

HG Energy, LLC
Lincoln County, West Virginia
JA Fowler 110
JA Fowler 110

Wellbore #1

Design: Wellbore #1

DDC Survey Report

23 October, 2014

Received
Office of Oil & Gas

DEC 08 2014



01/16/2015

Survey Report



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well JA Fowler 110
Project:	Lincoln County, West Virginia	TVD Reference:	Well @ 1021.0usft (Decker #9)
Site:	JA Fowler 110	MD Reference:	Well @ 1021.0usft (Decker #9)
Well:	JA Fowler 110	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

Project	Lincoln 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	JA Fowler 110				
Site Position:		Northing:	13,882,372.74 usft	Latitude:	38° 13' 34.700 N
From:	Lat/Long	Easting:	1,366,166.96 usft	Longitude:	81° 57' 18.100 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.59 °

Well	JA Fowler 110					
Well Position	+N/-S	0.0 usft	Northing:	13,882,372.74 usft	Latitude:	38° 13' 34.700 N
	+E/-W	0.0 usft	Easting:	1,366,166.96 usft	Longitude:	81° 57' 18.100 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,013.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/17/2014	-7.44	66.08	51,829

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	4.30	

Survey Program	Date	10/23/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
776.0	2,781.0	MWD (Wellbore #1)	MWD default	MWD - Standard

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
750.0	0.00	0.00	750.0	0.0	0.0	0.0	0.00	0.00	0.00
776.0	1.00	98.70	776.0	0.0	0.2	0.0	3.85	3.85	0.00
806.0	1.60	34.70	806.0	0.3	0.7	0.3	4.90	2.00	-213.33
836.0	3.00	18.90	836.0	1.4	1.2	1.4	5.08	4.67	-52.67
866.0	4.40	14.80	865.9	3.2	1.8	3.3	4.75	4.67	-13.67
896.0	5.50	11.00	895.8	5.7	2.3	5.9	3.82	3.67	-12.67
926.0	6.60	10.60	925.6	8.8	2.9	9.0	3.67	3.67	-1.33
956.0	7.50	7.30	955.4	12.5	3.5	12.7	3.29	3.00	-11.00
986.0	8.50	4.70	985.1	16.6	3.9	16.9	3.54	3.33	-8.67
1,016.0	9.60	2.70	1,014.7	21.3	4.2	21.6	3.99	3.67	-10.00

