



PRODIRECTIONAL



Robert Fowler No. 516
Lincoln County, WV
Noah Horn 294 Rig

October 20, 2021

Survey Certification Report



PRODIRECTIONAL

Survey Certification Letter

October 20, 2021



Operator Name: HG Energy
 Well Name: Robert Fowler No. 516
 County/Parish: Lincoln County,
 State: WV
 Rig Name: Noah Horn 294
 Job Number: LWV3151921

This is to certify the surveys performed on the referenced well by Professional Directional Ent., Inc. are true and correct MWD Surveys, data provided as follows:

Surveyor	Surveyed Depths	Projection to Bit	Dates Performed	Type of Survey
ProDirectional	481' MD – 2,510' MD	2,564' MD	10/11/21 – 10/12/21	MWD

Sincerely,

Mike Coats
 Regulatory Specialist
 Professional Directional

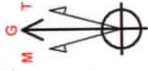
850 Conroe Park West Drive | Conroe, TX 77303 | Phone: 936.441.7266

prodirectional.com

HG Energy LLC
Lincoln County, West Virginia UTM
Mason/Tackett/Fowler
Robert Fowler #516
Plan #1 - Robert Fowler #516



Universal Transverse Mercator
 NAD83 West Virginia - HARN
 Zone 17N (84W to 78 W)
 Mean Sea Level



Azimuth to Grid North
 True North
 Magnetic North: 7.98°
 Magnetic Field
 Strength: 0.530
 Dip Angle: 65.30°
 Date: 10/25/2021
 Model: HOGM

Azimuth Corrections

Total Magnetic Corr. (M to G): Subtract 7.98°

RKB Elevation: 875.6=KB @ 881.00usft

SECTION DETAILS	
+N/-S	0.00
+E/-W	0.00
Northing	13883128.40
Easting	1366294.51
Latitude	38.228441
Longitude	-81.947647
Slot	

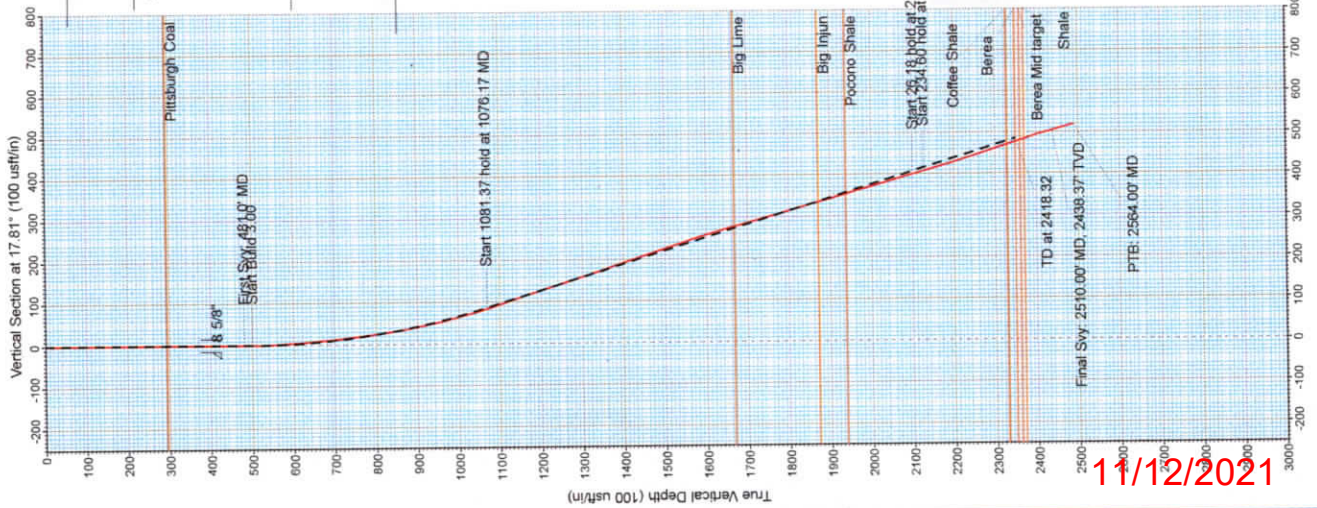
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Diep	TFace	VSecl
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00
3	1076.17	17.28	17.81	1067.47	82.12	26.38	3.00	17.81	86.25
4	2157.54	17.28	17.81	2100.00	388.03	124.63	0.00	0.00	415.33
5	2183.72	17.28	17.81	2125.00	395.44	127.01	0.00	0.00	415.33
6	2418.32	17.28	17.81	2349.01	461.80	146.32	0.00	0.00	486.04

Targets

Name	TVD	+N/-S	+E/-W	Northing	Easting
BHL (Robert Fowler #516)	2370.00	-9651079.99	-961089.94	4232048.41	417204.57

Formations

TVDPath	MDPath	Formation
294.00	294.00	Pittsburgh Coal
1667.00	1704.06	Big Lime
1871.00	1977.07	Pocono Shale
2320.00	2396.32	Coffee Shale
2349.00	2418.31	Berea



11/12/2021

36" x 48"

ProDirectional

Survey Report

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Robert Fowler #516
Wellbore: OH
Design: Robert Fowler #516 Svy

Local Co-ordinate Reference: Well Robert Fowler #516
TVD Reference: 875+6=KB @ 881.00usft
MD Reference: 875+6=KB @ 881.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project: Lincoln County, West Virginia UTM83
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: Mason/Tackett/Fowler
Site Position: 13,883,128.40 usft
From: Map 1,368,294.51 usft
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 38.228441 -81.947647 -0.59 °

Well: Robert Fowler #516
Well Position: +N-S 0.00 usft
Position Uncertainty: +E-W 0.00 usft
Wellhead Elevation: 0.00 usft
Latitude: 38.228441
Longitude: -81.947647
Ground Level: 875.00 usft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/25/2021	-8.57	65.30	51,168.80

Design: Robert Fowler #516 Svy
Audit Notes:
Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.00
Vertical Section: **Depth From (TVD) (usft)** **+N-S (usft)** **+E-W (usft)** **Direction (°)**
 0.00 0.00 0.00 17.81

Survey Program	From (usft)	To (usft)	Date	Survey (Wellbore)	Tool Name	Description
	0.00	2,564.00	10/20/2021	Survey #1 (OH)	MWD	MWD - Standard

