

33.05750

HG Energy, LLC

Harrison County, West Virginia

W.B. Carpenter #134

W.B. Carpenter #134

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

15 May, 2014



01/23/2015

33.05750

DDC
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.B. Carpenter #134
Project:	Harrison County, West Virginia	TVD Reference:	WELL @ 1168.0usft (Decker)
Site:	W.B. Carpenter #134	MD Reference:	WELL @ 1168.0usft (Decker)
Well:	W.B. Carpenter #134	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Harrison County, West Virginia	
Map System:	Universal Transverse Mercator	System Datum: Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN	
Map Zone:	Zone 17N (84 W to 78 W)	

Site	W.B. Carpenter #134				
Site Position:		Northing:	14,263,848.36 usft	Latitude:	39° 16' 37.100 N
From:	Lat/Long	Easting:	1,780,312.41 usft	Longitude:	80° 30' 20.300 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.31 °

Well	W.B. Carpenter #134					
Well Position	+N-S	0.0 usft	Northing:	14,263,848.36 usft	Latitude:	39° 16' 37.100 N
	+E-W	0.0 usft	Easting:	1,780,312.41 usft	Longitude:	80° 30' 20.300 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,160.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/8/2014	-8.66	66.78	52,268

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.0	0.0	0.0	133.00	

Survey Program	Date 5/14/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
650.0	2,988.0	MWD (Wellbore #1)	MWD default	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	14,263,848.36	1,780,312.41	39° 16' 37.100 N	80° 30' 20.300 W
650.0	0.00	0.00	650.0	0.0	0.0	14,263,848.36	1,780,312.41	39° 16' 37.100 N	80° 30' 20.300 W
First MWD Survey @ 650' MD / 650' TVD									
683.0	1.40	107.60	683.0	-0.1	0.4	14,263,848.24	1,780,312.79	39° 16' 37.099 N	80° 30' 20.285 W
713.0	1.40	104.60	713.0	-0.3	1.1	14,263,848.04	1,780,313.49	39° 16' 37.097 N	80° 30' 20.286 W
743.0	1.50	106.40	743.0	-0.5	1.8	14,263,847.84	1,780,314.23	39° 16' 37.095 N	80° 30' 20.277 W
773.0	1.80	123.00	773.0	-0.9	2.6	14,263,847.47	1,780,315.00	39° 16' 37.091 N	80° 30' 20.267 W
803.0	2.60	140.70	802.9	-1.7	3.4	14,263,848.69	1,780,315.82	39° 16' 37.083 N	80° 30' 20.257 W
833.0	3.60	149.10	832.9	-3.0	4.3	14,263,845.35	1,780,316.74	39° 16' 37.070 N	80° 30' 20.245 W
863.0	4.30	151.40	862.8	-4.8	5.4	14,263,843.55	1,780,317.76	39° 16' 37.052 N	80° 30' 20.232 W
893.0	5.10	152.10	892.7	-7.0	6.5	14,263,841.39	1,780,318.92	39° 16' 37.031 N	80° 30' 20.218 W
923.0	5.80	150.30	922.6	-9.5	7.9	14,263,838.89	1,780,320.30	39° 16' 37.006 N	80° 30' 20.200 W

