

87.04758

## **HG Energy, LLC**

Roane County, West Virginia

C. McGraw #115

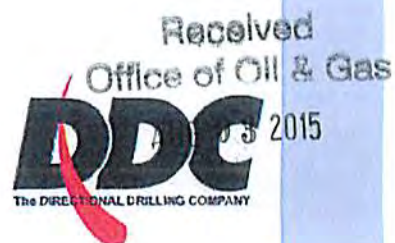
C. McGraw #115

**Wellbore #1**

**Design: Wellbore #1**

# **Survey Report - Geographic**

11 June, 2015



10/23/2015

87.04758

HP  
Survey Report - Geographic



<b>Company:</b> HG Energy, LLC	<b>Local Co-ordinate Reference:</b> Site C. McGraw #115
<b>Project:</b> Roane County, West Virginia	<b>TVD Reference:</b> WELL @ 1119.0usft (Decker #9)
<b>Site:</b> C. McGraw #115	<b>MD Reference:</b> WELL @ 1119.0usft (Decker #9)
<b>Well:</b> C. McGraw #115	<b>North Reference:</b> Grid
<b>Wellbore:</b> Wellbore #1	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Wellbore #1	<b>Database:</b> Compass

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

<b>Site</b> C. McGraw #115		
<b>Site Position:</b>	<b>Northing:</b> 14,058,775.56 usft	<b>Latitude:</b> 38° 42' 51.900 N
<b>From:</b> Lat/Long	<b>Easting:</b> 1,560,242.75 usft	<b>Longitude:</b> 81° 16' 51.900 W
<b>Position Uncertainty:</b> 0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> -0.18 °

<b>Well</b> C. McGraw #115		
<b>Well Position</b> +N/-S 0.0 usft	<b>Northing:</b> 14,058,775.56 usft	<b>Latitude:</b> 38° 42' 51.900 N
+E/-W 0.0 usft	<b>Easting:</b> 1,560,242.75 usft	<b>Longitude:</b> 81° 16' 51.900 W
<b>Position Uncertainty</b> 0.0 usft	<b>Wellhead Elevation:</b> 0.0 usft	<b>Ground Level:</b> 1,111.0 usft

<b>Wellbore</b> Wellbore #1
-----------------------------

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/3/2015	-7.99	66.36	51,924

<b>Design</b> Wellbore #1
---------------------------

<b>Audit Notes:</b>		
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	128.27

Survey Program		Date			
<b>From (usft)</b>	<b>To (usft)</b>	6/11/2015			
500.0	2,554.0	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
		MWD Survey #1 (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	14,058,775.56	1,560,242.75	38° 42' 51.900 N	81° 16' 51.900 W
500.0	0.00	0.00	500.0	0.0	0.0	14,058,775.56	1,560,242.75	38° 42' 51.900 N	81° 16' 51.900 W
<b>Assumed Vertical Tie-In @ 500' MD / 500' TVD</b>									
557.0	0.88	128.79	557.0	-0.3	0.3	14,058,775.29	1,560,243.10	38° 42' 51.897 N	81° 16' 51.896 W
587.0	0.80	138.79	587.0	-0.6	0.7	14,058,774.99	1,560,243.41	38° 42' 51.894 N	81° 16' 51.892 W
617.0	1.50	128.39	617.0	-1.0	1.1	14,058,774.59	1,560,243.86	38° 42' 51.890 N	81° 16' 51.886 W
647.0	2.39	129.10	647.0	-1.6	1.9	14,058,773.95	1,560,244.65	38° 42' 51.884 N	81° 16' 51.876 W
677.0	3.40	126.10	676.9	-2.5	3.1	14,058,773.03	1,560,245.86	38° 42' 51.875 N	81° 16' 51.871 W
707.0	4.68	126.59	706.9	-3.8	4.8	14,058,771.78	1,560,247.56	38° 42' 51.863 N	81° 16' 51.859 W
737.0	5.70	126.37	736.7	-5.4	7.0	14,058,770.16	1,560,249.74	38° 42' 51.847 N	81° 16' 51.812 W
767.0	6.41	125.40	766.6	-7.3	9.6	14,058,768.31	1,560,252.31	38° 42' 51.829 N	81° 16' 51.779 W
797.0	6.98	125.40	796.4	-9.3	12.4	14,058,766.28	1,560,255.16	38° 42' 51.809 N	81° 16' 51.743 W

