

87.04766

HG Energy, LLC

Roane County, West Virginia

C. McGraw #116

C. McGraw #116

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

24 June, 2015



10/23/2015

87-04766

HP
Survey Report - Geographic



Company: HG Energy, LLC	Local Co-ordinate Reference: Well C. McGraw #116
Project: Roane County, West Virginia	TVD Reference: WELL @ 1065.0usft (Decker #9)
Site: C. McGraw #116	MD Reference: WELL @ 1065.0usft (Decker #9)
Well: C. McGraw #116	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: Compass

Project Roane 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 C. McGraw #116		
Site Position:	Northing: 14,058,810.58 usft	Latitude: 38° 42' 52.300 N
From: Lat/Long	Easting: 1,562,033.50 usft	Longitude: 81° 16' 29.300 W
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence: -0.17 °

Well C. McGraw #116		
Well Position +N/-S 0.0 usft	Northing: 14,058,810.58 usft	Latitude: 38° 42' 52.300 N
+E/-W 0.0 usft	Easting: 1,562,033.50 usft	Longitude: 81° 16' 29.300 W
Position Uncertainty 0.0 usft	Wellhead Elevation: 0.0 usft	Ground Level: 1,057.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/4/2015	-8.00	66.36	51,923

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	210.61

Survey Program	Date 6/24/2015
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From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
500.0	2,430.0	MWD (Wellbore #1)	MWD default	MWD - Standard

Survey

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	14,058,810.58	1,562,033.50	38° 42' 52.300 N	81° 16' 29.300 W
500.0	0.00	0.00	500.0	0.0	0.0	14,058,810.58	1,562,033.50	38° 42' 52.300 N	81° 16' 29.300 W
First Survey @ 500' MD / 500' TVD									
529.0	0.88	202.15	529.0	-0.2	-0.1	14,058,810.38	1,562,033.42	38° 42' 52.298 N	81° 16' 29.301 W
559.0	1.10	204.57	559.0	-0.7	-0.3	14,058,809.90	1,562,033.21	38° 42' 52.293 N	81° 16' 29.304 W
589.0	1.19	209.95	589.0	-1.2	-0.6	14,058,809.37	1,562,032.94	38° 42' 52.288 N	81° 16' 29.312 W
619.0	1.68	212.15	619.0	-1.9	-1.0	14,058,808.73	1,562,032.55	38° 42' 52.282 N	81° 16' 29.312 W
649.0	2.70	213.96	649.0	-2.8	-1.6	14,058,807.77	1,562,031.92	38° 42' 52.278 N	81° 16' 29.320 W
679.0	3.40	213.96	678.9	-4.1	-2.5	14,058,806.45	1,562,031.03	38° 42' 52.259 N	81° 16' 29.331 W
709.0	4.02	214.36	708.9	-5.7	-3.6	14,058,804.84	1,562,029.94	38° 42' 52.243 N	81° 16' 29.345 W
739.0	4.51	210.96	738.8	-7.6	-4.8	14,058,802.96	1,562,028.73	38° 42' 52.224 N	81° 16' 29.360 W
769.0	5.39	211.27	768.7	-9.8	-6.1	14,058,800.74	1,562,027.40	38° 42' 52.203 N	81° 16' 29.377 W