33-05750

DDC
Survey Report - Geographic



Company: HG Energy, LLC
Project: Harrison County, West Virginia
Site: W.B. Carpenter #134
Well: W.B. Carpenter #134
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well W.B. Carpenter #134
TVD Reference: WELL @ 1168.0usft (Decker)
MD Reference: WELL @ 1168.0usft (Decker)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
953.0	6.30	147.10	952.4	-12.2	9.5	14,263,836.20	1,780,321.94	39° 16' 36.979 N	80° 30' 20.180 W
983.0	6.60	142.70	982.2	-14.9	11.5	14,263,833.44	1,780,323.88	39° 16' 36.952 N	80° 30' 20.155 W
1,013.0	6.60	138.00	1,012.0	-17.6	13.7	14,263,830.79	1,780,326.08	39° 16' 36.925 N	80° 30' 20.127 W
1,043.0	6.50	133.80	1,041.8	-20.0	16.1	14,263,828.33	1,780,328.46	39° 16' 36.901 N	80° 30' 20.097 W
1,073.0	6.80	135.80	1,071.6	-22.4	18.5	14,263,825.92	1,780,330.89	39° 16' 36.877 N	80° 30' 20.066 W
1,103.0	6.60	137.00	1,101.4	-24.9	20.9	14,263,823.42	1,780,333.26	39° 16' 36.852 N	80° 30' 20.036 W
1,133.0	6.60	133.80	1,131.2	-27.4	23.3	14,263,820.97	1,780,335.68	39° 16' 36.828 N	80° 30' 20.006 W
1,163.0	6.50	141.80	1,161.1	-29.9	25.6	14,263,818.44	1,780,337.98	39° 16' 36.803 N	80° 30' 19.977 W
1,193.0	6.40	145.10	1,190.9	-32.6	27.6	14,263,815.74	1,780,339.99	39° 16' 36.776 N	80° 30' 19.951 W
1,223.0	6.30	151.00	1,220.7	-35.4	29.3	14,263,812.93	1,780,341.74	39° 16' 36.748 N	80° 30' 19.929 W
1,253.0	6.30	151.50	1,250.5	-38.3	30.9	14,263,810.04	1,780,343.32	39° 16' 36.719 N	80° 30' 19.909 W
1,283.0	6.40	154.40	1,280.3	-41.3	32.4	14,263,807.08	1,780,344.83	39° 16' 36.690 N	80° 30' 19.890 W
1,313.0	7.00	155.10	1,310.1	-44.4	33.9	14,263,803.92	1,780,346.32	39° 16' 36.659 N	80° 30' 19.872 W
1,343.0	6.70	151.70	1,339.9	-47.6	35.5	14,263,800.72	1,780,347.92	39° 16' 36.627 N	80° 30' 19.851 W
1,373.0	6.30	148.50	1,369.7	-50.6	37.3	14,263,797.81	1,780,349.66	39° 16' 36.598 N	80° 30' 19.830 W
1,403.0	5.70	141.40	1,399.5	-53.1	39.1	14,263,795.27	1,780,351.50	39° 16' 36.573 N	80° 30' 19.806 W
1,433.0	5.70	139.50	1,429.4	-55.4	41.0	14,263,792.97	1,780,353.40	39° 16' 36.550 N	80° 30' 19.782 W
1,463.0	5.80	138.50	1,459.2	-57.7	43.0	14,263,790.70	1,780,355.37	39° 16' 36.528 N	80° 30' 19.757 W
1,493.0	6.00	141.00	1,489.1	-60.0	45.0	14,263,788.35	1,780,357.36	39° 16' 36.504 N	80° 30' 19.732 W
1,523.0	6.20	143.20	1,518.9	-62.5	46.9	14,263,785.83	1,780,359.32	39° 16' 36.479 N	80° 30' 19.708 W
1,553.0	6.10	143.30	1,548.7	-65.1	48.8	14,263,783.26	1,780,361.24	39° 16' 36.454 N	80° 30' 19.683 W
1,583.0	5.90	139.60	1,578.6	-67.6	50.8	14,263,780.81	1,780,363.19	39° 16' 36.429 N	80° 30' 19.659 W
1,613.0	6.00	138.00	1,608.4	-69.9	52.8	14,263,778.47	1,780,365.24	39° 16' 36.406 N	80° 30' 19.633 W
1,643.0	6.30	135.80	1,638.2	-72.2	55.0	14,263,776.12	1,780,367.44	39° 16' 36.383 N	80° 30' 19.605 W
1,673.0	6.50	130.60	1,668.1	-74.5	57.5	14,263,773.84	1,780,369.87	39° 16' 36.360 N	80° 30' 19.574 W
1,703.0	6.80	130.40	1,697.8	-76.8	60.1	14,263,771.58	1,780,372.52	39° 16' 36.338 N	80° 30' 19.541 W