11/12/2021

ProDirectional

Survey Report

Company: HG Energy LLC Project: Lincoln County, West Virginia UTM83 Site: Mason/Tackett/Fowler Well: Robert Fowler #516 Wellbore: OH Design: Robert Fowler #516 Svy	Local Co-ordinate Reference: Well Robert Fowler #516 TVD Reference: 875+6=KB @ 881.00usft MD Reference: 875+6=KB @ 881.00usft North Reference: Grid Survey Calculation Method: Minimum Curvature Database: WellPlanner1
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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13,883,128.40	1,368,294.51
481.00	0.90	285.44	480.98	-0.16	1.01	-3.64	3.78	285.44	13,883,129.41	1,368,290.87
First Svy: 481.0' MD										
511.00	1.19	344.87	510.98	0.10	1.37	-3.95	4.18	289.12	13,883,129.77	1,368,290.56
541.00	2.68	8.67	540.96	1.05	2.36	-3.93	4.58	301.05	13,883,130.77	1,368,290.58
571.00	2.83	14.95	570.92	2.48	3.77	-3.63	5.23	316.11	13,883,132.17	1,368,290.88
601.00	3.58	19.47	600.88	4.16	5.37	-3.13	6.21	329.80	13,883,133.77	1,368,291.38
631.00	4.63	21.56	630.80	6.30	7.38	-2.37	7.75	342.21	13,883,135.78	1,368,292.14
661.00	4.99	21.42	660.69	8.81	9.72	-1.45	9.83	351.53	13,883,138.12	1,368,293.06
691.00	5.51	17.69	690.57	11.56	12.31	-0.53	12.32	357.52	13,883,140.71	1,368,293.98
721.00	6.65	12.73	720.40	14.73	15.37	0.29	15.38	1.07	13,883,143.78	1,368,294.80
751.00	7.08	10.37	750.18	18.29	18.89	1.00	18.91	3.04	13,883,147.29	1,368,295.51
781.00	7.64	10.26	779.94	22.10	22.67	1.69	22.73	4.27	13,883,151.07	1,368,296.20
811.00	7.95	9.65	809.66	26.13	26.68	2.39	26.78	5.13	13,883,155.08	1,368,296.90
841.00	8.56	11.80	839.35	30.40	30.91	3.20	31.07	5.91	13,883,159.31	1,368,297.71
871.00	10.01	13.29	868.95	35.22	35.63	4.25	35.88	6.81	13,883,164.03	1,368,298.76
901.00	11.35	15.03	898.43	40.77	41.02	5.62	41.40	7.80	13,883,169.42	1,368,300.13
931.00	12.05	14.66	927.81	46.85	46.90	7.18	47.45	8.70	13,883,175.30	1,368,301.69
961.00	13.22	13.07	957.08	53.39	53.27	8.75	53.98	9.32	13,883,181.67	1,368,303.25
991.00	14.34	13.67	986.22	60.52	60.22	10.40	61.11	9.80	13,883,188.62	1,368,304.91
1,021.00	15.01	12.95	1,015.24	68.09	67.62	12.15	68.70	10.19	13,883,196.02	1,368,306.66
1,051.00	16.22	14.36	1,044.13	76.15	75.46	14.06	76.76	10.55	13,883,203.87	1,368,308.57
1,081.00	17.98	15.30	1,072.81	84.96	83.99	16.32	85.56	11.00	13,883,212.39	1,368,310.83
1,111.00	18.67	14.25	1,101.28	94.37	93.11	18.72	94.97	11.37	13,883,221.51	1,368,313.23
1,141.00	18.80	14.14	1,129.70	103.99	102.45	21.09	104.60	11.63	13,883,230.85	1,368,315.59
1,171.00	18.73	15.17	1,158.10	113.63	111.79	23.53	114.24	11.89	13,883,240.19	1,368,318.04
1,201.00	18.44	12.05	1,186.54	123.16	121.08	25.78	123.79	12.02	13,883,249.48	1,368,320.29

11/12/2021

ProDirectional

Survey Report

Local Co-ordinate Reference: Well Robert Fowler #516
TVD Reference: 875+6=KB @ 881.00usft
MD Reference: 875+6=KB @ 881.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Masom/Tackett/Fowler
Well: Robert Fowler #516
Wellbore: OH
Design: Robert Fowler #516 Svy

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (")	Northing (usft)	Easting (usft)
1,231.00	17.79	13.76	1,215.05	132.45	130.17	27.86	133.12	12.08	13,883,258.57	1,368,322.37
1,261.00	17.80	16.92	1,243.62	141.61	139.01	30.28	142.27	12.29	13,883,267.41	1,368,324.79
1,291.00	17.84	18.31	1,272.18	150.79	147.76	33.06	151.41	12.61	13,883,276.16	1,368,327.57
1,321.00	18.00	17.60	1,300.72	160.02	156.54	35.91	160.60	12.92	13,883,284.94	1,368,330.42
1,351.00	18.24	18.34	1,329.23	169.35	165.41	38.79	169.90	13.20	13,883,293.81	1,368,333.29
1,381.00	18.36	18.55	1,357.72	178.77	174.35	41.77	179.28	13.47	13,883,302.75	1,368,336.27
1,411.00	18.51	18.58	1,386.18	188.25	183.34	44.79	188.73	13.73	13,883,311.74	1,368,339.30
1,441.00	18.33	18.53	1,414.64	197.73	192.33	47.80	198.18	13.96	13,883,320.73	1,368,342.31
1,471.00	18.10	18.07	1,443.14	207.11	201.23	50.75	207.53	14.15	13,883,329.63	1,368,345.26
1,501.00	18.14	18.98	1,471.65	216.44	210.08	53.71	216.84	14.34	13,883,338.48	1,368,348.22
1,531.00	18.20	19.14	1,500.15	225.79	218.92	56.77	226.16	14.54	13,883,347.32	1,368,351.28
1,561.00	18.29	19.64	1,528.64	235.18	227.78	59.89	235.52	14.73	13,883,356.18	1,368,354.39
1,591.00	18.47	20.06	1,557.11	244.63	236.68	63.10	244.94	14.93	13,883,365.08	1,368,357.61
1,621.00	17.51	19.60	1,585.65	253.89	245.39	66.24	254.18	15.11	13,883,373.79	1,368,360.75
1,651.00	16.41	18.78	1,614.34	262.64	253.66	69.12	262.91	15.24	13,883,382.06	1,368,363.63
1,681.00	15.63	17.20	1,643.18	270.92	261.53	71.68	271.17	15.33	13,883,389.93	1,368,366.19
1,711.00	15.41	17.50	1,672.08	278.95	269.19	74.07	279.20	15.39	13,883,397.59	1,368,368.58
1,741.00	15.64	18.40	1,700.99	286.98	276.83	76.55	287.22	15.46	13,883,405.23	1,368,371.06
1,771.00	15.63	17.91	1,729.88	295.06	284.51	79.07	295.29	15.53	13,883,412.91	1,368,373.58
1,801.00	15.52	17.71	1,758.78	303.12	292.18	81.53	303.34	15.59	13,883,420.58	1,368,376.04
1,831.00	15.49	18.21	1,787.68	311.14	299.81	84.00	311.36	15.65	13,883,428.21	1,368,378.51
1,861.00	16.03	20.87	1,816.56	319.28	307.49	86.73	319.48	15.75	13,883,435.89	1,368,381.24
1,891.00	16.32	19.54	1,845.37	327.63	315.33	89.62	327.82	15.87	13,883,443.73	1,368,384.13
1,921.00	16.01	18.73	1,874.18	335.98	323.22	92.36	336.16	15.95	13,883,451.62	1,368,386.86
1,951.00	15.78	18.09	1,903.04	344.19	331.01	94.95	344.36	16.01	13,883,459.42	1,368,389.46
1,981.00	15.76	17.78	1,931.91	352.35	338.77	97.46	352.51	16.05	13,883,467.17	1,368,391.97
2,011.00	15.54	17.55	1,960.79	360.44	346.48	99.92	360.60	16.09	13,883,474.88	1,368,394.43