Received
Office of Oil & Gas

Survey Report



Company: HG Energy, LLC	Local Co-ordinate Reference: Well JA Fowler 110
Project: Lincoln County, West Virginia	TVD Reference: Well @ 1021.0usft (Decker #9)
Site: JA Fowler 110	MD Reference: Well @ 1021.0usft (Decker #9)
Well: JA Fowler 110	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: EDM Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,046.0	10.70	0.60	1,044.3	26.6	4.3	26.9	3.72	3.67	-3.67
1,076.0	11.80	0.10	1,073.7	32.5	4.3	32.7	3.68	3.67	-1.67
1,106.0	12.70	1.20	1,103.0	38.8	4.4	39.1	3.10	3.00	3.67
1,136.0	13.70	2.30	1,132.2	45.7	4.6	45.9	3.44	3.33	3.67
1,166.0	14.80	3.30	1,161.3	53.1	5.0	53.3	3.76	3.67	3.33
1,196.0	16.00	3.90	1,190.2	61.0	5.5	61.3	4.04	4.00	2.00
1,226.0	17.20	4.00	1,219.0	69.6	6.1	69.8	4.00	4.00	0.33
1,256.0	18.20	4.30	1,247.5	78.7	6.7	78.9	3.35	3.33	1.00
1,286.0	19.70	5.00	1,275.9	88.4	7.5	88.7	5.06	5.00	2.33
1,316.0	20.70	6.10	1,304.1	98.7	8.5	99.0	3.57	3.33	3.67
1,346.0	21.40	6.10	1,332.1	109.4	9.7	109.8	2.33	2.33	0.00
1,376.0	21.50	5.50	1,360.0	120.3	10.8	120.8	0.80	0.33	-2.00
1,406.0	21.50	5.30	1,387.9	131.3	11.8	131.8	0.24	0.00	-0.67
1,436.0	22.10	5.00	1,415.8	142.4	12.8	142.9	2.03	2.00	-1.00
1,466.0	22.70	5.10	1,443.5	153.7	13.8	154.3	2.00	2.00	0.33
1,496.0	22.60	5.00	1,471.2	165.3	14.8	165.9	0.36	-0.33	-0.33
1,526.0	22.60	4.30	1,498.9	176.7	15.8	177.4	0.90	0.00	-2.33
1,556.0	22.80	4.90	1,526.5	188.3	16.7	189.0	1.02	0.67	2.00
1,586.0	23.10	5.10	1,554.2	199.9	17.7	200.7	1.03	1.00	0.67
1,616.0	23.10	4.90	1,581.8	211.7	18.7	212.5	0.26	0.00	-0.67
1,646.0	23.00	4.90	1,609.4	223.4	19.7	224.2	0.33	-0.33	0.00
1,676.0	23.10	5.10	1,637.0	235.1	20.8	236.0	0.42	0.33	0.67
1,706.0	23.40	5.10	1,664.5	246.9	21.8	247.8	1.00	1.00	0.00
1,736.0	23.80	5.80	1,692.0	258.8	23.0	259.8	1.63	1.33	2.33
1,766.0	24.10	6.40	1,719.4	270.9	24.2	272.0	1.29	1.00	2.00
1,796.0	23.20	5.40	1,746.9	282.9	25.5	284.0	3.28	-3.00	-3.33
1,826.0	21.70	4.60	1,774.7	294.3	26.5	295.5	5.10	-5.00	-2.67
1,856.0	21.10	4.00	1,802.6	305.2	27.3	306.4	2.13	-2.00	-2.00
1,886.0	20.90	3.50	1,830.6	315.9	28.0	317.2	0.90	-0.67	-1.67
1,916.0	20.80	3.10	1,858.6	326.6	28.6	327.8	0.58	-0.33	-1.33
1,946.0	21.80	4.00	1,886.6	337.5	29.3	338.7	3.51	3.33	3.00
1,976.0	22.80	5.00	1,914.3	348.8	30.2	350.1	3.57	3.33	3.33
2,006.0	23.00	5.00	1,942.0	360.5	31.2	361.8	0.67	0.67	0.00
2,036.0	23.20	5.00	1,969.6	372.2	32.2	373.6	0.67	0.67	0.00
2,066.0	22.70	4.30	1,997.2	383.8	33.2	385.3	1.90	-1.67	-2.33
2,096.0	22.60	4.70	2,024.9	395.4	34.1	396.8	0.61	-0.33	1.33
2,126.0	21.90	4.00	2,052.6	406.7	35.0	408.2	2.49	-2.33	-2.33
2,156.0	21.00	2.80	2,080.6	417.6	35.6	419.1	3.34	-3.00	-4.00
2,186.0	19.40	2.10	2,108.7	428.0	36.1	429.5	5.39	-5.33	-2.33
2,216.0	19.30	2.10	2,137.0	437.9	36.4	439.4	0.33	-0.33	0.00
2,246.0	18.50	2.00	2,165.4	447.6	36.8	449.1	2.67	-2.67	-0.33
2,276.0	18.80	2.70	2,193.8	457.2	37.2	458.7	1.25	1.00	2.33
2,306.0	19.10	4.60	2,222.2	466.9	37.8	468.5	2.29	1.00	6.33
2,336.0	18.50	4.90	2,250.6	476.6	38.6	478.1	2.03	-2.00	1.00