1,733.0	7.10	132.80	1,727.6	-79.2	62.8	14,263,769.17	1,780,375.23	39° 16' 36.314 N	80° 30' 19.506 W
1,763.0	7.30	135.40	1,757.4	-81.8	65.5	14,263,766.55	1,780,377.93	39° 16' 36.288 N	80° 30' 19.472 W
1,793.0	7.20	136.90	1,787.2	-84.5	68.1	14,263,763.82	1,780,380.55	39° 16' 36.260 N	80° 30' 19.439 W
1,823.0	7.60	138.90	1,816.9	-87.4	70.7	14,263,760.96	1,780,383.14	39° 16' 36.232 N	80° 30' 19.406 W
1,853.0	7.60	140.10	1,846.6	-90.4	73.3	14,263,757.94	1,780,385.72	39° 16' 36.202 N	80° 30' 19.374 W
1,883.0	7.60	140.80	1,876.4	-93.5	75.8	14,263,754.88	1,780,388.25	39° 16' 36.172 N	80° 30' 19.342 W
1,913.0	8.00	140.60	1,906.1	-96.6	78.4	14,263,751.74	1,780,390.83	39° 16' 36.140 N	80° 30' 19.309 W
1,943.0	8.30	139.60	1,935.8	-99.9	81.2	14,263,748.48	1,780,393.56	39° 16' 36.108 N	80° 30' 19.275 W
1,973.0	8.80	138.10	1,965.5	-103.2	84.1	14,263,745.12	1,780,396.50	39° 16' 36.075 N	80° 30' 19.237 W
2,003.0	9.10	136.30	1,995.1	-106.7	87.3	14,263,741.70	1,780,399.67	39° 16' 36.041 N	80° 30' 19.197 W
2,033.0	8.90	134.00	2,024.7	-110.0	90.6	14,263,738.37	1,780,402.98	39° 16' 36.008 N	80° 30' 19.155 W
2,063.0	8.20	129.70	2,054.4	-113.0	93.9	14,263,735.39	1,780,406.29	39° 16' 35.978 N	80° 30' 19.114 W
2,093.0	7.70	127.50	2,084.1	-115.6	97.1	14,263,732.80	1,780,409.53	39° 16' 35.952 N	80° 30' 19.072 W
2,123.0	7.70	128.50	2,113.8	-118.0	100.3	14,263,730.33	1,780,412.70	39° 16' 35.927 N	80° 30' 19.032 W
2,153.0	7.40	127.30	2,143.6	-120.5	103.4	14,263,727.80	1,780,415.81	39° 16' 35.903 N	80° 30' 18.993 W
2,183.0	7.30	125.40	2,173.3	-122.7	106.5	14,263,725.63	1,780,418.90	39° 16' 35.881 N	80° 30' 18.954 W
2,213.0	6.80	123.20	2,203.1	-124.8	109.5	14,263,723.55	1,780,421.94	39° 16' 35.860 N	80° 30' 18.915 W
2,243.0	6.50	121.30	2,232.9	-126.7	112.5	14,263,721.70	1,780,424.88	39° 16' 35.841 N	80° 30' 18.878 W
2,273.0	6.00	117.60	2,262.7	-128.3	115.3	14,263,720.09	1,780,427.72	39° 16' 35.825 N	80° 30' 18.842 W
2,303.0	5.80	115.40	2,292.6	-129.7	118.1	14,263,718.71	1,780,430.48	39° 16' 35.812 N	80° 30' 18.807 W
2,333.0	5.60	116.50	2,322.4	-131.0	120.7	14,263,717.41	1,780,433.15	39° 16' 35.799 N	80° 30' 18.773 W
2,363.0	5.40	120.50	2,352.3	-132.3	123.3	14,263,716.04	1,780,435.68	39° 16' 35.785 N	80° 30' 18.741 W
2,393.0	5.20	121.40	2,382.1	-133.8	125.7	14,263,714.61	1,780,438.06	39° 16' 35.771 N	80° 30' 18.711 W
2,423.0	5.40	120.40	2,412.0	-135.2	128.0	14,263,713.19	1,780,440.44	39° 16' 35.757 N	80° 30' 18.681 W
2,453.0	5.60	119.10	2,441.9	-136.6	130.5	14,263,711.77	1,780,442.93	39° 16' 35.742 N	80° 30' 18.649 W
2,483.0	5.30	117.00	2,471.7	-137.9	133.0	14,263,710.42	1,780,445.45	39° 16' 35.729 N	80° 30' 18.617 W
2,513.0	5.00	114.60	2,501.6	-139.1	135.5	14,263,709.25	1,780,447.87	39° 16' 35.717 N	80° 30' 18.586 W
2,543.0	4.70	112.50	2,531.5	-140.1	137.8	14,263,708.24	1,780,450.19	39° 16' 35.707 N	80° 30' 18.557 W
2,573.0	4.60	113.10	2,561.4	-141.1	140.0	14,263,707.29	1,780,452.44	39° 16' 35.698 N	80° 30' 18.528 W