11/12/2021

ProDirectional

Survey Report

Company: HG Energy LLC Project: Lincoln County, West Virginia UTM83 Site: Mason/Tackett/Fowler Well: Robert Fowler #516 Wellbore: OH Design: Robert Fowler #516 Svy	Local Co-ordinate Reference: Well Robert Fowler #516 TVD Reference: 875+6=KB @ 881.00usft MD Reference: 875+6=KB @ 881.00usft North Reference: Grid Survey Calculation Method: Minimum Curvature Database: WellPlanner1
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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
2,041.00	15.63	18.81	1,989.69	368.50	354.14	102.43	368.66	16.13	13,883,482.54	1,368,396.94
2,071.00	15.73	18.94	2,018.58	376.61	361.81	105.05	376.76	16.19	13,883,490.21	1,368,399.56
2,101.00	16.02	18.13	2,047.43	384.81	369.59	107.66	384.95	16.24	13,883,497.99	1,368,402.17
2,131.00	16.05	17.95	2,076.26	393.10	377.47	110.23	393.24	16.28	13,883,505.87	1,368,404.74
2,161.00	15.66	18.33	2,105.12	401.29	385.26	112.78	401.43	16.32	13,883,513.66	1,368,407.29
2,191.00	16.02	16.70	2,133.98	409.48	393.07	115.24	409.62	16.34	13,883,521.47	1,368,409.75
2,221.00	16.66	14.66	2,162.77	417.91	401.19	117.52	418.05	16.33	13,883,529.60	1,368,412.03
2,251.00	17.40	14.96	2,191.46	426.69	409.69	119.77	426.84	16.30	13,883,538.09	1,368,414.28
2,281.00	17.48	18.16	2,220.08	435.67	418.30	122.33	435.82	16.30	13,883,546.71	1,368,416.84
2,311.00	16.94	20.67	2,248.74	444.54	426.67	125.28	444.69	16.36	13,883,555.08	1,368,419.79
2,341.00	17.43	21.63	2,277.40	453.39	434.94	128.48	453.52	16.46	13,883,563.34	1,368,422.98
2,371.00	18.17	18.96	2,305.96	462.55	443.54	131.65	462.67	16.53	13,883,571.94	1,368,426.16
2,401.00	18.88	18.19	2,334.41	472.08	452.58	134.69	472.19	16.57	13,883,580.98	1,368,429.20
2,431.00	18.84	18.95	2,362.79	481.78	461.77	137.78	481.88	16.61	13,883,590.17	1,368,432.28
2,461.00	17.50	17.24	2,391.30	491.13	470.66	140.69	491.24	16.64	13,883,599.06	1,368,435.19
2,491.00	15.74	15.78	2,420.04	499.71	478.88	143.13	499.81	16.64	13,883,607.29	1,368,437.64
2,510.00	14.83	13.72	2,438.37	504.71	483.73	144.41	504.82	16.62	13,883,612.13	1,368,438.91
Final Svy: 2510.00' MD, 2438.37' TVD										
2,564.00	15.54	15.99	2,490.49	518.84	497.39	148.04	518.96	16.57	13,883,625.79	1,368,442.55
PTB: 2564.00' MD										

11/12/2021

ProDirectional

Survey Report

Local Co-ordinate Reference: Well Robert Fowler #516
TVD Reference: 875+6=KB @ 881.00usft
MD Reference: 875+6=KB @ 881.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Robert Fowler #516
Wellbore: OH
Design: Robert Fowler #516 Svy

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
481.00	480.98	1.01	-3.64	First Svy: 481.0' MD
2,510.00	2,438.37	483.73	144.41	Final Svy: 2510.00' MD, 2438.37' TVD
2,564.00	2,490.49	497.39	148.04	PTB: 2564.00' MD

11/12/2021

ProDirectional

Survey Report - Geographic

Company: HG Energy LLC	Local Co-ordinate Reference: Well Robert Fowler #516
Project: Lincoln County, West Virginia UTM83	TVD Reference: 875+6=KB @ 881.00usft
Site: Mason/Tackett/Fowler	MD Reference: 875+6=KB @ 881.00usft
Well: Robert Fowler #516	North Reference: Grid
Wellbore: OH	Survey Calculation Method: Minimum Curvature
Design: Robert Fowler #516 Svy	Database: WellPlanner1

Project Lincoln County, West Virginia UTM83	
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 Mason/Tackett/Fowler					
Site Position:		Northing: 13,883,128.40 usft	Latitude: 38° 13' 42.388072 N		
From: Map		Easting: 1,368,294.51 usft	Longitude: 81° 56' 51.528614 W		
Position Uncertainty: 0.00 usft		Slot Radius: 13-3/16 "	Grid Convergence: -0.59 °		

