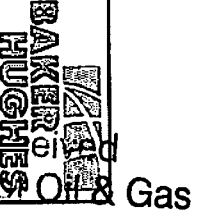


HG ENERGY

Location: Wetzell County, WV
 Field: Wetzell (UTM 17N M4D 27)
 Facility: Long 408 Pad

Well: Long 408 S-3H
 Wellbore: Long 408 S-3H PWB



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Location Information

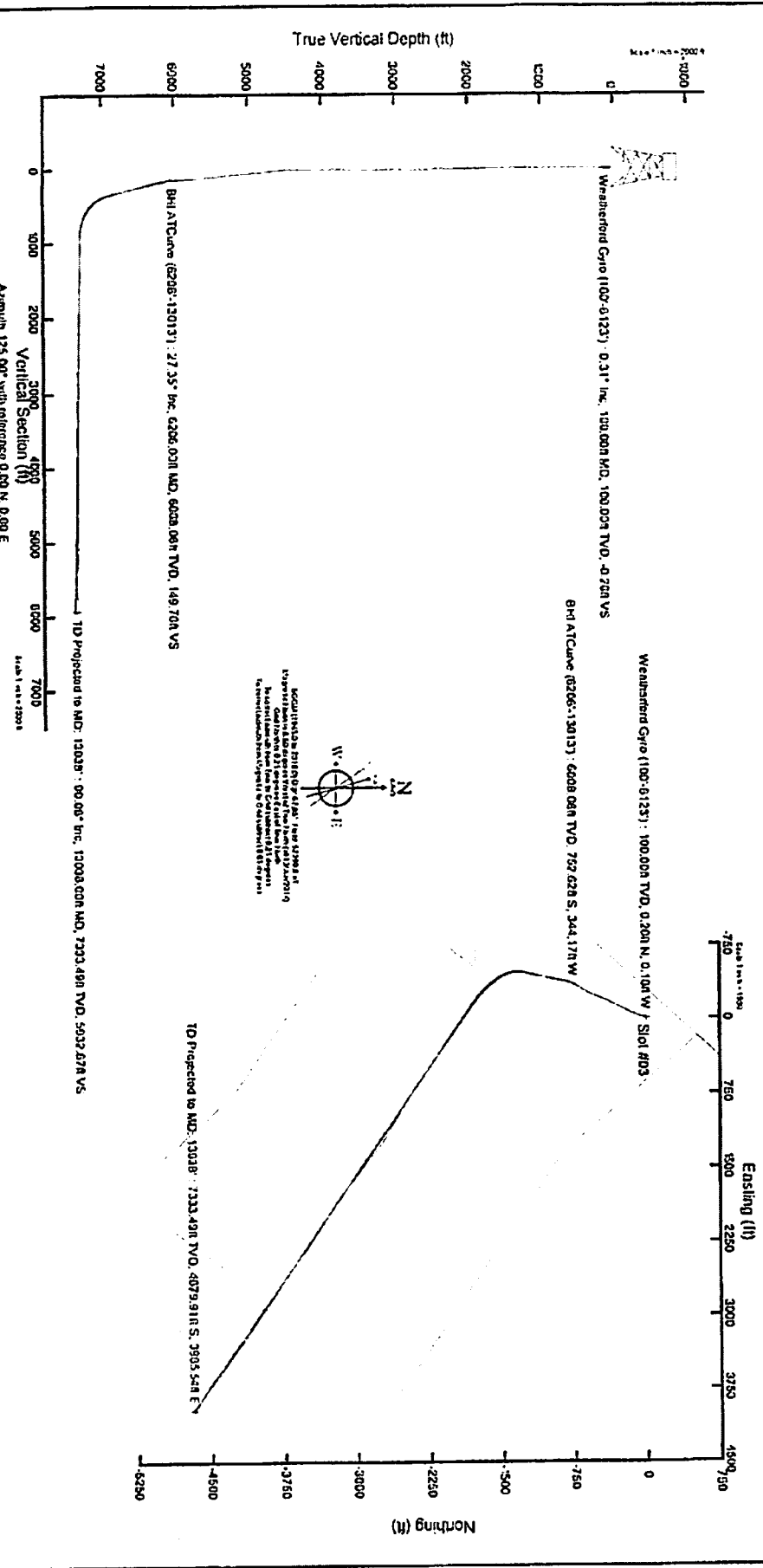
Facility Name	Long 408 Pad	Grid East (US In)	1731500.700	Grid North (US In)	1437451.800	Latitude	39°35'00.496" N	Longitude	80°47'35.165" W
Grid East (US In)	1731500.700	Grid North (US In)	1437451.800	Latitude	39°35'00.496" N	Longitude	80°47'35.165" W		
Grid East (US In)	1731500.700	Grid North (US In)	1437451.800	Latitude	39°35'00.496" N	Longitude	80°47'35.165" W		
Grid East (US In)	1731500.700	Grid North (US In)	1437451.800	Latitude	39°35'00.496" N	Longitude	80°47'35.165" W		