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Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
799.0	5.92	210.88	798.5	-12.4	-7.6	14,058,798.21	1,562,025.87	38° 42' 52.177 N	81° 16' 29.396 W
829.0	6.32	209.55	828.3	-15.1	-9.2	14,058,795.45	1,562,024.26	38° 42' 52.150 N	81° 16' 29.416 W
859.0	6.72	209.55	858.1	-18.1	-10.9	14,058,792.48	1,562,022.58	38° 42' 52.121 N	81° 16' 29.437 W
889.0	7.51	205.98	887.9	-21.4	-12.6	14,058,789.19	1,562,020.86	38° 42' 52.088 N	81° 16' 29.459 W
919.0	8.62	203.38	917.6	-25.2	-14.4	14,058,785.37	1,562,019.11	38° 42' 52.050 N	81° 16' 29.481 W
949.0	9.50	205.98	947.2	-29.5	-16.4	14,058,781.08	1,562,017.13	38° 42' 52.008 N	81° 16' 29.505 W
979.0	10.38	205.76	976.8	-34.2	-18.6	14,058,776.42	1,562,014.87	38° 42' 51.962 N	81° 16' 29.534 W
1,009.0	11.00	206.38	1,006.3	-39.2	-21.1	14,058,771.42	1,562,012.43	38° 42' 51.912 N	81° 16' 29.565 W
1,039.0	12.02	205.19	1,035.7	-44.6	-23.7	14,058,766.03	1,562,009.82	38° 42' 51.859 N	81° 16' 29.597 W
1,069.0	12.81	206.16	1,065.0	-50.4	-26.5	14,058,760.22	1,562,007.03	38° 42' 51.801 N	81° 16' 29.632 W
1,099.0	13.52	207.97	1,094.2	-56.4	-29.6	14,058,754.14	1,562,003.92	38° 42' 51.741 N	81° 16' 29.671 W
1,129.0	14.58	207.26	1,123.3	-62.9	-33.0	14,058,747.68	1,562,000.54	38° 42' 51.677 N	81° 16' 29.714 W
1,159.0	15.38	208.28	1,152.3	-69.8	-36.6	14,058,740.82	1,561,996.93	38° 42' 51.609 N	81° 16' 29.759 W
1,189.0	16.62	208.45	1,181.1	-77.0	-40.5	14,058,733.55	1,561,993.00	38° 42' 51.537 N	81° 16' 29.808 W
1,219.0	17.50	209.38	1,209.8	-84.7	-44.8	14,058,725.84	1,561,988.74	38° 42' 51.461 N	81° 16' 29.862 W
1,249.0	18.60	208.45	1,238.3	-92.9	-49.3	14,058,717.71	1,561,984.25	38° 42' 51.380 N	81° 16' 29.918 W
1,279.0	19.40	209.47	1,266.7	-101.4	-54.0	14,058,709.16	1,561,979.52	38° 42' 51.296 N	81° 16' 29.977 W
1,309.0	20.50	209.07	1,294.9	-110.4	-59.0	14,058,700.23	1,561,974.52	38° 42' 51.207 N	81° 16' 30.040 W
1,339.0	21.30	209.69	1,322.9	-119.7	-64.2	14,058,690.91	1,561,969.26	38° 42' 51.115 N	81° 16' 30.106 W
1,369.0	21.79	209.95	1,350.8	-129.2	-69.7	14,058,681.35	1,561,963.79	38° 42' 51.020 N	81° 16' 30.175 W
1,399.0	22.49	211.36	1,378.6	-139.0	-75.5	14,058,671.62	1,561,958.02	38° 42' 50.924 N	81° 16' 30.247 W
1,429.0	23.20	212.77	1,406.2	-148.8	-81.7	14,058,661.76	1,561,951.84	38° 42' 50.826 N	81° 16' 30.325 W
1,459.0	23.91	212.68	1,433.7	-158.9	-88.1	14,058,651.67	1,561,945.35	38° 42' 50.726 N	81° 16' 30.406 W
1,489.0	24.39	212.77	1,461.1	-169.2	-94.8	14,058,641.34	1,561,938.72	38° 42' 50.624 N	81° 16' 30.490 W
1,519.0	25.59	212.29	1,488.3	-179.9	-101.6	14,058,630.66	1,561,931.90	38° 42' 50.518 N	81° 16' 30.575 W
1,549.0	26.20	210.57	1,515.3	-191.1	-108.4	14,058,619.48	1,561,925.08	38° 42' 50.407 N	81° 16' 30.661 W
1,579.0	26.69	209.55	1,542.1	-202.7	-115.1	14,058,607.92	1,561,918.38	38° 42' 50.293 N	81° 16' 30.745 W