Received  
Office of Oil & Gas  
AUG 05 2015



87.04758

HP  
Survey Report - Geographic



<b>Company:</b> HG Energy, LLC	<b>Local Co-ordinate Reference:</b> Site C. McGraw #115
<b>Project:</b> Roane County, West Virginia	<b>TVD Reference:</b> WELL @ 1119.0usft (Decker #9)
<b>Site:</b> C. McGraw #115	<b>MD Reference:</b> WELL @ 1119.0usft (Decker #9)
<b>Well:</b> C. McGraw #115	<b>North Reference:</b> Grid
<b>Wellbore:</b> Wellbore #1	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Wellbore #1	<b>Database:</b> Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
827.0	7.69	124.38	826.1	-11.5	15.5	14,058,764.09	1,560,258.30	38° 42' 51.787 N	81° 16' 51.703 W
857.0	8.40	126.10	855.8	-13.9	19.0	14,058,761.67	1,560,261.73	38° 42' 51.763 N	81° 16' 51.660 W
887.0	8.88	127.16	885.5	-16.6	22.6	14,058,758.98	1,560,265.34	38° 42' 51.737 N	81° 16' 51.614 W
917.0	9.59	127.16	915.1	-19.5	26.4	14,058,756.07	1,560,269.18	38° 42' 51.708 N	81° 16' 51.566 W
947.0	10.38	126.19	944.6	-22.6	30.6	14,058,752.97	1,560,273.35	38° 42' 51.677 N	81° 16' 51.513 W
977.0	11.18	124.69	974.1	-25.8	35.2	14,058,749.72	1,560,277.92	38° 42' 51.645 N	81° 16' 51.455 W
1,007.0	12.11	124.47	1,003.5	-29.3	40.2	14,058,746.28	1,560,282.91	38° 42' 51.612 N	81° 16' 51.392 W
1,037.0	12.90	123.90	1,032.8	-32.9	45.5	14,058,742.63	1,560,288.28	38° 42' 51.576 N	81° 16' 51.324 W
1,067.0	13.70	123.37	1,062.0	-36.8	51.3	14,058,738.81	1,560,294.03	38° 42' 51.538 N	81° 16' 51.251 W
1,097.0	14.49	122.88	1,091.1	-40.7	57.4	14,058,734.82	1,560,300.15	38° 42' 51.499 N	81° 16' 51.174 W
1,127.0	15.20	122.27	1,120.1	-44.9	63.9	14,058,730.68	1,560,306.63	38° 42' 51.458 N	81° 16' 51.092 W
1,157.0	16.22	122.88	1,148.9	-49.3	70.7	14,058,726.31	1,560,313.47	38° 42' 51.415 N	81° 16' 51.006 W
1,187.0	17.01	123.77	1,177.7	-54.0	77.9	14,058,721.59	1,560,320.64	38° 42' 51.369 N	81° 16' 50.915 W
1,217.0	17.90	126.50	1,206.3	-59.2	85.2	14,058,716.41	1,560,327.99	38° 42' 51.318 N	81° 16' 50.822 W
1,247.0	18.91	128.57	1,234.8	-64.9	92.7	14,058,710.64	1,560,335.50	38° 42' 51.261 N	81° 16' 50.727 W
1,277.0	19.80	129.19	1,263.1	-71.2	100.5	14,058,704.39	1,560,343.24	38° 42' 51.199 N	81° 16' 50.629 W
1,307.0	20.59	129.10	1,291.2	-77.7	108.5	14,058,697.86	1,560,351.27	38° 42' 51.135 N	81° 16' 50.527 W
1,337.0	21.30	129.10	1,319.3	-84.5	116.8	14,058,691.09	1,560,359.59	38° 42' 51.068 N	81° 16' 50.422 W
1,367.0	22.18	129.58	1,347.1	-91.5	125.4	14,058,684.05	1,560,368.19	38° 42' 50.999 N	81° 16' 50.313 W
1,397.0	22.89	129.89	1,374.8	-98.9	134.3	14,058,676.70	1,560,377.03	38° 42' 50.926 N	81° 16' 50.202 W
1,427.0	23.91	129.98	1,402.4	-106.5	143.4	14,058,669.05	1,560,386.16	38° 42' 50.851 N	81° 16' 50.086 W
1,457.0	24.88	130.38	1,429.7	-114.5	152.9	14,058,661.06	1,560,395.63	38° 42' 50.772 N	81° 16' 49.966 W
1,487.0	25.98	131.17	1,456.8	-122.9	162.6	14,058,652.64	1,560,405.38	38° 42' 50.689 N	81° 16' 49.843 W
1,517.0	26.78	130.99	1,483.7	-131.7	172.7	14,058,643.88	1,560,415.43	38° 42' 50.603 N	81° 16' 49.716 W
1,547.0	27.49	130.68	1,510.3	-140.6	183.0	14,058,634.94	1,560,425.78	38° 42' 50.515 N	81° 16' 49.585 W