Well Profile Data

Depth (ft)	MD (ft)	ME (ft)	AE (ft)	TVD (ft)	Locker (ft)	Locale (ft)	DLG (ft/100ft)	VS (ft)
0	6122.00	28.820	289.850	5934.64	-716.50	-325.12	2.33	14.00
100	6204.79	29.820	289.850	6008.85	-737.56	-344.54	0.00	14.00
200	6312.14	32.884	192.211	6110.20	-689.89	-365.06	8.00	16.00
300	7355.96	32.884	192.211	6932.77	-1300.68	-472.88	0.00	35.78
400	8026.64	39.000	124.990	7235.00	-1503.31	-151.16	10.00	910.51
500	13068.00	69.000	124.990	7272.60	-4833.84	3662.76	0.00	5932.64

Targets

Zone	MD (ft)	ME (ft)	AE (ft)	Locker (ft)	Locale (ft)	DLG (ft/100ft)	VS (ft)
Long 408 S-3H PWB	13068.00	69.000	124.990	7272.60	-4833.84	3662.76	5932.64



Scale: 1 inch = 2000 feet
 Assumed 125.00° with reference 0.00 N, 0.00 E

Actual Wellpath Report
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GENERAL INFORMATION

Operator	HIG ENERGY	Shot	Shot 403
Area	West of County, WV	Well	Long 408 S-3H
Field	West of UTM 17N NAD 27)	Wellbore	Long 408 S-3H AWP
Facility	Long 408 Pad		

PROJECTION INFORMATION

Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect@ 4.0.1
North Reference	Grid	Ucr	Kroschr
Scale	0.99961	Report Generated	18/Jul/2014 at 13:56
Convergence at shot	0.21° East	Database/Source file	VA_Fennoy\wml\Long_408_S-3H_AWP.rvt

WELL PATH INFORMATION

Shot Location	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Facility Reference Pt	-6.20	-29.41	1731550.30	14374535.40	39°33'00.436"N	80°40'35.571"W
Field Reference Pt			1731579.70	14374541.60	39°33'00.496"N	80°40'35.195"W
			1731860.70	14374712.90	39°33'02.180"N	80°40'31.597"W

WELL PATH INFORMATION

Calculation method	Minimum curvature	HAD 105 (RT) to Facility Vertical Datum	17.00ft
Horizontal Reference Pt	Shot	HAD 105 (RT) to Mean Sea Level	1358.50ft
Vertical Reference Pt	HAD 105 (RT)	HAD 105 (RT) to Mid Line at Shot (Shot 403)	17.00ft
KID 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-3H AWP Profile:1303S'
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OPERATOR: HIG ENERGY
 AREA: West Virginia
 FIELD: West UTM 17N S40 27J
 FACILITY: Long 408 Pad

Well: Wellbore
 Wellbore
 Wellbore

Well: Wellbore
 Wellbore
 Wellbore

Operator: HIG ENERGY
 Area: West Virginia
 Field: West UTM 17N S40 27J
 Facility: Long 408 Pad