1,609.0	27.22	208.06	1,568.9	-214.6	-121.7	14,058,596.00	1,561,911.83	38° 42' 50.175 N	81° 16' 30.827 W
1,639.0	28.02	208.19	1,595.5	-226.8	-128.2	14,058,583.73	1,561,905.28	38° 42' 50.053 N	81° 16' 30.910 W
1,669.0	29.52	210.26	1,621.8	-239.4	-135.3	14,058,571.14	1,561,898.22	38° 42' 49.928 N	81° 16' 30.998 W
1,699.0	31.51	210.66	1,647.6	-252.6	-143.0	14,058,558.01	1,561,890.50	38° 42' 49.798 N	81° 16' 31.095 W
1,729.0	33.58	210.57	1,672.9	-266.5	-151.2	14,058,544.12	1,561,882.28	38° 42' 49.661 N	81° 16' 31.198 W
1,759.0	35.88	212.99	1,697.5	-281.0	-160.2	14,058,529.60	1,561,873.27	38° 42' 49.517 N	81° 16' 31.312 W
1,789.0	37.69	213.48	1,721.6	-296.0	-170.1	14,058,514.58	1,561,863.43	38° 42' 49.368 N	81° 16' 31.435 W
1,819.0	37.21	212.99	1,745.4	-311.3	-180.1	14,058,499.32	1,561,853.43	38° 42' 49.217 N	81° 16' 31.561 W
1,849.0	35.79	212.46	1,769.5	-326.3	-189.7	14,058,484.31	1,561,843.78	38° 42' 49.068 N	81° 16' 31.682 W
1,879.0	35.71	211.98	1,793.9	-341.1	-199.1	14,058,469.48	1,561,834.44	38° 42' 48.921 N	81° 16' 31.799 W
1,909.0	36.10	212.77	1,818.2	-356.0	-208.5	14,058,454.62	1,561,825.02	38° 42' 48.774 N	81° 16' 31.918 W
1,939.0	36.50	212.46	1,842.3	-370.9	-218.1	14,058,439.66	1,561,815.44	38° 42' 48.626 N	81° 16' 32.038 W
1,969.0	36.90	212.15	1,866.4	-386.1	-227.6	14,058,424.51	1,561,805.86	38° 42' 48.476 N	81° 16' 32.158 W
1,999.0	37.52	211.98	1,890.3	-401.4	-237.3	14,058,409.13	1,561,796.23	38° 42' 48.323 N	81° 16' 32.279 W
2,029.0	37.61	211.89	1,914.1	-417.0	-246.9	14,058,393.61	1,561,786.56	38° 42' 48.169 N	81° 16' 32.401 W
2,059.0	36.72	210.48	1,938.0	-432.5	-256.3	14,058,378.11	1,561,777.17	38° 42' 48.016 N	81° 16' 32.519 W
2,089.0	36.81	210.17	1,962.0	-448.0	-265.4	14,058,362.61	1,561,768.10	38° 42' 47.862 N	81° 16' 32.633 W
2,119.0	36.99	210.66	1,986.0	-463.5	-274.5	14,058,347.08	1,561,758.99	38° 42' 47.709 N	81° 16' 32.747 W
2,149.0	37.38	209.95	2,009.9	-479.2	-283.7	14,058,331.42	1,561,749.84	38° 42' 47.553 N	81° 16' 32.862 W
2,179.0	37.69	209.55	2,033.7	-495.0	-292.7	14,058,315.55	1,561,740.77	38° 42' 47.396 N	81° 16' 32.976 W
<u>2,239.0</u>	<u>39.11</u>	<u>209.16</u>	<u>2,080.7</u>	<u>-527.5</u>	<u>-311.0</u>	<u>14,058,283.07</u>	<u>1,561,722.50</u>	<u>38° 42' 47.075 N</u>	<u>81° 16' 33.205 W</u>
2,269.0	38.62	208.06	2,104.1	-544.0	-320.0	14,058,266.55	1,561,713.49	38° 42' 46.911 N	81° 16' 33.318 W
2,299.0	37.61	207.09	2,127.7	-560.4	-328.6	14,058,250.13	1,561,704.91	38° 42' 46.748 N	81° 16' 33.426 W
2,329.0	36.59	205.76	2,151.6	-576.7	-336.6	14,058,233.93	1,561,696.86	38° 42' 46.588 N	81° 16' 33.527 W
2,359.0	35.22	204.35	2,175.9	-592.6	-344.1	14,058,218.00	1,561,689.40	38° 42' 46.430 N	81° 16' 33.620 W
2,430.0	35.22	204.35	2,233.9	-629.9	-361.0	14,058,180.69	1,561,672.52	38° 42' 46.061 N	81° 16' 33.832 W