1,577.0	28.28	130.29	1,536.9	-149.7	193.7	14,058,625.83	1,560,436.45	38° 42' 50.425 N	81° 16' 49.450 W
1,607.0	28.81	129.49	1,563.2	-158.9	204.7	14,058,616.63	1,560,447.45	38° 42' 50.335 N	81° 16' 49.310 W
1,637.0	29.70	128.26	1,589.4	-168.1	216.1	14,058,607.44	1,560,458.87	38° 42' 50.244 N	81° 16' 49.166 W
1,667.0	30.58	126.98	1,615.3	-177.3	228.0	14,058,598.22	1,560,470.80	38° 42' 50.153 N	81° 16' 49.015 W
1,697.0	31.68	126.37	1,641.0	-186.6	240.5	14,058,588.98	1,560,483.24	38° 42' 50.062 N	81° 16' 48.858 W
1,727.0	33.19	126.28	1,666.3	-196.1	253.4	14,058,579.45	1,560,496.20	38° 42' 49.968 N	81° 16' 48.694 W
1,757.0	34.60	126.19	1,691.2	-206.0	266.9	14,058,569.56	1,560,509.70	38° 42' 49.871 N	81° 16' 48.523 W
1,787.0	36.41	126.59	1,715.7	-216.3	281.0	14,058,559.22	1,560,523.72	38° 42' 49.769 N	81° 16' 48.346 W
1,817.0	37.91	126.89	1,739.6	-227.2	295.5	14,058,548.38	1,560,538.24	38° 42' 49.662 N	81° 16' 48.162 W
1,847.0	38.40	127.29	1,763.2	-238.4	310.3	14,058,537.21	1,560,553.03	38° 42' 49.552 N	81° 16' 47.975 W
1,877.0	38.18	126.98	1,786.7	-249.6	325.1	14,058,525.98	1,560,567.85	38° 42' 49.442 N	81° 16' 47.787 W
1,907.0	37.12	126.28	1,810.5	-260.5	339.8	14,058,515.05	1,560,582.55	38° 42' 49.334 N	81° 16' 47.601 W
1,937.0	36.99	126.50	1,834.4	-271.2	354.3	14,058,504.32	1,560,597.10	38° 42' 49.229 N	81° 16' 47.417 W
1,967.0	37.78	126.67	1,858.2	-282.1	369.0	14,058,493.47	1,560,611.73	38° 42' 49.122 N	81° 16' 47.232 W
1,997.0	38.18	127.29	1,881.9	-293.2	383.7	14,058,482.36	1,560,626.48	38° 42' 49.012 N	81° 16' 47.046 W
2,027.0	38.31	126.76	1,905.4	-304.4	398.5	14,058,471.18	1,560,641.30	38° 42' 48.902 N	81° 16' 46.858 W
2,057.0	38.31	126.76	1,929.0	-315.5	413.4	14,058,460.05	1,560,656.20	38° 42' 48.793 N	81° 16' 46.670 W
2,087.0	38.31	127.07	1,952.5	-326.7	428.3	14,058,448.88	1,560,671.07	38° 42' 48.683 N	81° 16' 46.482 W
2,117.0	38.49	126.76	1,976.0	-337.9	443.2	14,058,437.69	1,560,685.97	38° 42' 48.572 N	81° 16' 46.293 W
2,147.0	38.71	126.67	1,999.5	-349.1	458.2	14,058,426.50	1,560,700.97	38° 42' 48.462 N	81° 16' 46.103 W
2,177.0	39.02	126.28	2,022.8	-360.3	473.4	14,058,415.31	1,560,716.11	38° 42' 48.352 N	81° 16' 45.912 W
2,207.0	39.42	126.50	2,046.1	-371.5	488.6	14,058,404.05	1,560,731.38	38° 42' 48.241 N	81° 16' 45.719 W
2,237.0	39.90	126.37	2,069.2	-382.9	504.0	14,058,392.68	1,560,746.78	38° 42' 48.129 N	81° 16' 45.524 W
2,267.0	40.08	126.10	2,092.2	-394.3	519.6	14,058,381.29	1,560,762.34	38° 42' 48.017 N	81° 16' 45.327 W
2,297.0	40.39	125.57	2,115.1	-405.6	535.3	14,058,369.94	1,560,778.04	38° 42' 47.905 N	81° 16' 45.128 W
2,327.0	40.52	125.26	2,137.9	-416.9	551.2	14,058,358.66	1,560,793.91	38° 42' 47.794 N	81° 16' 44.928 W
2,357.0	39.68	124.78	2,160.8	-428.0	567.0	14,058,347.57	1,560,809.73	38° 42' 47.685 N	81° 16' 44.728 W
2,387.0	38.71	123.77	2,184.1	-438.7	582.6	14,058,336.89	1,560,825.40	38° 42' 47.580 N	81° 16' 44.529 W
2,447.0	37.38	122.40	2,231.3	-458.9	613.6	14,058,316.71	1,560,856.37	38° 42' 47.381 N	81° 16' 44.138 W
2,477.0	35.31	121.08	2,255.5	-468.2	628.7	14,058,307.35	1,560,871.49	38° 42' 47.289 N	81° 16' 43.947 W