Survey Report



Company: HG Energy, LLC	Local Co-ordinate Reference: Well JA Fowler 110
Project: Lincoln County, West Virginia	TVD Reference: Well @ 1021.0usft (Decker #9)
Site: JA Fowler 110	MD Reference: Well @ 1021.0usft (Decker #9)
Well: JA Fowler 110	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: EDM Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
2,366.0	17.00	3.30	2,279.2	485.7	39.2	487.3	5.26	-5.00	-5.33	
2,396.0	16.20	1.70	2,307.9	494.3	39.6	495.8	3.07	-2.67	-5.33	
2,426.0	16.00	358.30	2,336.7	502.6	39.6	504.1	3.21	-0.67	-11.33	
2,456.0	15.70	356.50	2,365.6	510.8	39.3	512.3	1.92	-1.00	-6.00	
2,486.0	16.00	357.10	2,394.5	518.9	38.8	520.4	1.14	1.00	2.00	
2,516.0	16.30	0.10	2,423.3	527.3	38.6	528.7	2.96	1.00	10.00	
2,546.0	16.70	4.70	2,452.0	535.8	39.0	537.2	4.55	1.33	15.33	
2,576.0	17.10	6.50	2,480.8	544.5	39.8	545.9	2.20	1.33	6.00	
2,606.0	16.70	6.90	2,509.5	553.1	40.8	554.6	1.39	-1.33	1.33	
2,636.0	15.60	4.70	2,538.3	561.4	41.7	563.0	4.20	-3.67	-7.33	
2,666.0	14.20	3.30	2,567.3	569.1	42.2	570.7	4.82	-4.67	-4.67	
2,696.0	12.60	2.90	2,596.4	576.1	42.6	577.6	5.34	-5.33	-1.33	
2,726.0	11.20	1.30	2,625.8	582.2	42.8	583.8	4.79	-4.67	-5.33	
TD @ 2781' MD / 2680' TVD										
2,781.0	11.20	1.30	2,679.8	592.9	43.1	594.5	0.00	0.00	0.00	

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
2,781.0	2,679.8	592.9	43.1	TD @ 2781' MD / 2680' TVD

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
DEC 08 2014

HG Energy, LLC

Lincoln County, West Virginia

JA Fowler 110

JA Fowler 110

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

23 October, 2014

Received
Office of Oil & Gas

DEC 08 2014



01/16/2015

Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well JA Fowler 110
Project:	Lincoln County, West Virginia	TVD Reference:	Well @ 1021.0usft (Decker #9)
Site:	JA Fowler 110	MD Reference:	Well @ 1021.0usft (Decker #9)
Well:	JA Fowler 110	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

Project	Lincoln 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	JA Fowler 110				
Site Position:		Northing:	13,882,372.74 usft	Latitude:	38° 13' 34.700 N
From:	Lat/Long	Easting:	1,366,166.96 usft	Longitude:	81° 57' 18.100 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.59 °

Well	JA Fowler 110					
Well Position	+N/-S	0.0 usft	Northing:	13,882,372.74 usft	Latitude:	38° 13' 34.700 N
	+E/-W	0.0 usft	Easting:	1,366,166.96 usft	Longitude:	81° 57' 18.100 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,013.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/17/2014	-7.44	66.08	51,829

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		4.30

Survey Program	Date	10/23/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
776.0	2,781.0	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
750.0	0.00	0.00	750.0	0.0	0.0	13,882,372.74	1,366,166.96	38° 13' 34.700 N	81° 57' 18.100 W
776.0	1.00	98.70	776.0	0.0	0.2	13,882,372.71	1,366,167.19	38° 13' 34.700 N	81° 57' 18.097 W
806.0	1.60	34.70	806.0	0.3	0.7	13,882,373.01	1,366,167.69	38° 13' 34.703 N	81° 57' 18.091 W
836.0	3.00	18.90	836.0	1.4	1.2	13,882,374.10	1,366,168.18	38° 13' 34.714 N	81° 57' 18.085 W
866.0	4.40	14.80	865.9	3.2	1.8	13,882,375.96	1,366,168.73	38° 13' 34.732 N	81° 57' 18.078 W
896.0	5.50	11.00	895.8	5.7	2.3	13,882,378.48	1,366,169.29	38° 13' 34.757 N	81° 57' 18.072 W
926.0	6.60	10.60	925.6	8.8	2.9	13,882,381.59	1,366,169.89	38° 13' 34.788 N	81° 57' 18.065 W
956.0	7.50	7.30	955.4	12.5	3.5	13,882,385.22	1,366,170.45	38° 13' 34.824 N	81° 57' 18.058 W
986.0	8.50	4.70	985.1	16.6	3.9	13,882,389.38	1,366,170.88	38° 13' 34.865 N	81° 57' 18.053 W
1,016.0	9.60	1.70	1,014.7	21.3	4.2	13,882,394.09	1,366,171.14	38° 13' 34.911 N	81° 57' 18.050 W
1,046.0	10.70	0.60	1,044.3	26.6	4.3	13,882,399.37	1,366,171.24	38° 13' 34.964 N	81° 57' 18.050 W
1,076.0	11.80	0.00	1,076.7	32.9	4.3	13,882,405.22	1,366,171.28	38° 13' 35.022 N	81° 57' 18.050 W