33-05750

DDC
Survey Report - Geographic



Company: HG Energy, LLC
Project: Harrison County, West Virginia
Site: W.B. Carpenter #134
Well: W.B. Carpenter #134
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well W.B. Carpenter #134
TVD Reference: WELL @ 1168.0usft (Decker)
MD Reference: WELL @ 1168.0usft (Decker)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,603.0	4.70	117.60	2,591.3	-142.1	142.2	14,263,706.25	1,780,454.63	39° 16' 35.687 N	80° 30' 18.501 W
2,633.0	5.00	123.00	2,621.2	-143.4	144.4	14,263,704.97	1,780,456.82	39° 16' 35.674 N	80° 30' 18.473 W
2,663.0	5.40	126.70	2,651.1	-144.9	146.6	14,263,703.42	1,780,459.04	39° 16' 35.659 N	80° 30' 18.445 W
2,693.0	5.80	125.50	2,680.9	-146.7	149.0	14,263,701.69	1,780,461.41	39° 16' 35.642 N	80° 30' 18.415 W
2,723.0	6.00	124.10	2,710.8	-148.4	151.5	14,263,699.93	1,780,463.94	39° 16' 35.624 N	80° 30' 18.383 W
2,753.0	6.00	121.70	2,740.6	-150.1	154.2	14,263,698.23	1,780,466.58	39° 16' 35.607 N	80° 30' 18.349 W
2,783.0	6.00	120.00	2,770.5	-151.7	156.9	14,263,696.62	1,780,469.27	39° 16' 35.591 N	80° 30' 18.315 W
2,813.0	5.80	118.40	2,800.3	-153.2	159.6	14,263,695.12	1,780,471.96	39° 16' 35.576 N	80° 30' 18.281 W
2,843.0	5.40	116.60	2,830.2	-154.6	162.1	14,263,693.76	1,780,474.55	39° 16' 35.563 N	80° 30' 18.248 W
2,873.0	5.30	118.40	2,860.0	-155.9	164.6	14,263,692.45	1,780,477.02	39° 16' 35.550 N	80° 30' 18.217 W
2,903.0	5.50	121.00	2,889.8	-157.3	167.1	14,263,691.03	1,780,479.46	39° 16' 35.535 N	80° 30' 18.186 W
2,933.0	5.80	120.60	2,919.7	-158.8	169.6	14,263,689.52	1,780,482.00	39° 16' 35.520 N	80° 30' 18.154 W
2,988.0	5.80	120.60	2,974.5	-161.7	174.4	14,263,686.69	1,780,486.78	39° 16' 35.492 N	80° 30' 18.093 W

TD @ 2988' MD / 2975' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
650.0	650.0	0.0	0.0	First MWD Survey @ 650' MD / 650' TVD
2,988.0	2,974.5	-161.7	174.4	TD @ 2988' MD / 2975' TVD

Checked By: _____ Approved By: _____ Date: _____

33-05756

HG Energy, LLC

Harrison County, West Virginia

W.B. Carpenter #134

W.B. Carpenter #134

Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

20 May, 2014



DDC
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Design: Wellbore #1	Database: EDM 5000.1 Single User Db

Project Harrison County, West Virginia	System Datum: Mean Sea Level
Map System: Universal Transverse Mercator	
Geo Datum: NAD83 West Virginia - HARN	
Map Zone: Zone 17N (84 W to 78 W)	

Site W.B. Carpenter #134	Site Position:	Northing: 14,263,848.36 usft	Latitude: 39° 16' 37.100 N
	From: Lat/Long	Easting: 1,780,312.41 usft	Longitude: 80° 30' 20.300 W
	Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence: 0.31 °