Received  
Office of Oil & Gas  
August 3, 2015



87.04758

HP  
Survey Report - Geographic



<b>Company:</b> HG Energy, LLC	<b>Local Co-ordinate Reference:</b> Site C. McGraw #115
<b>Project:</b> Roane County, West Virginia	<b>TVD Reference:</b> WELL @ 1119.0usft (Decker #9)
<b>Site:</b> C. McGraw #115	<b>MD Reference:</b> WELL @ 1119.0usft (Decker #9)
<b>Well:</b> C. McGraw #115	<b>North Reference:</b> Grid
<b>Wellbore:</b> Wellbore #1	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Wellbore #1	<b>Database:</b> Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,554.0	35.31	121.08	2,318.3	-491.2	666.9	14,058,284.37	1,560,909.61	38° 42' 47.063 N	81° 16' 43.465 W

TD @ 2554' MD / 2318' TVD

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.0	500.0	0.0	0.0	Assumed Vertical Tie-In @ 500' MD / 500' TVD
2,554.0	2,318.3	-491.2	666.9	TD @ 2554' MD / 2318' TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

Received  
Office of Oil & Gas  
AUG 03 2015

87-04758

**HG Energy, LLC**  
Roane County, West Virginia  
C. McGraw #115  
C. McGraw #115  
Wellbore #1

Design: Wellbore #1

## HG Energy EOW Report

11 June, 2015

Received  
Office of Oil & Gas  
AUG 03 2015



10/23/2015



87-04758

# HP HG Energy EOW Report

**Company:** HG Energy, LLC  
**Project:** Roane County, West Virginia  
**Site:** C. McGraw #115  
**Well:** C. McGraw #115  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Site C. McGraw #115  
**TVD Reference:** WELL @ 1119.0usft (Decker #9)  
**MD Reference:** WELL @ 1119.0usft (Decker #9)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Compass