Received
Office of Oil & Gas

Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well JA Fowler 110
Project:	Lincoln County, West Virginia	TVD Reference:	Well @ 1021.0usft (Decker #9)
Site:	JA Fowler 110	MD Reference:	Well @ 1021.0usft (Decker #9)
Well:	JA Fowler 110	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,106.0	12.70	1.20	1,103.0	38.8	4.4	13,882,411.59	1,366,171.35	38° 13' 35.085 N	81° 57' 18.050 W	
1,136.0	13.70	2.30	1,132.2	45.7	4.6	13,882,418.43	1,366,171.56	38° 13' 35.152 N	81° 57' 18.048 W	
1,166.0	14.80	3.30	1,161.3	53.1	5.0	13,882,425.81	1,366,171.93	38° 13' 35.225 N	81° 57' 18.045 W	
1,196.0	16.00	3.90	1,190.2	61.0	5.5	13,882,433.76	1,366,172.43	38° 13' 35.304 N	81° 57' 18.039 W	
1,226.0	17.20	4.00	1,219.0	69.6	6.1	13,882,442.31	1,366,173.02	38° 13' 35.388 N	81° 57' 18.033 W	
1,256.0	18.20	4.30	1,247.5	78.7	6.7	13,882,451.41	1,366,173.68	38° 13' 35.479 N	81° 57' 18.026 W	
1,286.0	19.70	5.00	1,275.9	88.4	7.5	13,882,461.12	1,366,174.47	38° 13' 35.575 N	81° 57' 18.017 W	
1,316.0	20.70	6.10	1,304.1	98.7	8.5	13,882,471.43	1,366,175.48	38° 13' 35.677 N	81° 57' 18.006 W	
1,346.0	21.40	6.10	1,332.1	109.4	9.7	13,882,482.14	1,366,176.62	38° 13' 35.783 N	81° 57' 17.993 W	
1,376.0	21.50	5.50	1,360.0	120.3	10.8	13,882,493.06	1,366,177.73	38° 13' 35.891 N	81° 57' 17.981 W	
1,406.0	21.50	5.30	1,387.9	131.3	11.8	13,882,504.00	1,366,178.76	38° 13' 35.999 N	81° 57' 17.969 W	
1,436.0	22.10	5.00	1,415.8	142.4	12.8	13,882,515.10	1,366,179.76	38° 13' 36.109 N	81° 57' 17.958 W	
1,466.0	22.70	5.10	1,443.5	153.7	13.8	13,882,526.49	1,366,180.77	38° 13' 36.222 N	81° 57' 17.947 W	
1,496.0	22.60	5.00	1,471.2	165.3	14.8	13,882,537.99	1,366,181.79	38° 13' 36.335 N	81° 57' 17.936 W	
1,526.0	22.60	4.30	1,498.9	176.7	15.8	13,882,549.48	1,366,182.72	38° 13' 36.449 N	81° 57' 17.925 W	
1,556.0	22.80	4.90	1,526.5	188.3	16.7	13,882,561.02	1,366,183.65	38° 13' 36.563 N	81° 57' 17.915 W	
1,586.0	23.10	5.10	1,554.2	199.9	17.7	13,882,572.68	1,366,184.67	38° 13' 36.679 N	81° 57' 17.904 W	
1,616.0	23.10	4.90	1,581.8	211.7	18.7	13,882,584.40	1,366,185.70	38° 13' 36.795 N	81° 57' 17.893 W	
1,646.0	23.00	4.90	1,609.4	223.4	19.7	13,882,596.11	1,366,186.70	38° 13' 36.911 N	81° 57' 17.882 W	
1,676.0	23.10	5.10	1,637.0	235.1	20.8	13,882,607.81	1,366,187.72	38° 13' 37.026 N	81° 57' 17.870 W	
1,706.0	23.40	5.10	1,664.5	246.9	21.8	13,882,619.60	1,366,188.78	38° 13' 37.143 N	81° 57' 17.859 W	
1,736.0	23.80	5.80	1,692.0	258.8	23.0	13,882,631.56	1,366,189.92	38° 13' 37.261 N	81° 57' 17.846 W	
1,766.0	24.10	6.40	1,719.4	270.9	24.2	13,882,643.67	1,366,191.21	38° 13' 37.381 N	81° 57' 17.831 W	
1,796.0	23.20	5.40	1,746.9	282.9	25.5	13,882,655.64	1,366,192.45	38° 13' 37.500 N	81° 57' 17.817 W	
1,826.0	21.70	4.60	1,774.7	294.3	26.5	13,882,667.05	1,366,193.45	38° 13' 37.613 N	81° 57' 17.806 W	
1,856.0	21.10	4.00	1,802.6	305.2	27.3	13,882,677.96	1,366,194.27	38° 13' 37.721 N	81° 57' 17.797 W	