MDP ID	Production	Amount	YPD	Wet Seal	North	East	Grid East	Grid North	Latitude	Longitude	Course Dist	Course Dir	DLS
ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
0.000	0.000	314.140	0.00	0.00	0.00	0.00	1721550.30	14374535.40	39°35'00.416"N	80°40'35.537"W	0.00	0.00	0.00
17.00	0.000	114.140	12.00	0.00	0.00	0.00	1721550.20	14374535.40	39°35'00.436"N	80°40'35.571"W	0.00	0.00	0.00
100.00	0.310	114.140	102.00	0.20	0.20	-0.10	1721550.60	14374535.60	39°35'00.436"N	80°40'35.572"W	0.22	344.140	0.37
210.00	0.230	343.070	200.00	-0.05	0.31	-0.30	1721550.60	14374536.41	39°35'00.415"N	80°40'35.575"W	0.27	117.140	0.05
300.00	0.540	315.410	300.00	-1.16	1.19	-0.50	1721549.71	14374536.59	39°35'00.447"N	80°40'35.570"W	0.16	333.740	0.16
400.00	0.130	351.800	400.00	-1.53	1.19	-0.41	1721549.49	14374536.91	39°35'00.451"N	80°40'35.581"W	1.22	331.808	0.75
500.00	0.100	347.840	500.00	-1.68	1.21	-0.63	1721549.45	14374537.11	39°35'00.457"N	80°40'35.582"W	1.91	333.676	0.61
600.00	0.160	320.610	600.00	-1.87	1.91	-0.95	1721549.35	14374537.20	39°35'00.457"N	80°40'35.583"W	2.38	333.418	0.68
700.00	0.130	348.840	699.99	-2.07	2.19	-1.06	1721549.24	14374537.52	39°35'00.457"N	80°40'35.583"W	2.56	334.411	0.08
800.00	0.070	329.610	899.99	-2.23	2.31	-1.11	1721549.19	14374537.71	39°35'00.459"N	80°40'35.585"W	2.84	334.355	0.04
900.00	0.240	312.630	1099.99	-2.47	2.84	-1.22	1721548.92	14374538.24	39°35'00.467"N	80°40'35.587"W	3.16	334.009	0.11
1000.00	0.120	308.730	1160.99	-2.76	3.06	-1.62	1721548.58	14374538.46	39°35'00.467"N	80°40'35.594"W	3.66	330.892	0.16
1100.00	0.130	323.630	1264.99	-3.29	3.20	-1.73	1721548.37	14374538.76	39°35'00.469"N	80°40'35.596"W	3.88	330.077	0.05
1200.00	0.430	53.260	1349.99	-3.31	3.36	-1.93	1721548.16	14374539.04	39°35'00.472"N	80°40'35.593"W	4.01	334.420	0.85
1300.00	0.230	63.170	1480.99	-3.19	4.25	-0.92	1721548.16	14374539.24	39°35'00.476"N	80°40'35.583"W	4.25	334.381	0.88
1400.00	0.280	176.740	1533.99	-3.01	4.12	-0.82	1721548.42	14374539.50	39°35'00.470"N	80°40'35.585"W	4.20	348.351	1.47
1500.00	1.780	196.080	1622.97	-2.76	2.42	-1.07	1721548.21	14374539.71	39°35'00.467"N	80°40'35.582"W	2.61	345.605	1.44
1600.00	2.430	166.970	1666.94	-1.91	0.74	-1.32	1721548.08	14374539.84	39°35'00.473"N	80°40'35.588"W	1.93	316.072	1.49
1700.00	3.100	190.150	1710.89	-0.61	-1.27	-1.63	1721548.67	14374540.13	39°35'00.479"N	80°40'35.592"W	1.99	312.087	1.99
