surveys: (100'-1300')
BHI MWD Surveys: (1300')(1431'-13413')
TD Projected to MD: 13438