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DEC 9 2015

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

HG Energy, LLC
Lincoln County, West Virginia
Edna May #227
Edna May #227

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

02 November, 2015



HP
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Edna May #227
Project:	Lincoln County, West Virginia	TVD Reference:	WELL @ 968.0usft (Decker #9)
Site:	Edna May #227	MD Reference:	WELL @ 968.0usft (Decker #9)
Well:	Edna May #227	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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	Edna May #227				
Site Position:		Northing:	13,885,081.84 usft	Latitude:	38° 14' 1.300 N
From:	Lat/Long	Easting:	1,364,336.27 usft	Longitude:	81° 57' 41.400 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.60 °

Well	Edna May #227					
Well Position	+N/-S	0.0 usft	Northing:	13,885,081.84 usft	Latitude:	38° 14' 1.300 N
	+E/-W	0.0 usft	Easting:	1,364,336.27 usft	Longitude:	81° 57' 41.400 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	960.0 usft

Wellbore	Wellbore #1				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/13/2015	-7.44	66.03	51,702

Design	Wellbore #1				
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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	355.03

Survey Program	Date	11/2/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
678.0	2,841.0	MWD (Wellbore #1)	MWD default	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	13,885,081.84	1,364,336.27	38° 14' 1.300 N	81° 57' 41.400 W
678.0	0.88	122.67	678.0	-2.8	4.4	13,885,079.03	1,364,340.65	38° 14' 1.273 N	81° 57' 41.345 W
First Survey @ 678' MD / 678' TVD									
708.0	0.71	143.65	708.0	-3.1	4.7	13,885,078.76	1,364,340.96	38° 14' 1.270 N	81° 57' 41.341 W
738.0	0.31	124.26	738.0	-3.3	4.9	13,885,078.56	1,364,341.13	38° 14' 1.268 N	81° 57' 41.339 W
768.0	1.19	358.98	768.0	-3.0	4.9	13,885,078.83	1,364,341.19	38° 14' 1.271 N	81° 57' 41.338 W
798.0	2.61	348.48	798.0	-2.0	4.8	13,885,079.81	1,364,341.05	38° 14' 1.280 N	81° 57' 41.340 W
828.0	4.42	343.06	827.9	-0.3	4.3	13,885,081.59	1,364,340.58	38° 14' 1.298 N	81° 57' 41.346 W
858.0	6.32	342.35	857.8	2.4	3.5	13,885,084.27	1,364,339.74	38° 14' 1.324 N	81° 57' 41.357 W
888.0	7.91	343.28	887.5	6.0	2.4	13,885,087.82	1,364,338.65	38° 14' 1.359 N	81° 57' 41.371 W
918.0	9.10	343.98	917.2	10.2	1.1	13,885,092.07	1,364,337.40	38° 14' 1.401 N	81° 57' 41.387 W
948.0	10.38	344.55	946.8	15.1	-0.2	13,885,096.96	1,364,336.02	38° 14' 1.449 N	81° 57' 41.405 W