1800.00	4.010	194.620	1751.81	0.16	3.75	-2.19	1721548.11	14374541.65	39°35'00.473"N	80°40'35.599"W	1.84	210.227	2.32
1900.00	4.810	198.470	1793.68	1.38	-6.91	-3.15	1721547.16	14374542.16	39°35'00.434"N	80°40'35.612"W	7.99	204.490	1.90
2000.00	5.640	202.180	1838.53	2.78	-10.28	-4.41	1721546.89	14374542.51	39°35'00.384"N	80°40'35.627"W	11.19	201.218	1.21
2100.00	5.830	199.640	1923.16	4.16	-13.89	-5.86	1721544.44	14374543.13	39°35'00.262"N	80°40'35.668"W	15.08	202.866	0.68
2200.00	5.330	201.620	1981.36	4.16	-17.63	-7.26	1721541.04	14374543.92	39°35'00.187"N	80°40'35.628"W	19.07	202.358	1.38
2300.00	5.380	200.170	1993.16	5.22	-21.49	-8.68	1721541.63	14374545.65	39°35'00.134"N	80°40'35.647"W	23.17	201.972	1.15
2400.00	5.380	200.170	1993.16	6.09	-24.83	-9.95	1721540.35	14374546.86	39°35'00.107"N	80°40'35.699"W	26.75	201.847	2.82
2500.00	2.830	205.020	2049.73	6.63	-27.25	-10.97	1721538.31	14374548.16	39°35'00.152"N	80°40'35.712"W	29.38	201.925	3.14
2600.00	1.230	211.880	2090.70	6.94	-28.70	-12.41	1721537.89	14374549.58	39°35'00.224"N	80°40'35.722"W	31.01	202.225	2.76
2700.00	1.630	210.480	2177.65	7.11	-31.04	-13.05	1721537.26	14374550.82	39°35'00.179"N	80°40'35.739"W	32.81	202.889	0.18
2800.00	2.030	205.480	2222.62	7.80	-33.84	-11.74	1721536.56	14374552.09	39°35'00.113"N	80°40'35.748"W	35.31	202.809	0.44
2900.00	2.120	212.340	2268.60	7.94	-35.86	-14.16	1721535.85	14374552.71	39°35'00.039"N	80°40'35.764"W	37.81	202.807	1.15
3000.00	0.630	212.340	2312.99	7.62	-35.24	-15.32	1721535.09	14374553.18	39°35'00.088"N	80°40'35.769"W	38.42	203.122	1.75
3100.00	0.630	209.730	2388.58	7.71	-35.54	-15.47	1721534.84	14374553.84	39°35'00.087"N	80°40'35.764"W	38.81	203.486	1.86
3200.00	0.210	198.500	2442.38	7.87	-35.65	-15.16	1721533.195	14374554.99	39°35'00.048"N	80°40'35.764"W	38.67	203.701	1.89
3300.00	0.640	86.160	2486.58	8.19	-35.66	-14.92	1721533.88	14374555.71	39°35'00.083"N	80°40'35.757"W	38.49	202.006	0.54
3400.00	0.820	98.120	2529.58	8.65	-35.69	-14.42	1721534.09	14374556.44	39°35'00.083"N	80°40'35.750"W	38.34	201.261	0.25
3500.00	0.750	92.750	2570.57	9.14	-35.74	-13.66	1721537.11	14374557.11	39°35'00.085"N	80°40'35.741"W	37.95	200.148	1.03
3600.00	0.790	64.030	2617.57	9.60	-35.86	-12.33	1721537.87	14374558.36	39°35'00.099"N	80°40'35.732"W	37.20	199.534	1.23