Well Robert Fowler #516					
Well Position +N/-S	0.00 usft	Northing: 13,883,128.40 usft	Latitude: 38° 13' 42.388072 N		
+E/-W	0.00 usft	Easting: 1,368,294.51 usft	Longitude: 81° 56' 51.528614 W		
Position Uncertainty	0.00 usft	Wellhead Elevation: usft	Ground Level: 875.00 usft		

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/25/2021	-8.57	65.30	51,168.80

Design Robert Fowler #516 Svy					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00			
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	17.81	

Survey Program Date 10/20/2021					
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	2,564.00	Survey #1 (OH)	MWD	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	13,883,128.40	1,368,294.51	38° 13' 42.388072 N	81° 56' 51.528614 W
481.00	0.90	285.44	480.98	1.01	-3.64	13,883,129.41	1,368,290.87	38° 13' 42.397648 N	81° 56' 51.574388 W
First Svy: 481.0' MD									
511.00	1.19	344.87	510.98	1.37	-3.95	13,883,129.77	1,368,290.56	38° 13' 42.401211 N	81° 56' 51.578301 W
541.00	2.68	8.67	540.96	2.36	-3.93	13,883,130.77	1,368,290.58	38° 13' 42.411043 N	81° 56' 51.578122 W
571.00	2.83	14.95	570.92	3.77	-3.63	13,883,132.17	1,368,290.88	38° 13' 42.425004 N	81° 56' 51.574583 W
601.00	3.58	19.47	600.88	5.37	-3.13	13,883,133.77	1,368,291.38	38° 13' 42.440862 N	81° 56' 51.568480 W
631.00	4.63	21.56	630.80	7.38	-2.37	13,883,135.78	1,368,292.14	38° 13' 42.460806 N	81° 56' 51.559246 W
661.00	4.99	21.42	660.69	9.72	-1.45	13,883,138.12	1,368,293.06	38° 13' 42.484044 N	81° 56' 51.547996 W
691.00	5.51	17.69	690.57	12.31	-0.53	13,883,140.71	1,368,293.98	38° 13' 42.509715 N	81° 56' 51.536869 W
721.00	6.65	12.73	720.40	15.37	0.29	13,883,143.78	1,368,294.80	38° 13' 42.540121 N	81° 56' 51.526978 W
751.00	7.08	10.37	750.18	18.89	1.00	13,883,147.29	1,368,295.51	38° 13' 42.574930 N	81° 56' 51.518459 W

ProDirectional
Survey Report - Geographic

Company:	HG Energy LLC	Local Co-ordinate Reference:	Well Robert Fowler #516
Project:	Lincoln County, West Virginia UTM83	TVD Reference:	875+6=KB @ 881.00usft
Site:	Mason/Tackett/Fowler	MD Reference:	875+6=KB @ 881.00usft
Well:	Robert Fowler #516	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Robert Fowler #516 Sv	Database:	WellPlanner1

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,431.00	18.84	18.95	2,362.79	461.77	137.78	13,883,590.17	1,368,432.28	38° 13' 46.967963 N	81° 56' 49.860793 W
2,461.00	17.50	17.24	2,391.30	470.66	140.69	13,883,599.06	1,368,435.19	38° 13' 47.056159 N	81° 56' 49.825455 W
2,491.00	15.74	15.78	2,420.04	478.88	143.13	13,883,607.29	1,368,437.64	38° 13' 47.137728 N	81° 56' 49.795879 W
2,510.00	14.83	13.72	2,438.37	483.73	144.41	13,883,612.13	1,368,438.92	38° 13' 47.185737 N	81° 56' 49.780485 W
Final Svy: 2510.00' MD, 2438.37' TVD									
2,564.00	15.54	15.99	2,490.49	497.39	148.04	13,883,625.80	1,368,442.55	38° 13' 47.321249 N	81° 56' 49.736712 W
PTB: 2564.00' MD									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
481.00	480.98	1.01	-3.64	First Svy: 481.0' MD	
2,510.00	2,438.37	483.73	144.41	Final Svy: 2510.00' MD, 2438.37' TVD	
2,564.00	2,490.49	497.39	148.04	PTB: 2564.00' MD	

ProDirectional Survey Report

Company: HG Energy LLC Project: Lincoln County, West Virginia UTM83 Site: Mason/Tackett/Fowler Well: Robert Fowler #516 Wellbore: OH Design: Robert Fowler #516 Svy	Local Co-ordinate Reference: TVD Reference: Well Robert Fowler #516 MD Reference: 875+6=KB @ 881.0ft North Reference: 875+6=KB @ 881.0ft Survey Calculation Method: Grid Database: Minimum Curvature WellPlanner1
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Project: Lincoln County, West Virginia UTM83
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: Mason/Tackett/Fowler
Site Position: Northing: 4,231,586.00 m Latitude: 38° 13' 42.388 N
 From: Easting: 417,057.00 m Longitude: 81° 56' 51.529 W
Position Uncertainty: Slot Radius: 13.200 in Grid Convergence: -0.59°

Well: Robert Fowler #516
Well Position: +N/-S: 0.0 ft Latitude: 38° 13' 42.388 N
 +E/-W: 0.0 ft Longitude: 81° 56' 51.529 W
Position Uncertainty: Wellhead Elevation: 0.0 ft Ground Level: 875.0 ft

Wellbore: OH
Magnetics: Model Name: HDGM Sample Date: 10/25/2021 Dip Angle (°): 65.30 Field Strength (nT): 51,168.80000000
 Declination (°): -8.57

Design: Robert Fowler #516 Svy
Audit Notes: Version: 1.0 Phase: ACTUAL Tie On Depth: 0.0
Vertical Section: Depth From (TVD) (ft): 0.0 +N/-S (ft): 0.0 Direction (°): 17.81
 +E/-W (ft): 0.0

Survey Program	Date	10/20/2021
From (ft)	To (ft)	Survey (Wellbore)
0.0	2,564.0	Survey #1 (OH)
		Tool Name
		MWD
		Description
		MWD - Standard

11/12/2021

ProDirectional

Survey Report

Local Co-ordinate Reference: Well Robert Fowler #516
TVD Reference: 875+6=KB @ 881.0ft
MD Reference: 875+6=KB @ 881.0ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Robert Fowler #516
Wellbore: OH
Design: Robert Fowler #516 Svy