Well W.B. Carpenter #134	Well Position +N/-S 0.0 usft	Northing: 14,263,848.37 usft	Latitude: 39° 16' 37.100 N
	+E/-W 0.0 usft	Easting: 1,780,312.41 usft	Longitude: 80° 30' 20.300 W
Position Uncertainty 0.0 usft		Wellhead Elevation: usft	Ground Level: 1,160.0 usft

Wellbore Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/8/2014	-8.66	66.78	52,268

Design Wellbore #1				
Audit Notes:				
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0		
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	133.00

Survey Program	Date 5/14/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
650.0	2,988.0	MWD (Wellbore #1)	MWD default	MWD - Standard

DDC
HG Energy EOW Report



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 Project: Harrison County, West Virginia
 Site: W.B. Carpenter #134
 Well: W.B. Carpenter #134
 Wellbore: Wellbore #1
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Local Co-ordinate Reference: Well W.B. Carpenter #134
 TVD Reference: WELL @ 1168.0usft (Decker)
 MD Reference: WELL @ 1168.0usft (Decker)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg ("/100usft)	Closure Distance (usft)	Closure Azimuth (")	
0.0	0.00	0.00	0.00	0.0	0.0	0.0	0.00	0.0	0.00	
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.0	0.00	
First MWD Survey @ 650' MD / 650' TVD										
683.0	1.40	107.60	683.0	-0.1	0.4	0.4	4.24	0.4	107.60	
713.0	1.40	104.60	713.0	-0.3	1.1	1.0	0.24	1.1	106.63	
743.0	1.50	106.40	743.0	-0.5	1.8	1.7	0.37	1.9	108.19	
773.0	1.80	123.00	773.0	-0.9	2.6	2.5	1.87	2.7	109.07	
803.0	2.60	140.70	802.9	-1.7	3.4	3.6	3.47	3.8	116.16	
833.0	3.60	149.10	832.9	-3.0	4.3	5.2	3.65	5.3	124.82	
863.0	4.30	151.40	862.8	-4.8	5.4	7.2	2.39	7.2	131.93	
893.0	5.10	152.10	892.7	-7.0	6.5	9.5	2.67	9.5	136.95	
923.0	5.80	150.30	922.6	-9.5	7.9	12.2	2.40	12.3	140.20	
953.0	6.30	147.10	952.4	-12.2	9.5	15.3	2.01	15.5	141.91	
983.0	6.60	142.70	982.2	-14.9	11.5	18.6	1.83	18.8	142.44	
1,013.0	6.60	138.00	1,012.0	-17.6	13.7	22.0	1.80	22.3	142.12	
1,043.0	6.50	133.80	1,041.8	-20.0	16.1	25.4	1.63	25.7	141.29	
1,073.0	6.60	135.80	1,071.6	-22.4	18.5	28.8	0.83	29.1	140.53	
1,103.0	6.60	137.00	1,101.4	-24.9	20.9	32.3	0.46	32.5	140.09	
1,133.0	6.60	133.80	1,131.2	-27.4	23.3	35.7	1.23	35.9	139.64	
1,163.0	8.50	141.80	1,161.1	-29.9	25.6	39.1	3.06	39.4	139.48	
1,193.0	6.40	145.10	1,190.9	-32.6	27.6	42.4	1.28	42.7	139.79	
1,223.0	6.30	151.00	1,220.7	-35.4	29.3	45.6	2.20	46.0	140.38	
1,253.0	6.30	151.50	1,250.5	-38.3	30.9	48.7	0.18	49.2	141.11	
1,283.0	6.40	154.40	1,280.3	-41.3	32.4	51.9	1.12	52.5	141.85	
1,313.0	7.00	155.10	1,310.1	-44.4	33.9	55.1	2.02	55.9	142.65	
1,343.0	6.70	151.70	1,339.9	-47.6	35.5	58.5	1.68	59.4	143.30	
1,373.0	6.30	146.50	1,369.7	-50.6	37.3	61.7	2.37	62.8	143.61	