WELL PATH DATA (91 Stations)

Operator: JIG ENERGY
Area: Wetzel County, WV
Field: Wetzel (LAT: 17N NAD 27)
Facility: Long 408 Prod

Table with columns: Station ID, East (ft), North (ft), Elevation (ft), True Azimuth, True Dip, True Azimuth, True Dip, True Azimuth, True Dip, True Azimuth, True Dip. The table contains 91 rows of well path data points.

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Site: Wetzel
Wellbore: Long 408 S-311 AWP



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Operator: HIG ENERGY
 Area: Midland County, WY
 Field: Wellid (UTM 17N SAD 27)
 Facility: Long 408 Ind

Well: Wellbore
 Well: Wellbore
 Slot 603
 Long 408 S-3H
 Long 408 S-3H AWP

WELLPATH DATA (91 stations)														
Station ID	Station Name	Station Type	Station X (ft)	Station Y (ft)	Station Z (ft)	Station X (m)	Station Y (m)	Station Z (m)	Station X (UTM)	Station Y (UTM)	Station Z (UTM)	Station X (UTM)	Station Y (UTM)	Station Z (UTM)
12792.00			89.170	127.910	7198.38	2187.19	-4265.97	3345.32	1437021.10	39°54'18.13"N	80°39'51.04"W	521.23	141.87	1.75
12798.00			89.200	127.330	7199.61	5274.14	-4115.45	3415.61	1437021.64	39°54'17.66"N	80°39'52.15"W	590.59	141.69	6.53
12804.00			89.230	127.960	7330.31	5399.03	-4161.20	3498.42	1437017.35	39°54'17.20"N	80°39'51.22"W	5584.72	141.33	4.30
12552.00			89.140	125.700	7332.08	5446.95	-4110.18	3561.30	1437010.40	39°54'16.72"N	80°39'50.29"W	5608.68	141.07	4.25
12639.00			89.350	125.460	7333.25	5533.97	-4160.73	3632.29	1437007.12	39°54'16.21"N	80°39'49.29"W	5752.54	140.84	0.46
12724.00			90.030	124.810	7333.69	5618.97	-4509.12	3702.17	1437003.02	39°54'15.71"N	80°39'48.50"W	5814.23	140.61	1.75
12811.00			90.060	124.800	7333.67	5705.91	-4356.46	3775.16	1436998.71	39°54'15.26"N	80°39'47.57"W	5917.19	140.37	2.57
12899.00			90.090	124.170	7333.55	5793.73	-4602.18	3859.17	1436994.96	39°54'14.80"N	80°39'46.61"W	6009.55	140.06	0.42
12989.00			90.060	126.610	7333.53	5883.67	-4651.34	3925.72	1436987.49	39°54'14.33"N	80°39'45.65"W	6088.57	139.80	1.82
13013.00			90.060	126.010	7333.51	5907.67	-4685.21	3945.32	1436982.02	39°54'14.18"N	80°39'45.05"W	6109.81	139.79	5.84
13038.00			90.000	126.010	7333.49	5972.67	-4679.97	3965.54	1436987.33	39°54'14.03"N	80°39'43.18"W	6134.09	139.74	0.70

TARGETS														
Name	MID (ft)	TVD (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Choreo Dir (ft)	Choreo Dir (ft)	Shape			
Long 408 S-3H LP Rev. 1		7285.00	-1803.31	3962.76	1731199.20	1437232.80	39°54'14.00"N	80°40'37.58"W			point			
Long 408 S-3H PHH, Rev. 1		7372.00	-4683.50	3962.76	1735511.50	1436983.40	39°54'14.00"N	80°39'45.18"W			point			

WELLPATH COMPOSITION - Ref Wellbore: Long 408 S-3H AWP Ref Wellbore: Long 408 S-3H AWP Proj:13038
 Positional Uncertainty: Mixed

Start MID: 17300 End MID: 13038.00
 0123.00 Georeg. Error - nonbacksliding (Standard)
 0123.00 NoTrack (All Curve Short Spaced)
 1303.00 Blind Drilling (csh)

Log Name/Comment: Log Name/Comment
 01. Weatherford Gys 100'-61.3'
 02. BH A/Curve - 84-475'-6206'-13013'
 Protection to bit

Wellbore: Long 408 S-3H AWP
 Long 408 S-3H AWP
 Long 408 S-3H AWP

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REFERENCE WELL IDENTIFICATION			
Operator	HIC ENERGY	Site	Site #03
Area	Wellbore	Well	Long 408 S-3H
Field	Wellbore	Wellbore	Long 408 S-3H AWP
Facility	Long 408 Prod		

COMMENTS

Wellpath general comments
 API: 47-103-02889 0200
 Rq: HAD 105
 BHJ Job #: 6272399
 Duration: 08/18/2014 08:21/2014
 Wellhead G500 (100-6123)
 BHJ A Curve (6286-13013)
 TD Projected to MD: 1308