MD (ft)	MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	Northing (m)	Easting (m)
0.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	4,231,586.00	417,057.00
481.0	0.90	0.90	285.44	481.0	-0.2	1.0	-3.6	3.8	285.44	4,231,586.31	417,055.89
First Svy: 481.0' MD											
511.0	1.19	1.19	344.87	511.0	0.1	1.4	-3.9	4.2	289.12	4,231,586.42	417,055.80
541.0	2.68	2.68	8.67	541.0	1.0	2.4	-3.9	4.6	301.05	4,231,586.72	417,055.80
571.0	2.83	2.83	14.95	570.9	2.5	3.8	-3.6	5.2	316.11	4,231,587.15	417,055.89
601.0	3.58	3.58	19.47	600.9	4.2	5.4	-3.1	6.2	329.80	4,231,587.64	417,056.05
631.0	4.63	4.63	21.56	630.8	6.3	7.4	-2.4	7.8	342.21	4,231,588.25	417,056.28
661.0	4.99	4.99	21.42	660.7	8.8	9.7	-1.4	9.8	351.53	4,231,588.96	417,056.56
691.0	5.51	5.51	17.69	690.6	11.6	12.3	-0.5	12.3	357.52	4,231,589.75	417,056.84
721.0	6.65	6.65	12.73	720.4	14.7	15.4	0.3	15.4	1.07	4,231,590.69	417,057.09
751.0	7.08	7.08	10.37	750.2	18.3	18.9	1.0	18.9	3.04	4,231,591.76	417,057.31
781.0	7.64	7.64	10.26	779.9	22.1	22.7	1.7	22.7	4.27	4,231,592.91	417,057.52
811.0	7.95	7.95	9.65	809.7	26.1	26.7	2.4	26.8	5.13	4,231,594.13	417,057.73
841.0	8.56	8.56	11.80	839.3	30.4	30.9	3.2	31.1	5.91	4,231,595.42	417,057.98
871.0	10.01	10.01	13.29	869.0	35.2	35.6	4.3	35.9	6.81	4,231,596.86	417,058.30
901.0	11.35	11.35	15.03	898.4	40.8	41.0	5.6	41.4	7.80	4,231,598.50	417,058.71
931.0	12.05	12.05	14.66	927.8	46.8	46.9	7.2	47.4	8.70	4,231,600.30	417,059.19
961.0	13.22	13.22	13.07	957.1	53.4	53.3	8.7	54.0	9.32	4,231,602.24	417,059.67
991.0	14.34	14.34	13.67	986.2	60.5	60.2	10.4	61.1	9.80	4,231,604.36	417,060.17
1,021.0	15.01	15.01	12.95	1,015.2	68.1	67.6	12.1	68.7	10.19	4,231,606.61	417,060.70
1,051.0	16.22	16.22	14.36	1,044.1	76.1	75.5	14.1	76.8	10.55	4,231,609.00	417,061.29
1,081.0	17.98	17.98	15.30	1,072.8	85.0	84.0	16.3	85.6	11.00	4,231,611.60	417,061.97
1,111.0	18.67	18.67	14.25	1,101.3	94.4	93.1	18.7	95.0	11.37	4,231,614.38	417,062.71
1,141.0	18.80	18.80	14.14	1,129.7	104.0	102.5	21.1	104.6	11.63	4,231,617.23	417,063.43
1,171.0	18.73	18.73	15.17	1,158.1	113.6	111.8	23.5	114.2	11.89	4,231,620.07	417,064.17
1,201.0	18.44	18.44	12.05	1,186.5	123.2	121.1	25.8	123.8	12.02	4,231,622.90	417,064.86

11/12/2021

ProDirectional

Survey Report

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Robert Fowler #516
Wellbore: OH
Design: Robert Fowler #516 Svy

Local Co-ordinate Reference: Well Robert Fowler #516
TVD Reference: 875+6=KB @ 881.0ft
MD Reference: 875+6=KB @ 881.0ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	Northing (m)	Easting (m)
1,231.0	17.79	13.76	1,215.1	132.5	130.2	27.9	133.1	12.08	4,231,625.68	417,065.49
1,261.0	17.80	16.92	1,243.6	141.6	139.0	30.3	142.3	12.29	4,231,628.37	417,066.23
1,291.0	17.84	18.31	1,272.2	150.8	147.8	33.1	151.4	12.61	4,231,631.04	417,067.08
1,321.0	18.00	17.60	1,300.7	160.0	156.5	35.9	160.6	12.92	4,231,633.71	417,067.94
1,351.0	18.24	18.34	1,329.2	169.3	165.4	38.8	169.9	13.20	4,231,636.42	417,068.82
1,381.0	18.36	18.55	1,357.7	178.8	174.3	41.8	179.3	13.47	4,231,639.14	417,069.73
1,411.0	18.51	18.58	1,386.2	188.3	183.3	44.8	188.7	13.73	4,231,641.88	417,070.65
1,441.0	18.33	18.53	1,414.6	197.7	192.3	47.8	198.2	13.96	4,231,644.62	417,071.57
1,471.0	18.10	18.07	1,443.1	207.1	201.2	50.7	207.5	14.15	4,231,647.34	417,072.47
1,501.0	18.14	18.98	1,471.7	216.4	210.1	53.7	216.8	14.34	4,231,650.03	417,073.37
1,531.0	18.20	19.14	1,500.2	225.8	218.9	56.8	226.2	14.54	4,231,652.73	417,074.30
1,561.0	18.29	19.64	1,528.6	235.2	227.8	59.9	235.5	14.73	4,231,655.43	417,075.25
1,591.0	18.47	20.06	1,557.1	244.6	236.7	63.1	244.9	14.93	4,231,658.14	417,076.23
1,621.0	17.51	19.60	1,585.6	253.9	245.4	66.2	254.2	15.11	4,231,660.80	417,077.19
1,651.0	16.41	18.78	1,614.3	262.6	253.7	69.1	262.9	15.24	4,231,663.31	417,078.07
1,681.0	15.63	17.20	1,643.2	270.9	261.5	71.7	271.2	15.33	4,231,665.71	417,078.85
1,711.0	15.41	17.50	1,672.1	278.9	269.2	74.1	279.2	15.39	4,231,668.05	417,079.58
1,741.0	15.64	18.40	1,701.0	287.0	276.8	76.5	287.2	15.46	4,231,670.38	417,080.33
1,771.0	15.63	17.91	1,729.9	295.1	284.5	79.1	295.3	15.53	4,231,672.72	417,081.10
1,801.0	15.52	17.71	1,758.8	303.1	292.2	81.5	303.3	15.59	4,231,675.06	417,081.85
1,831.0	15.49	18.21	1,787.7	311.1	299.8	84.0	311.4	15.65	4,231,677.38	417,082.60
1,861.0	16.03	20.87	1,816.6	319.3	307.5	86.7	319.5	15.75	4,231,679.72	417,083.44
1,891.0	16.32	19.54	1,845.4	327.6	315.3	89.6	327.8	15.87	4,231,682.11	417,084.32
1,921.0	16.01	18.73	1,874.2	336.0	323.2	92.4	336.2	15.95	4,231,684.52	417,085.15
1,951.0	15.78	18.09	1,903.0	344.2	331.0	95.0	344.4	16.01	4,231,686.89	417,085.94
1,981.0	15.76	17.78	1,931.9	352.3	338.8	97.5	352.5	16.05	4,231,689.26	417,086.71
2,011.0	15.54	17.55	1,960.8	360.4	346.5	99.9	360.6	16.09	4,231,691.61	417,087.45