1,886.0	20.90	3.50	1,830.6	315.9	28.0	13,882,688.69	1,366,194.98	38° 13' 37.827 N	81° 57' 17.790 W	
1,916.0	20.80	3.10	1,858.6	326.6	28.6	13,882,699.35	1,366,195.59	38° 13' 37.932 N	81° 57' 17.783 W	
1,946.0	21.80	4.00	1,886.6	337.5	29.3	13,882,710.23	1,366,196.27	38° 13' 38.040 N	81° 57' 17.776 W	
1,976.0	22.80	5.00	1,914.3	348.8	30.2	13,882,721.58	1,366,197.16	38° 13' 38.152 N	81° 57' 17.767 W	
2,006.0	23.00	5.00	1,942.0	360.5	31.2	13,882,733.21	1,366,198.18	38° 13' 38.267 N	81° 57' 17.755 W	
2,036.0	23.20	5.00	1,969.6	372.2	32.2	13,882,744.93	1,366,199.21	38° 13' 38.383 N	81° 57' 17.744 W	
2,066.0	22.70	4.30	1,997.2	383.8	33.2	13,882,756.59	1,366,200.15	38° 13' 38.499 N	81° 57' 17.734 W	
2,096.0	22.60	4.70	2,024.9	395.4	34.1	13,882,768.11	1,366,201.06	38° 13' 38.613 N	81° 57' 17.724 W	
2,126.0	21.90	4.00	2,052.6	406.7	35.0	13,882,779.43	1,366,201.92	38° 13' 38.725 N	81° 57' 17.714 W	
2,156.0	21.00	2.80	2,080.6	417.6	35.6	13,882,790.38	1,366,202.58	38° 13' 38.833 N	81° 57' 17.708 W	
2,186.0	19.40	2.10	2,108.7	428.0	36.1	13,882,800.73	1,366,203.02	38° 13' 38.936 N	81° 57' 17.703 W	
2,216.0	19.30	2.10	2,137.0	437.9	36.4	13,882,810.67	1,366,203.39	38° 13' 39.034 N	81° 57' 17.700 W	
2,246.0	18.50	2.00	2,165.4	447.6	36.8	13,882,820.38	1,366,203.73	38° 13' 39.130 N	81° 57' 17.697 W	
2,276.0	18.80	2.70	2,193.8	457.2	37.2	13,882,829.96	1,366,204.13	38° 13' 39.225 N	81° 57' 17.693 W	
2,306.0	19.10	4.60	2,222.2	466.9	37.8	13,882,839.68	1,366,204.75	38° 13' 39.321 N	81° 57' 17.687 W	
2,336.0	18.50	4.90	2,250.6	476.6	38.6	13,882,849.32	1,366,205.55	38° 13' 39.416 N	81° 57' 17.678 W	
2,366.0	17.00	3.30	2,279.2	485.7	39.2	13,882,858.44	1,366,206.21	38° 13' 39.507 N	81° 57' 17.671 W	
2,396.0	16.20	1.70	2,307.9	494.3	39.6	13,882,867.00	1,366,206.58	38° 13' 39.591 N	81° 57' 17.667 W	
2,426.0	16.00	358.30	2,336.7	502.6	39.6	13,882,875.32	1,366,206.59	38° 13' 39.673 N	81° 57' 17.668 W	
2,456.0	15.70	356.50	2,365.6	510.8	39.3	13,882,883.50	1,366,206.22	38° 13' 39.754 N	81° 57' 17.674 W	
2,486.0	16.00	357.10	2,394.5	518.9	38.8	13,882,891.68	1,366,205.76	38° 13' 39.835 N	81° 57' 17.681 W	
2,516.0	16.30	0.10	2,423.3	527.3	38.6	13,882,900.02	1,366,205.56	38° 13' 39.918 N	81° 57' 17.684 W	
2,546.0	16.70	4.70	2,452.0	535.8	39.0	13,882,908.53	1,366,205.92	38° 13' 40.002 N	81° 57' 17.681 W	
2,576.0	17.10	6.50	2,480.8	544.5	39.8	13,882,917.21	1,366,206.77	38° 13' 40.088 N	81° 57' 17.671 W	
2,606.0	16.70	6.90	2,509.5	553.1	40.8	13,882,925.87	1,366,207.79	38° 13' 40.173 N	81° 57' 17.660 W	
2,636.0	15.60	4.70	2,538.3	561.4	41.7	13,882,934.17	1,366,208.64	38° 13' 40.256 N	81° 57' 17.650 W	
2,666.0	14.20	3.30	2,567.3	569.1	42.2	13,882,941.86	1,366,209.18	38° 13' 40.332 N	81° 57' 17.644 W	
2,696.0	12.60	2.90	2,596.4	576.1	42.6	13,882,948.80	1,366,209.56	38° 13' 40.400 N	81° 57' 17.641 W	
2,726.0	11.20	1.30	2,625.8	582.2	42.8	13,882,954.98	1,366,209.79	38° 13' 40.462 N	81° 57' 17.638 W	

Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well JA Fowler 110
Project:	Lincoln County, West Virginia	TVD Reference:	Well @ 1021.0usft (Decker #9)
Site:	JA Fowler 110	MD Reference:	Well @ 1021.0usft (Decker #9)
Well:	JA Fowler 110	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,781.0	11.20	1.30	2,679.8	592.9	43.1	13,882,965.67	1,366,210.03	38° 13' 40.567 N	81° 57' 17.637 W
TD @ 2781' MD / 2680' TVD									

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
2,781.0	2,679.8	592.9	43.1	TD @ 2781' MD / 2680' TVD

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
DEC 08 2014

JA Fowler 110
Lincoln County, West Virginia
Q141117 & AM-141073
Design #1

Company Name: HG Energy, LLC
JA Fowler 110
 Lincoln County, West Virginia
 Rig: Decker #9
 Created By: Jerry Arsenault
 Date: 10/23/2014

PROJECT DETAILS: Lincoln 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

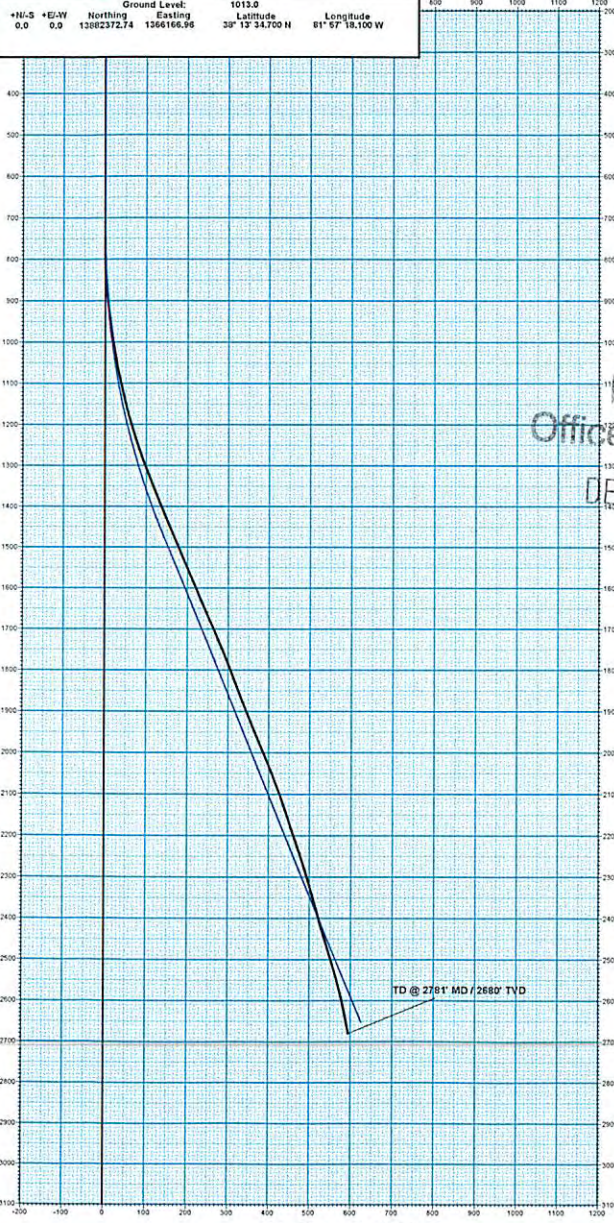
DESIGN TARGET DETAILS						
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude
Target - JA Fowler 110 - plan hits target center	2505.0	563.4	42.7	13882936.13	1366209.65	39° 13' 40.275 N 81° 57' 17.638 W