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

**System Datum:** Mean Sea Level

**Site:** C. McGraw #115

**Site Position:** Lat/Long 0.0 usft  
 Northing: 14,058,775.56 usft  
 Easting: 1,560,242.75 usft  
 Slot Radius: 13-3/16"  
 Latitude: 38° 42' 51.900 N  
 Longitude: 81° 16' 51.900 W  
 Grid Convergence: -0.18°

**Well:** C. McGraw #115

**Well Position:** +N/-S 0.0 usft  
 +E/-W 0.0 usft  
 Wellhead Elevation: 0.0 usft  
 Latitude: 38° 42' 51.900 N  
 Longitude: 81° 16' 51.900 W  
 Ground Level: 1,111.0 usft

**Wellbore:** Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/3/2015	-7.99	66.36	51.924

**Design:** Wellbore #1

**Audit Notes:** 1.0

**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	128.27

**Survey Program:** Date 6/11/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
500.0	2,554.0	MWD Survey #1 (Wellbore #1)	MWD default	MWD - Standard

Office of Oil & Gas  
 Received  
 6/11/2015

10/23/2015





87-04758

# HP HG Energy EOW Report

**Company:** HG Energy, LLC  
**Project:** Roane County, West Virginia  
**Site:** C. McGraw #115  
**Well:** C. McGraw #115  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Site C. McGraw #115  
**TVD Reference:** WELL @ 1119.0usft (Decker #9)  
**MD Reference:** WELL @ 1119.0usft (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 (°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.0	0.00	
<b>Assumed Vertical Tie-In @ 500' MD / 500' TVD</b>										
557.0	0.88	128.79	557.0	-0.3	0.3	0.4	1.54	0.4	128.79	
587.0	0.80	138.79	587.0	-0.6	0.7	0.9	0.56	0.9	131.17	
617.0	1.50	128.39	617.0	-1.0	1.1	1.5	2.43	1.5	131.51	
647.0	2.39	129.10	647.0	-1.6	1.9	2.5	2.97	2.5	130.41	
677.0	3.40	126.10	676.9	-2.5	3.1	4.0	3.40	4.0	129.25	
707.0	4.68	126.59	706.9	-3.8	4.8	6.1	4.27	6.1	128.26	
737.0	5.70	126.37	736.7	-5.4	7.0	8.8	3.40	8.8	127.71	
767.0	6.41	125.40	766.6	-7.3	9.6	12.0	2.39	12.0	127.22	
797.0	6.98	125.40	796.4	-9.3	12.4	15.5	1.90	15.5	126.81	
827.0	7.69	124.38	826.1	-11.5	15.5	19.3	2.41	19.3	126.42	
857.0	8.40	126.10	855.8	-13.9	19.0	23.5	2.50	23.5	126.22	
887.0	8.88	127.16	885.5	-16.6	22.6	28.0	1.69	28.0	126.29	
917.0	9.59	127.16	915.1	-19.5	26.4	32.8	2.37	32.8	126.42	
947.0	10.38	126.19	944.6	-22.6	30.6	38.0	2.69	38.0	126.45	
977.0	11.18	124.69	974.1	-25.8	35.2	43.6	2.83	43.6	126.32	
1,007.0	12.11	124.47	1,003.5	-29.3	40.2	49.7	3.10	49.7	126.10	
1,037.0	12.90	123.90	1,032.8	-32.9	45.5	56.1	2.67	56.2	125.88	
1,067.0	13.70	123.37	1,062.0	-36.8	51.3	63.0	2.70	63.1	125.63	
1,097.0	14.49	122.88	1,091.1	-40.7	57.4	70.3	2.66	70.4	125.37	
1,127.0	15.20	122.27	1,120.1	-44.9	63.9	77.9	2.42	78.1	125.10	
1,157.0	16.01	122.88	1,148.9	-49.3	70.7	86.0	3.44	86.2	124.86	
1,187.0	17.01	123.77	1,177.7	-54.0	77.9	94.6	2.77	94.8	124.72	
1,217.0	17.90	126.50	1,206.3	-59.2	85.2	103.6	4.03	103.8	124.76	
1,247.0	18.91	128.57	1,234.8	-64.9	92.7	113.0	4.01	113.2	125.00	