ProDirectional

Survey Report

Local Co-ordinate Reference: Well Robert Fowler #516
TVD Reference: 875+6=KB @ 881.0ft
MD Reference: 875+6=KB @ 881.0ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Robert Fowler #516
Wellbore: OH
Design: Robert Fowler #516 Svy

Survey	MD (ft)	Inc (°)	Azi (azimuth) (°)	TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	Northing (m)	Easting (m)
	2,041.0	15.63	18.81	1,989.7	368.5	354.1	102.4	368.7	16.13	4,231,693.94	417,088.22
	2,071.0	15.73	18.94	2,018.6	376.6	361.8	105.1	376.8	16.19	4,231,696.28	417,089.02
	2,101.0	16.02	18.13	2,047.4	384.8	369.6	107.7	385.0	16.24	4,231,698.65	417,089.82
	2,131.0	16.05	17.95	2,076.3	393.1	377.5	110.2	393.2	16.28	4,231,701.05	417,090.60
	2,161.0	15.66	18.33	2,105.1	401.3	385.3	112.8	401.4	16.32	4,231,703.43	417,091.38
	2,191.0	16.02	16.70	2,134.0	409.5	393.1	115.2	409.6	16.34	4,231,705.81	417,092.13
	2,221.0	16.66	14.66	2,162.8	417.9	401.2	117.5	418.1	16.33	4,231,708.28	417,092.82
	2,251.0	17.40	14.96	2,191.5	426.7	409.7	119.8	426.8	16.30	4,231,710.87	417,093.51
	2,281.0	17.48	18.16	2,220.1	435.7	418.3	122.3	435.8	16.30	4,231,713.50	417,094.29
	2,311.0	16.94	20.67	2,248.7	444.5	426.7	125.3	444.7	16.36	4,231,716.05	417,095.18
	2,341.0	17.43	21.63	2,277.4	453.4	434.9	128.5	453.5	16.46	4,231,718.57	417,096.16
	2,371.0	18.17	18.96	2,306.0	462.6	443.5	131.7	462.7	16.53	4,231,721.19	417,097.13
	2,401.0	18.88	18.19	2,334.4	472.1	452.6	134.7	472.2	16.57	4,231,723.95	417,098.05
	2,431.0	18.84	18.95	2,362.8	481.8	461.8	137.8	481.9	16.61	4,231,726.75	417,098.99
	2,461.0	17.50	17.24	2,391.3	491.1	470.7	140.7	491.2	16.64	4,231,729.46	417,099.88
	2,491.0	15.74	15.78	2,420.0	499.7	478.9	143.1	499.8	16.64	4,231,731.96	417,100.63
	2,510.0	14.83	13.72	2,438.4	504.7	483.7	144.4	504.8	16.62	4,231,733.44	417,101.02
	Final Svy: 2510.00' MD, 2438.37' TVD										
	2,564.0	15.54	15.99	2,490.5	518.8	497.4	148.0	519.0	16.57	4,231,737.61	417,102.12
	PTB: 2564.00' MD										

11/12/2021

ProDirectional

Survey Report

Company: HG Energy LLC Project: Lincoln County, West Virginia UTM83 Site: Mason/Tackett/Fowler Well: Robert Fowler #516 Wellbore: OH Design: Robert Fowler #516 Svy	Local Co-ordinate Reference: Well Robert Fowler #516 TVD Reference: 875+6=KB @ 881.0ft MD Reference: 875+6=KB @ 881.0ft North Reference: Grid Survey Calculation Method: Minimum Curvature Database: WellPlanner1	
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Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
481.0	481.0	1.0	-3.6	First Svy: 481.0' MD
2,510.0	2,438.4	483.7	144.4	Final Svy: 2510.00' MD, 2438.37' TVD
2,564.0	2,490.5	497.4	148.0	PTB: 2564.00' MD

11/12/2021

ProDirectional
Survey Report - Geographic

Company:	HG Energy LLC	Local Co-ordinate Reference:	Well Robert Fowler #516
Project:	Lincoln County, West Virginia UTM83	TVD Reference:	875+6=KB @ 881.0ft
Site:	Mason/Tackett/Fowler	MD Reference:	875+6=KB @ 881.0ft
Well:	Robert Fowler #516	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Robert Fowler #516 Svy	Database:	WellPlanner1

Project	Lincoln County, West Virginia UTM83		
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	Mason/Tackett/Fowler				
Site Position:		Northing:	4,231,586.00 m	Latitude:	38° 13' 42.388 N
From:	Map	Easting:	417,057.00 m	Longitude:	81° 56' 51.529 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.59 °

Well	Robert Fowler #516					
Well Position	+N/-S	0.0 ft	Northing:	4,231,586.00 m	Latitude:	38° 13' 42.388 N
	+E/-W	0.0 ft	Easting:	417,057.00 m	Longitude:	81° 56' 51.529 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	875.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/25/2021	-8.57	65.30	51,168.80000000

Design	Robert Fowler #516 Svy				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	17.81	

Survey Program	Date	10/20/2021			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	2,564.0	Survey #1 (OH)	MWD	MWD - Standard	