TD @ 2430' MD / 2234' TVD

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HP
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well C. McGraw #116
Project:	Roane County, West Virginia	TVD Reference:	WELL @ 1065.0usft (Decker #9)
Site:	C. McGraw #116	MD Reference:	WELL @ 1065.0usft (Decker #9)
Well:	C. McGraw #116	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.0	500.0	0.0	0.0	First Survey @ 500' MD / 500' TVD
2,430.0	2,233.9	-629.9	-361.0	TD @ 2430' MD / 2234' TVD

Checked By: _____ Approved By: _____ Date: _____

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Office of Oil & Gas
AUG 03 2015

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HG Energy, LLC
Roane County, West Virginia
C. McGraw #116
C. McGraw #116
Wellbore #1

Design: Wellbore #1

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Design: Wellbore #1	Database: Compass

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Geo Datum: NAD83 West Virginia - HARN
Map Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

Site: C. McGraw #116
Site Position: Northing: 14,058,810.58 usft
 Latitude: 38° 42' 52.300 N
 From: Lat/Long Easting: 1,562,033.50 usft
 Longitude: 81° 16' 29.300 W
 Position Uncertainty: Slot Radius: 13-3/16 " Grid Convergence: -0.17 °

Well: C. McGraw #116
Well Position: +N/-S 0.0 usft
 Northing: 14,058,810.58 usft
 Latitude: 38° 42' 52.300 N
 +E/-W 0.0 usft
 Easting: 1,562,033.50 usft
 Longitude: 81° 16' 29.300 W
 Position Uncertainty: Wellhead Elevation: 0.0 usft
 Ground Level: 1,057.0 usft

Wellbore: Wellbore #1
Magnetics: Model Name: IGRF2015 Sample Date: 6/4/2015
 Declination (°): -8.00 Dip Angle (°): 66.36 Field Strength (nT): 51,923

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 0.0 210.61

Survey Program: Date: 6/24/2015
 From (usft) To (usft) Survey (Wellbore) Tool Name Description
 500.0 430.0 MWD (Wellbore #1) MWD default MWD - Standard

10/23/2015

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Company: HG Energy, LLC
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Wellbore: Wellbore #1
Design: Wellbore #1

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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	0.0	0.0	0.0	0.0	0.0	0.0	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.0	0.0	0.00	
First Survey @ 500' MD / 500' TVD										
529.0	0.88	202.15	529.0	-0.2	-0.1	0.2	3.03	0.2	202.15	
559.0	1.10	204.57	559.0	-0.7	-0.3	0.7	0.75	0.7	203.09	
589.0	1.19	209.95	589.0	-1.2	-0.6	1.3	0.47	1.3	205.00	
619.0	1.68	212.15	619.0	-1.9	-1.0	2.1	1.64	2.1	207.24	
649.0	2.70	213.96	649.0	-2.8	-1.6	3.2	3.41	3.2	209.38	
679.0	3.40	213.96	678.9	-4.1	-2.5	4.8	2.33	4.8	210.89	
709.0	4.02	214.36	708.9	-5.7	-3.6	6.8	2.07	6.8	211.83	
739.0	4.51	210.96	738.8	-7.6	-4.8	9.0	1.84	9.0	212.02	
769.0	5.39	211.27	768.7	-9.8	-6.1	11.6	2.93	11.6	211.82	
799.0	5.92	210.88	798.5	-12.4	-7.6	14.5	1.77	14.5	211.66	
829.0	6.32	209.55	828.3	-15.1	-9.2	17.7	1.41	17.7	211.40	
859.0	6.72	209.55	858.1	-18.1	-10.9	21.1	1.33	21.1	211.10	
889.0	7.51	205.98	887.9	-21.4	-12.6	24.8	3.02	24.8	210.59	
919.0	8.62	203.38	917.6	-25.2	-14.4	29.0	3.89	29.0	209.72	
949.0	9.50	205.98	947.2	-29.5	-16.4	33.7	3.23	33.7	209.02	
979.0	10.38	205.76	976.8	-34.2	-18.6	38.9	2.94	38.9	208.60	
1,009.0	11.00	206.38	1,006.3	-39.2	-21.1	44.4	2.10	44.5	208.29	
1,039.0	12.02	205.19	1,035.7	-44.6	-23.7	50.4	3.49	50.5	207.99	
1,069.0	12.81	206.16	1,065.0	-50.4	-26.5	56.8	2.72	56.9	207.73	
1,099.0	13.52	207.97	1,094.2	-56.4	-29.6	63.6	2.74	63.7	207.66	
1,129.0	14.58	207.26	1,123.3	-62.9	-33.0	70.9	3.58	71.0	207.65	
1,159.0	15.38	208.28	1,152.3	-69.8	-36.6	78.7	2.81	78.8	207.67	
1,189.0	16.62	208.45	1,181.1	-77.0	-40.5	86.9	4.14	87.0	207.73	
1,219.0	17.50	209.38	1,209.8	-84.7	-44.8	95.7	3.07	95.8	207.84	