Received  
 Office of Oil & Gas  
 10/23/2015



87-04758

HP  
HG Energy EOW Report

Company: HG Energy, LLC  
 Project: Roane County, West Virginia  
 Site: C. McGraw #115  
 Well: C. McGraw #115  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Site C, McGraw #115  
 TVD Reference: WELL @ 1119.0usft (Decker #9)  
 MD Reference: WELL @ 1119.0usft (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/Lag (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
1,277.0	19.80	129.19	1,263.1	-71.2	100.5	123.0	3.04	123.1	125.31
1,307.0	20.59	129.10	1,291.2	-77.7	108.5	133.3	2.64	133.5	125.61
1,337.0	21.30	129.10	1,319.3	-84.5	116.8	144.0	2.37	144.2	125.87
1,367.0	22.18	129.58	1,347.1	-91.5	125.4	155.2	2.99	155.3	126.12
1,397.0	22.89	129.89	1,374.8	-98.9	134.3	166.7	2.40	166.7	126.36
1,427.0	23.91	129.98	1,402.4	-106.5	143.4	178.6	3.40	178.6	126.60
1,457.0	24.88	130.38	1,429.7	-114.5	152.9	190.9	3.28	191.0	126.83
1,487.0	25.98	131.17	1,456.8	-122.9	162.6	203.8	3.84	203.9	127.08
1,517.0	26.78	130.99	1,483.7	-131.7	172.7	217.1	2.68	217.2	127.33
1,547.0	27.49	130.68	1,510.4	-140.6	183.0	230.8	2.41	230.8	127.54
1,577.0	28.28	130.29	1,536.9	-149.7	193.7	244.8	2.70	244.8	127.71
1,607.0	28.81	129.49	1,563.2	-158.9	204.7	259.1	2.18	259.2	127.83
1,637.0	29.70	128.26	1,589.4	-168.1	216.1	273.8	3.58	273.8	127.88
1,667.0	30.58	126.98	1,615.3	-177.3	228.0	288.9	3.63	288.9	127.87
1,697.0	31.68	126.37	1,641.0	-186.6	240.5	304.4	3.81	304.4	127.81
1,727.0	33.19	126.28	1,666.3	-196.1	253.4	320.4	5.04	320.5	127.73
1,757.0	34.60	125.19	1,691.2	-206.0	266.9	337.2	4.70	337.2	127.66
1,787.0	36.41	126.59	1,715.7	-216.3	281.0	354.6	6.08	354.6	127.60
1,817.0	37.91	126.89	1,739.6	-227.2	295.5	372.7	5.04	372.7	127.55
1,847.0	38.40	127.29	1,763.2	-238.4	310.3	391.2	1.83	391.3	127.53
1,877.0	38.18	126.98	1,786.7	-249.6	325.1	409.8	0.97	409.8	127.51
1,907.0	37.12	126.28	1,810.5	-260.5	339.8	428.1	3.81	428.2	127.48
1,937.0	36.99	126.50	1,834.4	-271.2	354.3	446.2	0.62	446.2	127.43
1,967.0	37.78	126.67	1,858.2	-282.1	369.0	464.4	2.66	464.5	127.40
1,997.0	38.18	127.29	1,881.9	-293.2	383.7	482.9	1.84	482.9	127.38
2,027.0	38.31	126.76	1,905.4	-304.4	398.5	501.4	1.18	501.5	127.37
2,057.0	38.31	126.76	1,929.0	-315.5	413.4	520.0	0.00	520.1	127.35

Received  
Office of Oil & Gas

AUG 03 2015

10/23/2015





87-04758

HP  
HG Energy EOW Report

Company: HG Energy, LLC  
 Project: Roane County, West Virginia  
 Site: C. McGraw #115  
 Well: C. McGraw #115  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Site C. McGraw #115  
 TVD Reference: WELL @ 1119.0usft (Decker #9)  
 MD Reference: WELL @ 1119.0usft (Decker #9)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: Compass