DDC
HG Energy EOW Report



33-05750

Company: HG Energy, LLC
Project: Harrison County, West Virginia
Site: W.B. Carpenter #134
Well: W.B. Carpenter #134
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well W.B. Carpenter #134
TVD Reference: WELL @ 1168.0usft (Decker)
MD Reference: WELL @ 1168.0usft (Decker)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLag ("/100usft)	Closure Distance (usft)	Closure Azimuth (")
1,403.0	5.70	141.40	1,399.5	-53.1	39.1	64.8	2.67	65.9	143.64
1,433.0	5.70	139.50	1,429.4	-55.4	41.0	67.8	0.63	68.9	143.50
1,463.0	5.80	138.50	1,459.2	-57.7	43.0	70.7	0.47	71.9	143.31
1,493.0	6.00	141.00	1,489.1	-60.0	45.0	73.8	1.09	75.0	143.16
1,523.0	6.20	143.20	1,518.9	-62.5	46.9	77.0	1.03	78.2	143.12
1,553.0	6.10	143.30	1,548.7	-65.1	48.8	80.1	0.34	81.4	143.13
1,583.0	5.90	139.60	1,578.6	-67.6	50.8	83.2	1.45	84.5	143.07
1,613.0	6.00	138.00	1,608.4	-69.9	52.8	86.3	0.65	87.6	142.91
1,643.0	6.30	135.80	1,638.2	-72.2	55.0	89.5	1.27	90.8	142.70
1,673.0	6.50	130.60	1,668.1	-74.5	57.5	92.9	2.04	94.1	142.36
1,703.0	6.80	130.40	1,697.8	-76.8	60.1	96.3	1.00	97.5	141.94
1,733.0	7.10	132.80	1,727.6	-79.2	62.8	100.0	1.39	101.1	141.58
1,763.0	7.30	135.40	1,757.4	-81.8	65.5	103.7	1.27	104.8	141.31
1,793.0	7.20	136.90	1,787.2	-84.5	68.1	107.5	0.71	108.6	141.13
1,823.0	7.60	138.90	1,816.9	-87.4	70.7	111.3	1.59	112.4	141.02
1,853.0	7.60	140.10	1,846.6	-90.4	73.3	115.3	0.53	116.4	140.97
1,883.0	7.60	140.60	1,876.4	-93.5	75.8	119.2	0.22	120.4	140.95
1,913.0	8.00	140.60	1,906.1	-96.6	78.4	123.3	1.33	124.4	140.94
1,943.0	8.30	139.60	1,935.8	-99.9	81.2	127.5	1.11	128.7	140.91
1,973.0	8.80	138.10	1,965.5	-103.2	84.1	131.9	1.82	133.2	140.84
2,003.0	9.10	136.30	1,995.1	-106.7	87.3	136.6	1.37	137.8	140.71
2,033.0	8.90	134.00	2,024.7	-110.0	90.6	141.3	1.37	142.5	140.53
2,063.0	8.20	129.70	2,054.4	-113.0	93.9	145.7	3.16	146.9	140.27
2,093.0	7.70	127.50	2,084.1	-115.6	97.1	149.8	1.95	151.0	139.95
2,123.0	7.70	128.50	2,113.8	-118.0	100.3	153.9	0.45	154.9	139.65
2,153.0	7.40	127.30	2,143.6	-120.5	103.4	157.8	1.13	158.8	139.36
2,183.0	7.30	125.40	2,173.3	-122.7	106.5	161.6	0.86	162.5	139.05