WELL DETAILS: JA Fowler 110					
+N-S	+E-W	Northing	Easting	Ground Level:	1013.0
0.0	0.0	13882372.74	1366166.96	Latitude	39° 13' 34.700 N
				Longitude	81° 57' 18.100 W

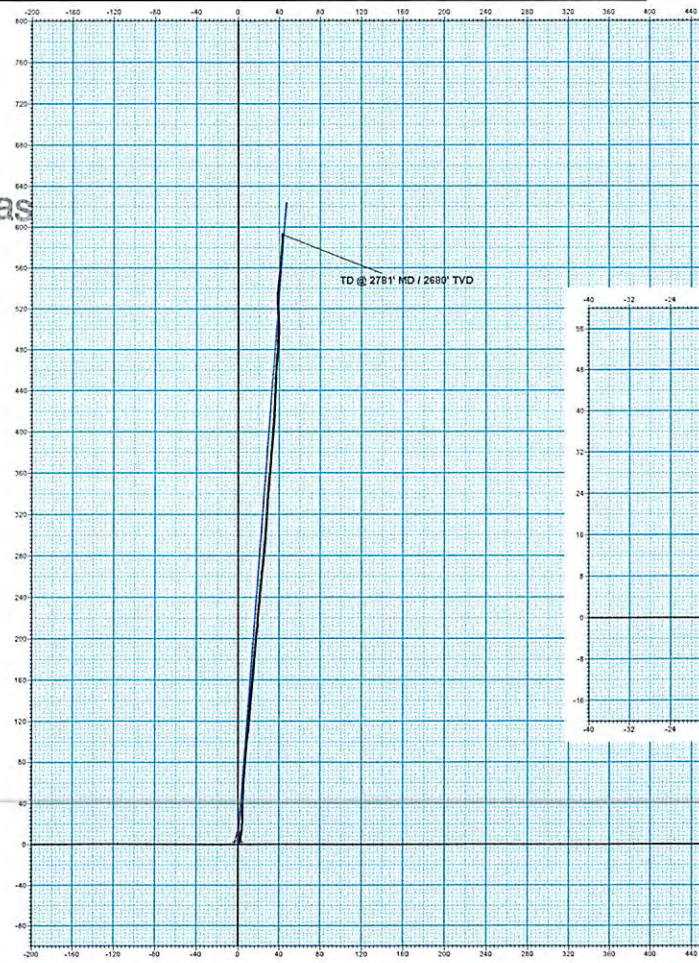
HG Energy



ANNOTATIONS							
MD	Inc	Azi	TVD	+N-S	+E-W	V Sect	Departure
2679.8	2761.6	11.20	1.30	592.9	43.1	594.5	556.6
							TD @ 2781' MD / 2680' TVD

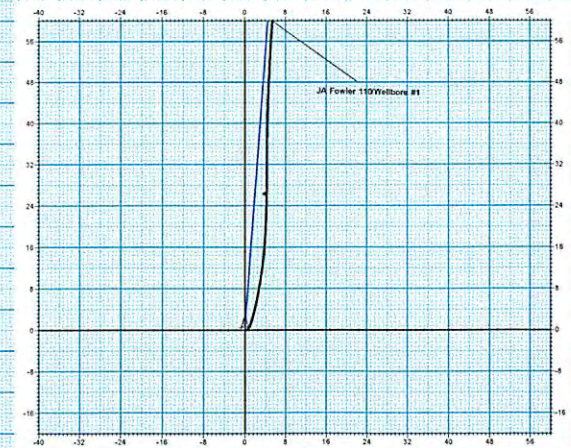


Received
 Office of Oil & Gas
 DEC 08 2014



G
 M ↑ T

Azimuths to Grid North
 Correction: -6.85°
 Magnetic Field
 Strength: 51828.8snT
 Dip Angle: 66.08°
 Date: 10/17/2014
 Model: IGRF2010



Vertical Section at 4.33" (100 usf/in)