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,087.0	38.31	127.07	1,952.5	-326.7	428.3	538.6	0.64	538.7	127.33
2,117.0	38.49	126.76	1,976.0	-337.9	443.2	557.2	0.88	557.3	127.32
2,147.0	38.71	126.67	1,999.5	-349.1	458.2	575.9	0.76	576.0	127.30
2,177.0	39.02	126.28	2,022.8	-360.3	473.4	594.8	1.32	594.9	127.27
2,207.0	39.42	126.50	2,046.1	-371.5	488.6	613.7	1.41	613.8	127.25
2,237.0	39.90	126.37	2,069.2	-382.9	504.0	632.9	1.62	633.0	127.22
2,267.0	40.08	126.10	2,092.2	-394.3	519.6	652.1	0.83	652.2	127.19
2,297.0	40.39	125.57	2,115.1	-405.6	535.3	671.5	1.54	671.6	127.15
2,327.0	40.52	125.26	2,137.9	-416.9	551.2	690.9	0.80	691.1	127.10
2,357.0	39.68	124.78	2,160.8	-428.0	567.0	710.2	2.98	710.4	127.05
2,387.0	38.71	123.77	2,184.1	-438.7	582.6	729.1	3.87	729.3	126.98
2,447.0	37.38	122.40	2,231.3	-458.9	613.6	766.0	2.63	766.2	126.79
2,477.0	35.31	121.08	2,255.5	-468.2	628.7	783.6	7.38	783.9	126.67
2,554.0	35.31	121.08	2,318.3	-491.2	666.9	827.8	0.00	828.2	126.37

TD @ 2554' MD / 2318' 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	Assumed Vertical Tie-in @ 500' MD / 500' TVD
2,554.0	2,318.3	-491.2	666.9	TD @ 2554' MD / 2318' TVD

Checked By: \_\_\_\_\_

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_

Received  
Office of Oil & Gas  
AUG 03 2015

10/23/2015

6/21/2015 1:06:24PM



87.04758

Company Name: HG Energy, LLC  
 C. McGraw #115  
 Roane County, West Virginia  
 Rig: Decker #9  
 Created By: John Mooney  
 Date: 6/11/2015

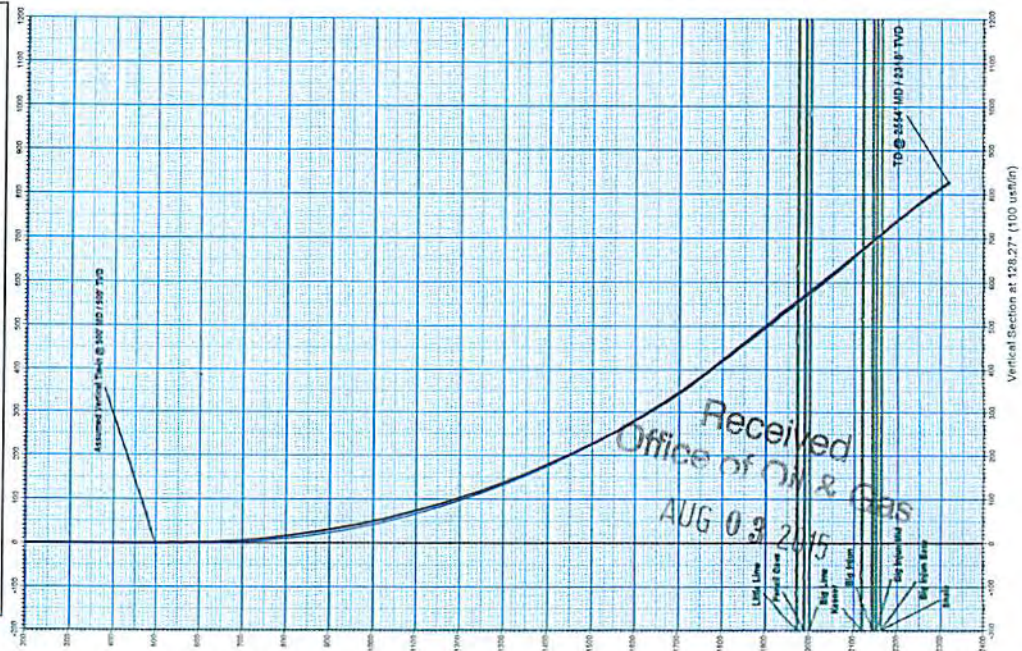
C. McGraw #115  
 Roane County, West Virginia  
 Q150472 & AM-150402  
 Design #1