DDC
HG Energy EOW Report



33-05750

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Design: Wellbore #1

Local Co-ordinate Reference: Well W.B. Carpenter #134
TVD Reference: WELL @ 1168.0usft (Decker)
MD Reference: WELL @ 1168.0usft (Decker)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,213.0	6.60	123.20	2,203.1	-124.8	109.5	165.2	1.89	166.1	138.73
2,243.0	6.50	121.30	2,232.9	-126.7	112.5	168.6	1.24	169.4	138.40
2,273.0	6.00	117.60	2,262.7	-128.3	115.3	171.8	2.14	172.5	138.05
2,303.0	5.80	115.40	2,292.6	-129.7	118.1	174.8	1.01	175.4	137.68
2,333.0	5.60	116.50	2,322.4	-131.0	120.7	177.8	0.76	178.1	137.32
2,363.0	5.40	120.50	2,352.3	-132.3	123.3	180.4	1.44	180.9	137.03
2,393.0	5.20	121.40	2,382.1	-133.8	125.7	183.1	0.72	183.5	136.79
2,423.0	5.40	120.40	2,412.0	-135.2	128.0	185.8	0.73	186.2	138.55
2,453.0	5.60	118.10	2,441.9	-138.6	130.5	188.6	0.79	188.9	136.30
2,483.0	5.30	117.00	2,471.7	-137.9	133.0	191.4	1.20	191.6	136.04
2,513.0	5.00	114.60	2,501.6	-139.1	135.5	193.9	1.23	194.2	135.76
2,543.0	4.70	112.50	2,531.5	-140.1	137.8	196.3	1.16	196.5	135.48
2,573.0	4.60	113.10	2,561.4	-141.1	140.0	198.8	0.37	198.8	135.21
2,603.0	4.70	117.60	2,591.3	-142.1	142.2	200.9	1.26	201.1	134.86
2,633.0	5.00	123.00	2,621.2	-143.4	144.4	203.4	1.82	203.5	134.80
2,663.0	5.40	126.70	2,651.1	-144.9	146.6	206.1	1.74	206.2	134.67
2,693.0	5.80	125.50	2,680.9	-146.7	149.0	209.0	1.39	209.1	134.55
2,723.0	6.00	124.10	2,710.8	-148.4	151.5	212.1	0.82	212.1	134.41
2,753.0	6.00	121.70	2,740.6	-150.1	154.2	215.1	0.84	215.2	134.24
2,783.0	6.00	120.00	2,770.5	-151.7	156.9	218.2	0.59	218.2	134.05
2,813.0	5.80	118.40	2,800.3	-153.2	159.6	221.2	0.86	221.2	133.85
2,843.0	5.40	116.60	2,830.2	-154.6	162.1	224.0	1.46	224.0	133.63
2,873.0	5.30	119.40	2,860.0	-155.9	164.6	226.7	0.93	226.7	133.44
2,903.0	5.50	121.00	2,889.9	-157.3	167.1	229.5	0.83	229.5	133.28
2,933.0	5.80	120.60	2,919.7	-158.8	169.6	232.4	1.01	232.4	133.13
2,968.0	5.80	120.60	2,974.5	-161.7	174.4	237.8	0.00	237.8	132.84

TD @ 2888' MD / 2976' TVD

DDC
HG Energy EOW Report



Company: HG Energy, LLC
Project: Harrison County, West Virginia
Site: W.B. Carpenter #134
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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well W.B. Carpenter #134
TVD Reference: WELL @ 1188.0usft (Decker)
MD Reference: WELL @ 1188.0usft (Decker)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

33-05750

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
650.0	650.0	0.0	0.0	First MWD Survey @ 650' MD / 650' TVD
2,988.0	2,974.5	-161.7	174.4	TD @ 2988' MD / 2975' TVD

Checked By: _____ Approved By: _____ Date: _____

33-05750

W.B. Carpenter #134
 Harrison County, West Virginia
 Q130687 & AM-140448
 Design #2