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Site: C. McGraw #116
Well: C. McGraw #116
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well C. McGraw #116
TVD Reference: WELL @ 1065.0usft (Decker #9)
MD Reference: WELL @ 1065.0usft (Decker #9)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
	1,249.0	18.60	208.45	1,238.3	-92.9	-49.3	105.0	3.79	105.1	207.94
	1,279.0	19.40	209.47	1,266.7	-101.4	-54.0	114.8	2.89	114.9	208.02
	1,309.0	20.50	209.07	1,294.9	-110.4	-59.0	125.0	3.69	125.1	208.13
	1,339.0	21.30	209.69	1,322.9	-119.7	-64.2	135.7	2.77	135.8	208.22
	1,369.0	21.79	209.95	1,350.8	-129.2	-69.7	146.7	1.66	146.8	208.34
	1,399.0	22.49	211.36	1,378.6	-139.0	-75.5	158.0	2.93	158.1	208.51
	1,429.0	23.20	212.77	1,406.2	-148.8	-81.7	169.7	2.99	169.8	208.75
	1,459.0	23.91	212.68	1,433.7	-158.9	-88.1	181.7	2.37	181.7	209.02
	1,489.0	24.39	212.77	1,461.1	-169.2	-94.8	193.9	1.60	194.0	209.25
	1,519.0	25.59	212.29	1,488.3	-179.9	-101.6	206.6	4.06	206.6	209.45
	1,549.0	26.20	210.57	1,515.3	-191.1	-108.4	219.7	3.23	219.7	209.57
	1,579.0	26.69	209.55	1,542.1	-202.7	-115.1	233.0	2.23	233.1	209.60
	1,609.0	27.22	208.06	1,568.9	-214.6	-121.7	246.6	2.86	246.7	209.55
	1,639.0	28.02	208.19	1,595.5	-226.8	-128.2	260.5	2.67	260.6	209.48
	1,669.0	29.52	210.26	1,621.8	-239.4	-135.3	275.0	6.00	275.0	209.46
	1,699.0	31.51	210.66	1,647.6	-252.6	-143.0	290.2	6.67	290.2	209.52
	1,729.0	33.58	210.57	1,672.9	-266.5	-151.2	306.3	6.90	306.4	209.58
	1,759.0	35.88	212.99	1,697.5	-281.0	-160.2	323.4	8.94	323.5	209.69
	1,789.0	37.69	213.48	1,721.6	-296.0	-170.1	341.4	6.11	341.4	209.88
	1,819.0	37.21	212.99	1,745.4	-311.3	-180.1	359.6	1.88	359.6	210.05
	1,849.0	35.79	212.46	1,769.5	-326.3	-189.7	377.4	4.85	377.4	210.18
	1,879.0	35.71	211.98	1,793.9	-341.1	-199.1	394.9	0.97	394.9	210.27
	1,909.0	36.10	212.77	1,818.2	-355.0	-208.5	412.5	2.02	412.5	210.36
	1,939.0	36.50	212.46	1,842.3	-370.9	-218.1	430.3	1.47	430.3	210.45
	1,969.0	36.90	212.15	1,866.4	-386.1	-227.6	448.2	1.47	448.2	210.52
	1,999.0	37.52	211.98	1,890.3	-401.4	-237.3	466.3	2.09	466.3	210.58
	2,029.0	37.61	211.89	1,914.1	-417.0	-246.9	484.6	0.35	484.6	210.64