HP
Survey Report - Geographic



Company: HG Energy, LLC
Project: Lincoln County, West Virginia
Site: Edna May #227
Well: Edna May #227
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Edna May #227
TVD Reference: WELL @ 968.0usft (Decker #9)
MD Reference: WELL @ 968.0usft (Decker #9)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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
978.0	11.62	345.57	976.2	20.6	-1.7	13,885,102.49	1,364,334.55	38° 14' 1.504 N	81° 57' 41.424 W
1,008.0	13.39	347.24	1,005.5	27.0	-3.2	13,885,108.80	1,364,333.03	38° 14' 1.566 N	81° 57' 41.444 W
1,038.0	14.89	348.87	1,034.6	34.1	-4.7	13,885,115.97	1,364,331.52	38° 14' 1.637 N	81° 57' 41.464 W
1,068.0	16.22	350.15	1,063.5	42.0	-6.2	13,885,123.89	1,364,330.06	38° 14' 1.715 N	81° 57' 41.483 W
1,098.0	17.41	350.85	1,092.2	50.6	-7.6	13,885,132.44	1,364,328.63	38° 14' 1.800 N	81° 57' 41.502 W
1,128.0	19.00	350.06	1,120.7	59.8	-9.2	13,885,141.69	1,364,327.07	38° 14' 1.891 N	81° 57' 41.523 W
1,158.0	20.50	349.84	1,148.9	69.8	-11.0	13,885,151.67	1,364,325.30	38° 14' 1.989 N	81° 57' 41.547 W
1,188.0	22.32	349.75	1,176.9	80.6	-12.9	13,885,162.45	1,364,323.36	38° 14' 2.096 N	81° 57' 41.572 W
1,218.0	24.22	350.68	1,204.4	92.3	-14.9	13,885,174.12	1,364,321.35	38° 14' 2.211 N	81° 57' 41.599 W
1,248.0	25.90	351.47	1,231.6	104.8	-16.9	13,885,186.68	1,364,319.38	38° 14' 2.335 N	81° 57' 41.625 W
1,278.0	27.80	353.15	1,258.4	118.3	-18.7	13,885,200.10	1,364,317.58	38° 14' 2.467 N	81° 57' 41.650 W
1,308.0	29.52	355.28	1,284.7	132.6	-20.1	13,885,214.42	1,364,316.13	38° 14' 2.609 N	81° 57' 41.670 W
1,338.0	30.80	356.47	1,310.6	147.6	-21.2	13,885,229.45	1,364,315.05	38° 14' 2.757 N	81° 57' 41.685 W
1,368.0	32.08	359.46	1,336.2	163.2	-21.8	13,885,245.08	1,364,314.50	38° 14' 2.912 N	81° 57' 41.694 W
1,398.0	33.80	1.84	1,361.4	179.5	-21.6	13,885,261.39	1,364,314.70	38° 14' 3.073 N	81° 57' 41.694 W
1,428.0	35.48	3.78	1,386.1	196.6	-20.7	13,885,278.42	1,364,315.54	38° 14' 3.242 N	81° 57' 41.685 W
1,458.0	36.81	4.88	1,410.3	214.2	-19.4	13,885,296.06	1,364,316.88	38° 14' 3.416 N	81° 57' 41.671 W
1,488.0	37.21	4.26	1,434.3	232.2	-18.0	13,885,314.07	1,364,318.32	38° 14' 3.594 N	81° 57' 41.655 W
1,518.0	37.52	4.97	1,458.1	250.4	-16.5	13,885,332.21	1,364,319.78	38° 14' 3.774 N	81° 57' 41.639 W
1,548.0	36.41	6.07	1,482.1	268.3	-14.8	13,885,350.17	1,364,321.51	38° 14' 3.952 N	81° 57' 41.620 W
1,578.0	36.01	6.86	1,506.3	285.9	-12.8	13,885,367.78	1,364,323.51	38° 14' 4.126 N	81° 57' 41.597 W
1,608.0	36.10	6.07	1,530.5	303.5	-10.8	13,885,385.32	1,364,325.50	38° 14' 4.300 N	81° 57' 41.575 W
1,638.0	36.50	6.38	1,554.7	321.1	-8.8	13,885,402.98	1,364,327.42	38° 14' 4.474 N	81° 57' 41.553 W
1,668.0	36.28	7.04	1,578.9	338.8	-6.8	13,885,420.65	1,364,329.50	38° 14' 4.649 N	81° 57' 41.529 W
1,698.0	35.31	7.88	1,603.2	356.2	-4.5	13,885,438.05	1,364,331.78	38° 14' 4.822 N	81° 57' 41.503 W
1,728.0	35.71	7.97	1,627.6	373.5	-2.1	13,885,455.31	1,364,334.18	38° 14' 4.993 N	81° 57' 41.475 W
1,758.0	35.88	7.88	1,652.0	390.8	0.3	13,885,472.69	1,364,336.60	38° 14' 5.165 N	81° 57' 41.447 W
1,788.0	34.60	6.64	1,676.5	408.0	2.5	13,885,489.86	1,364,338.79	38° 14' 5.335 N	81° 57' 41.422 W
1,818.0	33.98	6.47	1,701.2	424.8	4.5	13,885,506.65	1,364,340.72	38° 14' 5.501 N	81° 57' 41.400 W
1,848.0	34.11	5.28	1,726.1	441.5	6.2	13,885,523.36	1,364,342.44	38° 14' 5.666 N	81° 57' 41.380 W
1,878.0	33.32	4.75	1,751.1	458.1	7.6	13,885,539.94	1,364,343.90	38° 14' 5.830 N	81° 57' 41.364 W
1,908.0	32.61	3.96	1,776.2	474.4	8.9	13,885,556.22	1,364,345.14	38° 14' 5.992 N	81° 57' 41.351 W
1,938.0	32.39	3.87	1,801.5	490.5	10.0	13,885,572.30	1,364,346.24	38° 14' 6.151 N	81° 57' 41.339 W
1,968.0	32.48	2.94	1,826.8	506.5	10.9	13,885,588.36	1,364,347.19	38° 14' 6.310 N	81° 57' 41.329 W
2,028.0	32.70	2.77	1,877.4	538.8	12.5	13,885,620.64	1,364,348.80	38° 14' 6.629 N	81° 57' 41.313 W
2,058.0	33.01	3.78	1,902.6	555.0	13.5	13,885,636.89	1,364,349.73	38° 14' 6.790 N	81° 57' 41.303 W
2,088.0	33.32	3.16	1,927.7	571.4	14.5	13,885,653.27	1,364,350.72	38° 14' 6.952 N	81° 57' 41.293 W
2,118.0	32.70	2.94	1,952.9	587.7	15.3	13,885,669.59	1,364,351.59	38° 14' 7.113 N	81° 57' 41.284 W
2,148.0	31.42	1.44	1,978.3	603.7	15.9	13,885,685.50	1,364,352.21	38° 14' 7.271 N	81° 57' 41.279 W
2,178.0	30.40	358.98	2,004.0	619.1	16.0	13,885,700.91	1,364,352.27	38° 14' 7.423 N	81° 57' 41.280 W
2,208.0	29.12	356.47	2,030.1	633.9	15.4	13,885,715.79	1,364,351.68	38° 14' 7.570 N	81° 57' 41.289 W
2,238.0	27.09	355.36	2,056.5	648.0	14.4	13,885,729.88	1,364,350.68	38° 14' 7.709 N	81° 57' 41.304 W
2,268.0	25.10	353.06	2,083.5	661.2	13.1	13,885,743.01	1,364,349.36	38° 14' 7.839 N	81° 57' 41.322 W
2,298.0	23.20	348.56	2,110.9	673.3	11.1	13,885,755.12	1,364,347.42	38° 14' 7.958 N	81° 57' 41.348 W
2,328.0	21.70	343.76	2,138.6	684.4	8.4	13,885,766.24	1,364,344.70	38° 14' 8.068 N	81° 57' 41.383 W
2,358.0	20.42	338.08	2,166.6	694.6	4.9	13,885,776.42	1,364,341.19	38° 14' 8.168 N	81° 57' 41.429 W
2,388.0	19.18	331.77	2,194.8	703.8	0.6	13,885,785.62	1,364,336.90	38° 14' 8.259 N	81° 57' 41.484 W
2,418.0	18.78	326.66	2,223.2	712.1	-4.3	13,885,793.99	1,364,331.92	38° 14' 8.341 N	81° 57' 41.547 W
2,448.0	18.52	323.97	2,251.6	720.0	-9.8	13,885,801.88	1,364,326.46	38° 14' 8.419 N	81° 57' 41.617 W
2,478.0	18.12	320.36	2,280.1	727.5	-15.6	13,885,809.33	1,364,320.68	38° 14' 8.492 N	81° 57' 41.690 W
2,508.0	18.29	317.14	2,308.6	734.5	-21.8	13,885,816.37	1,364,314.50	38° 14' 8.561 N	81° 57' 41.768 W
2,538.0	18.38	314.37	2,337.1	741.3	-28.3	13,885,823.13	1,364,307.92	38° 14' 8.627 N	81° 57' 41.852 W
2,568.0	18.60	311.94	2,365.5	747.8	-35.3	13,885,829.63	1,364,300.98	38° 14' 8.690 N	81° 57' 41.940 W
2,598.0	18.78	309.48	2,393.9	754.1	-42.6	13,885,835.90	1,364,293.70	38° 14' 8.752 N	81° 57' 42.032 W
2,628.0	19.18	309.48	2,422.3	760.3	-50.1	13,885,842.10	1,364,286.16	38° 14' 8.812 N	81° 57' 42.127 W