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	4,231,586.00	417,057.00	38° 13' 42.388 N	81° 56' 51.529 W
481.0	0.90	285.44	481.0	1.0	-3.6	4,231,586.31	417,055.89	38° 13' 42.398 N	81° 56' 51.574 W
First Svy: 481.0' MD									
511.0	1.19	344.87	511.0	1.4	-3.9	4,231,586.42	417,055.80	38° 13' 42.401 N	81° 56' 51.578 W
541.0	2.68	8.67	541.0	2.4	-3.9	4,231,586.73	417,055.80	38° 13' 42.411 N	81° 56' 51.578 W
571.0	2.83	14.95	570.9	3.8	-3.6	4,231,587.15	417,055.89	38° 13' 42.425 N	81° 56' 51.575 W
601.0	3.58	19.47	600.9	5.4	-3.1	4,231,587.64	417,056.05	38° 13' 42.441 N	81° 56' 51.568 W
631.0	4.63	21.56	630.8	7.4	-2.4	4,231,588.25	417,056.28	38° 13' 42.461 N	81° 56' 51.559 W
661.0	4.99	21.42	660.7	9.7	-1.4	4,231,588.97	417,056.56	38° 13' 42.484 N	81° 56' 51.548 W
691.0	5.51	17.69	690.6	12.3	-0.5	4,231,589.76	417,056.84	38° 13' 42.510 N	81° 56' 51.537 W
721.0	6.65	12.73	720.4	15.4	0.3	4,231,590.69	417,057.09	38° 13' 42.540 N	81° 56' 51.527 W
751.0	7.08	10.37	750.2	18.9	1.0	4,231,591.76	417,057.31	38° 13' 42.575 N	81° 56' 51.518 W

ProDirectional

Survey Report - Geographic

Company: HG Energy LLC	Local Co-ordinate Reference: Well Robert Fowler #516
Project: Lincoln County, West Virginia UTM83	TVD Reference: 875+6=KB @ 881.0ft
Site: Mason/Tackett/Fowler	MD Reference: 875+6=KB @ 881.0ft
Well: Robert Fowler #516	North Reference: Grid
Wellbore: OH	Survey Calculation Method: Minimum Curvature
Design: Robert Fowler #516 Svy	Database: WellPlanner1