SEIGN TARGET DETAILS

Name	TVD	NS/E	EW/W	Northing	Eastng	Latitude	Longitude
Target C	212.0	-436.5	553.31452533501	160796.04	39° 42' 47.600 N	81° 16' 44.800 W	
* plan hits target center							

ANNOTATIONS

MD	Inc	Asl	TVD	NS/E	EW/W	Vertical Depth	Assumptions
2555.0	0.00	0.00	250.0	0.0	0.0	0.0	Assumed Vertical Tie-in @ 500' MD / 800' TVD
2555.0	35.31	171.05	2318.3	-491.2	666.9	872.8	TD @ 2554' MD / 2318' TVD



PROJECT DETAILS:

Roane County, West Virginia

Geodetic System: Universal Transverse Mercator  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: CRS 1980  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level

WELL DETAILS: C. McGraw #115

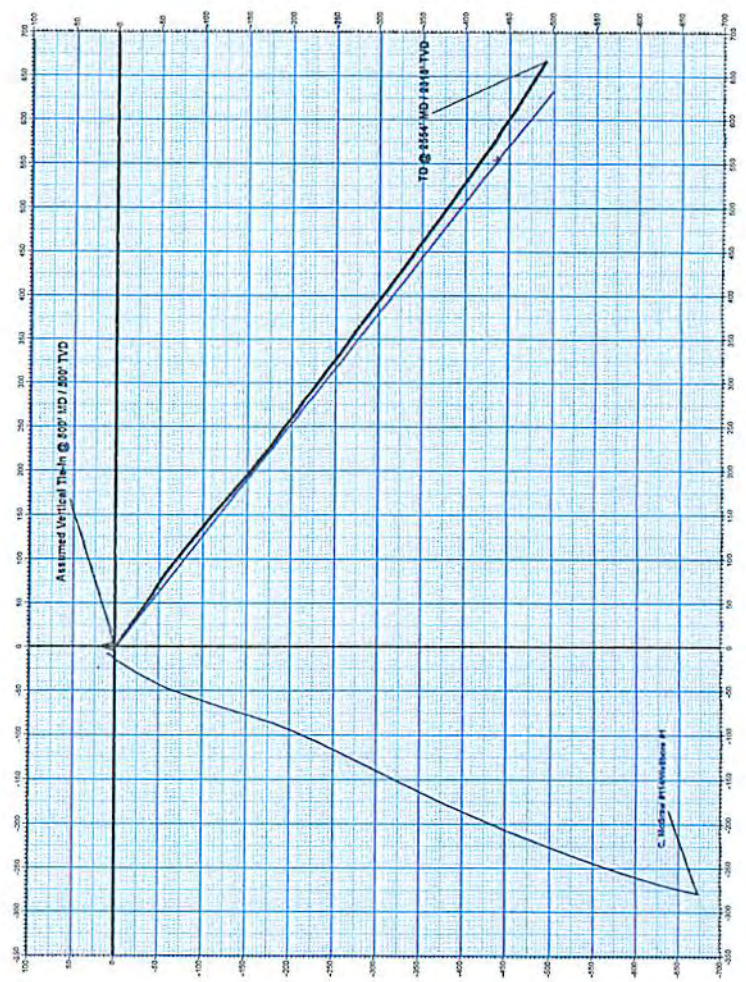
NS/E	EW/W	Northing	Eastng	Latitude	Longitude
0.0	0.0	14053775.56	1600247.75	39° 42' 51.800 N	81° 16' 51.800 W

Azimuths to Grid North

Correction: -7.82°

Magnetic Field  
 Strength: 51923.8snT  
 Dip Angle: 66.36°  
 Date: 6/3/2015  
 Model: IGRF2015

# HG Energy



10/23/2015