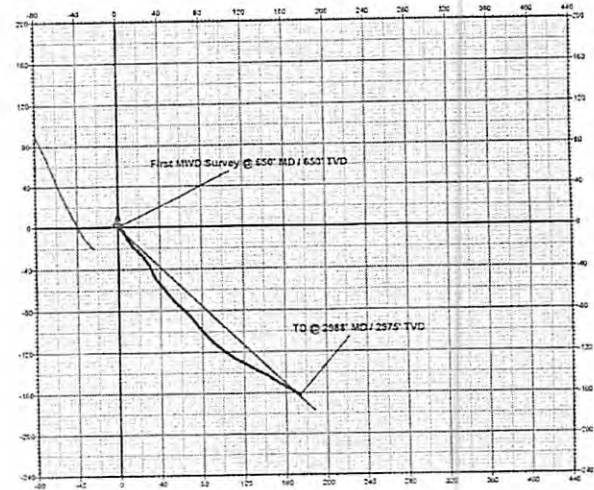
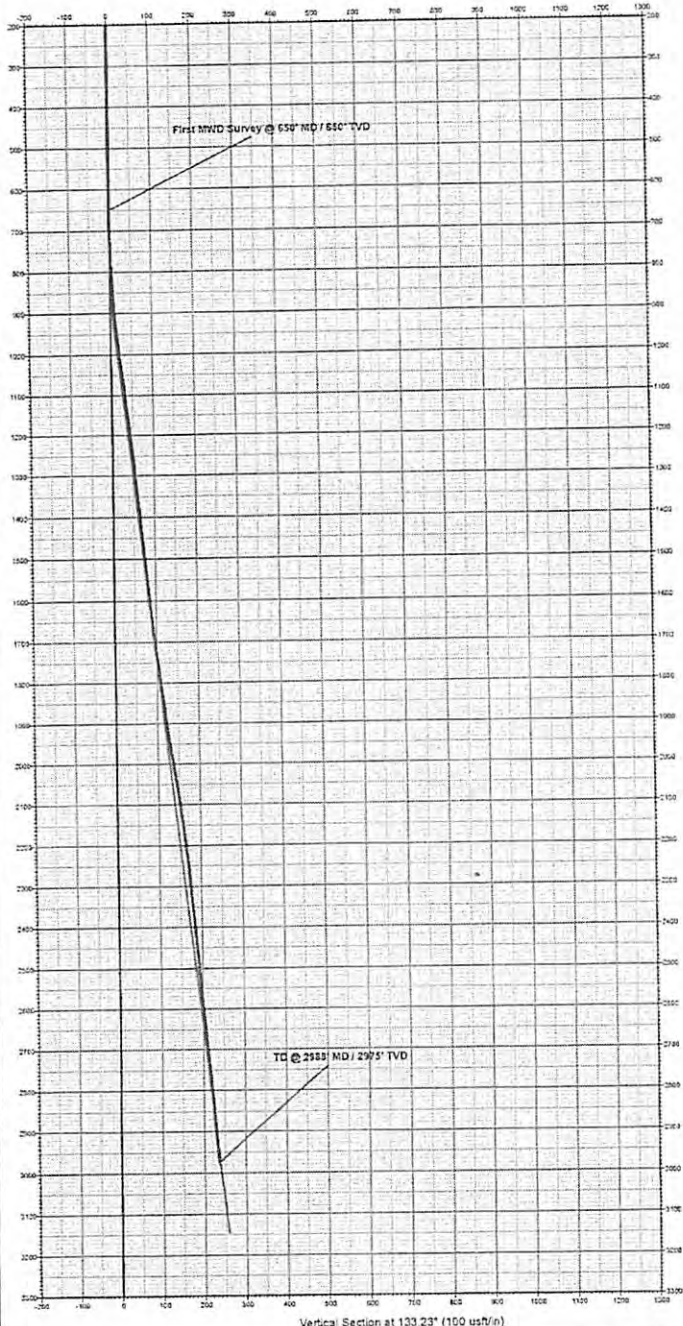
Company Name: HG Energy, LLC
 W.B. Carpenter #134
 Harrison County, West Virginia
 Rig: Decker
 Created By: Kris Ray
 Date: 5/14/2014

PROJECT DETAILS: Harrison County, West Virginia
 Geodetic System: Universal Transverse Mercator
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level



HG Energy

Azimuths to Grid North
 Correction: -8.97°
 Magnetic Field
 Strength: 52268.5snT
 Dip Angle: 66.78°
 Date: 5/8/2014
 Model: IGRF2010



WELL DETAILS: W.B. Carpenter #134

Ground Level: 1160.0					
+N-S	+E-W	Northing	Easting	Latitude	Longitude
6.0	5.3	14262844.37	1780312.41	39° 18' 37.100 N	80° 30' 00.500 W

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
Target W.B. Carpenter #134 DW2	2946.5	-183.4	161.4	14267936.77	1780475.81	39° 18' 35.572 N	80° 30' 18.232 W
-plan hit target center							

ANNOTATIONS

MD	Inc	Azi	TVD	+N-S	+E-W	Vsect	Departure	Annotation
650.0	0.00	6.00	650.0	0.3	6.0	0.0	0.0	First MWD Survey @ 650' MD / 650' TVD
2982.0	8.92	120.60	2974.5	-181.3	174.4	237.8	242.6	TD @ 2982 MD / 2975' TVD

01/23/2015