87.04766



HP
HG Energy EOW Report

Company: HG Energy, LLC
 Project: Roane County, West Virginia
 Site: C. McGraw #116
 Well: C. McGraw #116
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well C. McGraw #116
 TVD Reference: WELL @ 1065.0usft (Decker #9)
 MD Reference: WELL @ 1065.0usft (Decker #9)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Compass

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	D Leg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,059.0	36.72	210.48	1,938.0	-432.5	-256.3	502.7	4.11	502.7	210.66
2,089.0	36.81	210.17	1,962.0	-448.0	-265.4	520.7	0.69	520.7	210.64
2,119.0	36.99	210.66	1,986.0	-463.5	-274.5	538.7	1.15	538.7	210.64
2,149.0	37.38	209.95	2,009.9	-479.2	-283.7	556.8	1.93	556.8	210.63
2,179.0	37.69	209.55	2,033.7	-495.0	-292.7	575.1	1.31	575.1	210.60
2,239.0	39.11	209.16	2,080.7	-527.5	-311.0	612.4	2.40	612.4	210.52
2,269.0	38.62	208.06	2,104.1	-544.0	-320.0	631.2	2.82	631.2	210.47
2,299.0	37.61	207.09	2,127.7	-560.4	-328.6	649.7	3.91	649.7	210.38
2,329.0	36.59	205.76	2,151.6	-576.7	-336.6	667.7	4.33	667.7	210.28
2,359.0	35.22	204.35	2,175.9	-592.6	-344.1	685.2	5.33	685.2	210.14
2,430.0	35.22	204.35	2,233.9	-629.9	-361.0	725.9	0.00	726.0	209.82

TD @ 2430' MD / 2234' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.0	500.0	0.0	0.0	First Survey @ 500' MD / 500' TVD
2,430.0	2,233.9	-629.9	-361.0	TD @ 2430' MD / 2234' TVD

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
AUG 03 2015

10/23/2015

87.04766

Company Name: HG Energy, LLC
 C. McGraw #116
 Roane County, West Virginia
 Rig: Decker #9
 Created By: Shane Robbins
 Date: 6/24/2015

C. McGraw #116
 Roane County, West Virginia
 Q150322 & AM-150425
 Design #1

DESIGN TARGET DETAILS

Name	TVD	4x5	4x4W	Northing	Easting	Longitude	Latitude
Target C. McGraw #116	2882.0	-424.3	-312.6	14252525.64	1511722.31	31° 42' 47.100 N	81° 16' 33.200 W
*Plan View Target Center							

ANNOTATIONS

ID	In	A1	TVD	4x5	4x4W	Vsect	Departure	Annotation
1	800.0	0.00	0.00	0.00	0.00	0.00	0.00	TD @ 344 MO / 224' TVD
2	2430.0	36.22	2043.8	2333.5	-429.9	-361.0	726.9	TD @ 3437 MO / 2234' TVD

PROJECT DETAILS:

Geographic System:	Roane County, West Virginia
Datum:	Universal Transverse Mercator
Ellipsoid:	NAD83 West Virginia - MARN
System Datum:	Zone 18N 1844W to 78 WJ Mean Sea Level