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (m)	Map Easting (m)	Latitude	Longitude	
781.0	7.64	10.26	779.9	22.7	1.7	4,231,592.91	417,057.52	38° 13' 42.612 N	81° 56' 51.510 W	
811.0	7.95	9.65	809.7	26.7	2.4	4,231,594.14	417,057.73	38° 13' 42.652 N	81° 56' 51.502 W	
841.0	8.56	11.80	839.3	30.9	3.2	4,231,595.43	417,057.97	38° 13' 42.694 N	81° 56' 51.492 W	
871.0	10.01	13.29	869.0	35.6	4.3	4,231,596.86	417,058.30	38° 13' 42.741 N	81° 56' 51.480 W	
901.0	11.35	15.03	898.4	41.0	5.6	4,231,598.51	417,058.71	38° 13' 42.794 N	81° 56' 51.463 W	
931.0	12.05	14.66	927.8	46.9	7.2	4,231,600.30	417,059.19	38° 13' 42.853 N	81° 56' 51.445 W	
961.0	13.22	13.07	957.1	53.3	8.7	4,231,602.24	417,059.67	38° 13' 42.916 N	81° 56' 51.426 W	
991.0	14.34	13.67	986.2	60.2	10.4	4,231,604.36	417,060.17	38° 13' 42.985 N	81° 56' 51.406 W	
1,021.0	15.01	12.95	1,015.2	67.6	12.1	4,231,606.61	417,060.70	38° 13' 43.058 N	81° 56' 51.385 W	
1,051.0	16.22	14.36	1,044.1	75.5	14.1	4,231,609.01	417,061.28	38° 13' 43.136 N	81° 56' 51.362 W	
1,081.0	17.98	15.30	1,072.8	84.0	16.3	4,231,611.60	417,061.97	38° 13' 43.220 N	81° 56' 51.335 W	
1,111.0	18.67	14.25	1,101.3	93.1	18.7	4,231,614.38	417,062.71	38° 13' 43.311 N	81° 56' 51.306 W	
1,141.0	18.80	14.14	1,129.7	102.5	21.1	4,231,617.23	417,063.43	38° 13' 43.403 N	81° 56' 51.277 W	
1,171.0	18.73	15.17	1,158.1	111.8	23.5	4,231,620.08	417,064.17	38° 13' 43.496 N	81° 56' 51.248 W	
1,201.0	18.44	12.05	1,186.5	121.1	25.8	4,231,622.91	417,064.86	38° 13' 43.588 N	81° 56' 51.221 W	
1,231.0	17.79	13.76	1,215.1	130.2	27.9	4,231,625.68	417,065.49	38° 13' 43.678 N	81° 56' 51.196 W	
1,261.0	17.80	16.92	1,243.6	139.0	30.3	4,231,628.37	417,066.23	38° 13' 43.766 N	81° 56' 51.167 W	
1,291.0	17.84	18.31	1,272.2	147.8	33.1	4,231,631.04	417,067.08	38° 13' 43.852 N	81° 56' 51.133 W	
1,321.0	18.00	17.60	1,300.7	156.5	35.9	4,231,633.72	417,067.94	38° 13' 43.940 N	81° 56' 51.099 W	
1,351.0	18.24	18.34	1,329.2	165.4	38.8	4,231,636.42	417,068.82	38° 13' 44.028 N	81° 56' 51.064 W	
1,381.0	18.36	18.55	1,357.7	174.3	41.8	4,231,639.15	417,069.73	38° 13' 44.116 N	81° 56' 51.027 W	
1,411.0	18.51	18.58	1,386.2	183.3	44.8	4,231,641.89	417,070.65	38° 13' 44.205 N	81° 56' 50.991 W	
1,441.0	18.33	18.53	1,414.6	192.3	47.8	4,231,644.63	417,071.57	38° 13' 44.295 N	81° 56' 50.954 W	
1,471.0	18.10	18.07	1,443.1	201.2	50.7	4,231,647.34	417,072.47	38° 13' 44.383 N	81° 56' 50.918 W	
1,501.0	18.14	18.98	1,471.7	210.1	53.7	4,231,650.04	417,073.37	38° 13' 44.471 N	81° 56' 50.882 W	
1,531.0	18.20	19.14	1,500.2	218.9	56.8	4,231,652.73	417,074.30	38° 13' 44.558 N	81° 56' 50.845 W	
1,561.0	18.29	19.64	1,528.6	227.8	59.9	4,231,655.43	417,075.25	38° 13' 44.646 N	81° 56' 50.807 W	
1,591.0	18.47	20.06	1,557.1	236.7	63.1	4,231,658.14	417,076.23	38° 13' 44.735 N	81° 56' 50.768 W	
1,621.0	17.51	19.60	1,585.6	245.4	66.2	4,231,660.80	417,077.19	38° 13' 44.821 N	81° 56' 50.730 W	
1,651.0	16.41	18.78	1,614.3	253.7	69.1	4,231,663.32	417,078.07	38° 13' 44.903 N	81° 56' 50.695 W	
1,681.0	15.63	17.20	1,643.2	261.5	71.7	4,231,665.72	417,078.85	38° 13' 44.981 N	81° 56' 50.664 W	
1,711.0	15.41	17.50	1,672.1	269.2	74.1	4,231,668.05	417,079.58	38° 13' 45.057 N	81° 56' 50.635 W	
1,741.0	15.64	18.40	1,701.0	276.8	76.5	4,231,670.38	417,080.33	38° 13' 45.133 N	81° 56' 50.605 W	
1,771.0	15.63	17.91	1,729.9	284.5	79.1	4,231,672.72	417,081.10	38° 13' 45.209 N	81° 56' 50.574 W	
1,801.0	15.52	17.71	1,758.8	292.2	81.5	4,231,675.06	417,081.85	38° 13' 45.285 N	81° 56' 50.544 W	
1,831.0	15.49	18.21	1,787.7	299.8	84.0	4,231,677.39	417,082.60	38° 13' 45.361 N	81° 56' 50.514 W	
1,861.0	16.03	20.87	1,816.6	307.5	86.7	4,231,679.73	417,083.44	38° 13' 45.437 N	81° 56' 50.481 W	
1,891.0	16.32	19.54	1,845.4	315.3	89.6	4,231,682.12	417,084.31	38° 13' 45.515 N	81° 56' 50.446 W	
1,921.0	16.01	18.73	1,874.2	323.2	92.4	4,231,684.52	417,085.15	38° 13' 45.593 N	81° 56' 50.412 W	
1,951.0	15.78	18.09	1,903.0	331.0	95.0	4,231,686.90	417,085.94	38° 13' 45.671 N	81° 56' 50.381 W	
1,981.0	15.76	17.78	1,931.9	338.8	97.5	4,231,689.26	417,086.71	38° 13' 45.748 N	81° 56' 50.350 W	
2,011.0	15.54	17.55	1,960.8	346.5	99.9	4,231,691.61	417,087.45	38° 13' 45.824 N	81° 56' 50.321 W	
2,041.0	15.63	18.81	1,989.7	354.1	102.4	4,231,693.95	417,088.22	38° 13' 45.900 N	81° 56' 50.290 W	
2,071.0	15.73	18.94	2,018.6	361.8	105.1	4,231,696.29	417,089.02	38° 13' 45.976 N	81° 56' 50.258 W	
2,101.0	16.02	18.13	2,047.4	369.6	107.7	4,231,698.66	417,089.82	38° 13' 46.053 N	81° 56' 50.226 W	
2,131.0	16.05	17.95	2,076.3	377.5	110.2	4,231,701.06	417,090.60	38° 13' 46.132 N	81° 56' 50.195 W	
2,161.0	15.66	18.33	2,105.1	385.3	112.8	4,231,703.43	417,091.38	38° 13' 46.209 N	81° 56' 50.164 W	
2,191.0	16.02	16.70	2,134.0	393.1	115.2	4,231,705.81	417,092.13	38° 13' 46.286 N	81° 56' 50.134 W	
2,221.0	16.66	14.66	2,162.8	401.2	117.5	4,231,708.29	417,092.82	38° 13' 46.367 N	81° 56' 50.107 W	
2,251.0	17.40	14.96	2,191.5	409.7	119.8	4,231,710.88	417,093.50	38° 13' 46.451 N	81° 56' 50.080 W	
2,281.0	17.48	18.16	2,220.1	418.3	122.3	4,231,713.50	417,094.29	38° 13' 46.537 N	81° 56' 50.049 W	
2,311.0	16.94	20.67	2,248.7	426.7	125.3	4,231,716.06	417,095.18	38° 13' 46.620 N	81° 56' 50.013 W	
2,341.0	17.43	21.63	2,277.4	434.9	128.5	4,231,718.57	417,096.16	38° 13' 46.702 N	81° 56' 49.974 W	
2,371.0	18.17	18.96	2,306.0	443.5	131.7	4,231,721.20	417,097.13	38° 13' 46.787 N	81° 56' 49.935 W	
2,401.0	18.88	18.19	2,334.4	452.6	134.7	4,231,723.95	417,098.05	38° 13' 46.877 N	81° 56' 49.898 W	

ProDirectional
Survey Report - Geographic

Company:	HG Energy LLC	Local Co-ordinate Reference:	Well Robert Fowler #516
Project:	Lincoln County, West Virginia UTM83	TVD Reference:	875+6=KB @ 881.0ft
Site:	Mason/Tackett/Fowler	MD Reference:	875+6=KB @ 881.0ft
Well:	Robert Fowler #516	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Robert Fowler #516 Svy	Database:	WellPlanner1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
2,431.0	18.84	18.95	2,362.8	461.8	137.8	4,231,726.75	417,098.99	38° 13' 46.968 N	81° 56' 49.861 W
2,461.0	17.50	17.24	2,391.3	470.7	140.7	4,231,729.46	417,099.88	38° 13' 47.056 N	81° 56' 49.825 W
2,491.0	15.74	15.78	2,420.0	478.9	143.1	4,231,731.97	417,100.63	38° 13' 47.138 N	81° 56' 49.796 W
2,510.0	14.83	13.72	2,438.4	483.7	144.4	4,231,733.44	417,101.01	38° 13' 47.186 N	81° 56' 49.780 W
Final Svy: 2510.00' MD, 2438.37' TVD									
2,564.0	15.54	15.99	2,490.5	497.4	148.0	4,231,737.61	417,102.12	38° 13' 47.321 N	81° 56' 49.737 W
PTB: 2564.00' MD									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
481.0	481.0	1.0	-3.6	First Svy: 481.0' MD	
2,510.0	2,438.4	483.7	144.4	Final Svy: 2510.00' MD, 2438.37' TVD	
2,564.0	2,490.5	497.4	148.0	PTB: 2564.00' MD	