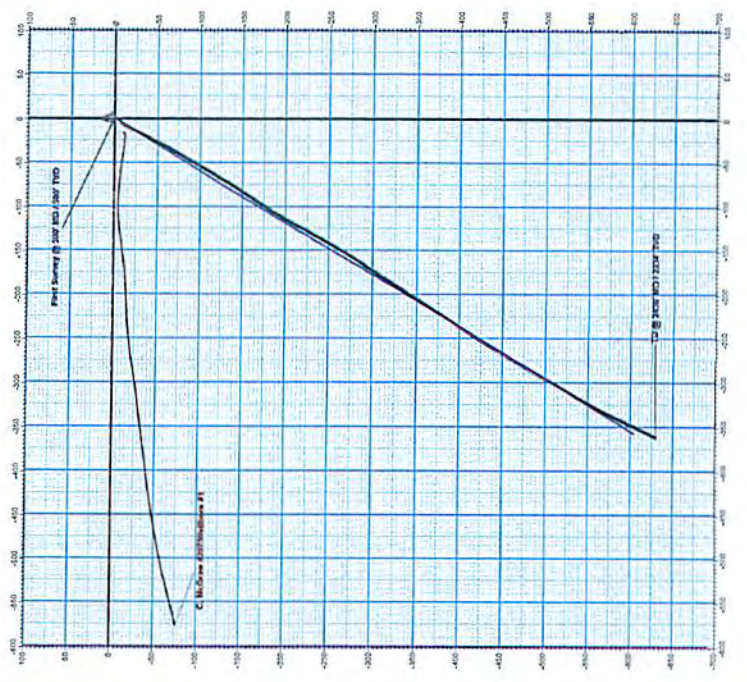
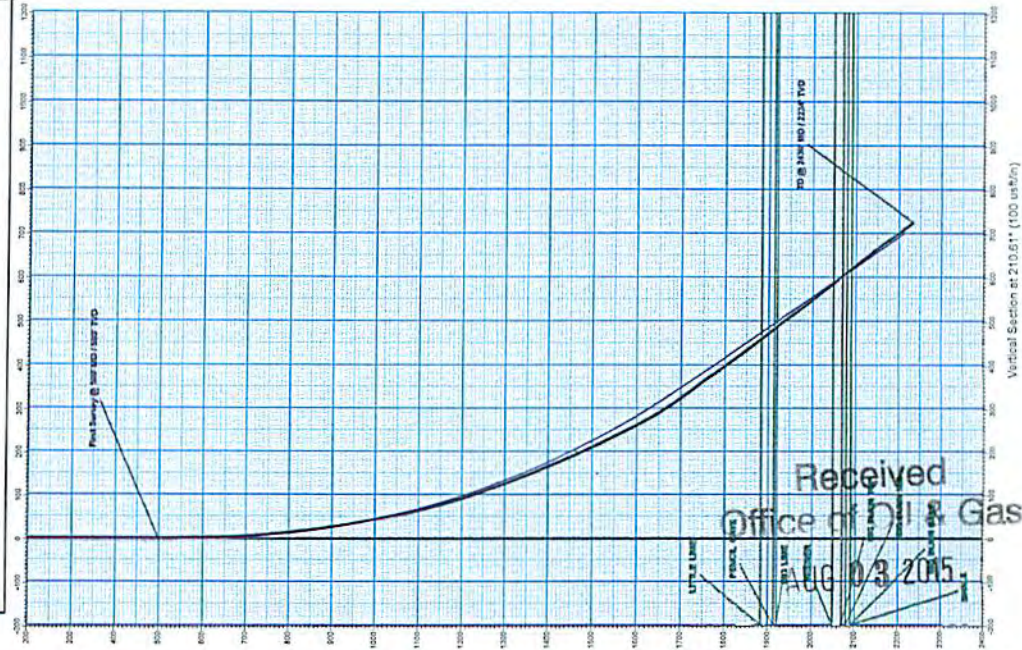
WELL DETAILS: C. McGraw #116

4x5	4x4W	Northing	Easting	Longitude	Latitude
8.0	0.0	14252512.8	1511721.06	31° 42' 47.200 N	81° 16' 28.300 W

M **G** **T**

 Azimuths to Grid North
 Correction: -7.83°
 Magnetic Field
 Strength: 51923.3snT
 Dip Angle: 66.36°
 Date: 6/4/2015
 Model: IGRF2015

HG Energy



10/23/2015