HP
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Edna May #227
Project:	Lincoln County, West Virginia	TVD Reference:	WELL @ 968.0usft (Decker #9)
Site:	Edna May #227	MD Reference:	WELL @ 968.0usft (Decker #9)
Well:	Edna May #227	North Reference:	Grid
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
2,658.0	20.11	308.07	2,450.6	766.6	-58.0	13,885,848.42	1,364,278.30	38° 14' 8.874 N	81° 57' 42.227 W
2,688.0	20.19	308.07	2,478.7	772.9	-66.1	13,885,854.79	1,364,270.16	38° 14' 8.936 N	81° 57' 42.329 W
2,748.0	17.28	306.74	2,535.5	784.7	-81.4	13,885,866.51	1,364,254.87	38° 14' 9.050 N	81° 57' 42.523 W
2,778.0	15.82	305.77	2,564.3	789.7	-88.3	13,885,871.56	1,364,247.98	38° 14' 9.100 N	81° 57' 42.610 W
2,841.0	15.82	305.77	2,624.9	799.8	-102.2	13,885,881.60	1,364,234.04	38° 14' 9.197 N	81° 57' 42.786 W

TD @ 2841' MD / 2625' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
678.0	678.0	-2.8	4.4	First Survey @ 678' MD / 678' TVD
2,841.0	2,624.9	799.8	-102.2	TD @ 2841' MD / 2625' TVD

Checked By: _____ Approved By: _____ Date: _____

HG Energy, LLC
Lincoln County, West Virginia
Edna May #227
Edna May #227
Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

02 November, 2015

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MORGANTOWN, WV





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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Edna May #227
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Project Lincoln 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 Edna May #227

Site Position: Northing: 13,885,081.84 usft Latitude: 38° 14' 1.300 N
 From: Lat/Long Easting: 1,364,336.27 usft Longitude: 81° 57' 41.400 W
Position Uncertainty: Slot Radius: 0.0 usft Grid Convergence: -0.60 °

Well Edna May #227

Well Position +N/-S 0.0 usft Northing: 13,885,081.84 usft Latitude: 38° 14' 1.300 N
 +E/-W 0.0 usft Easting: 1,364,336.27 usft Longitude: 81° 57' 41.400 W
Position Uncertainty Wellhead Elevation: 0.0 usft Ground Level: 960.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/13/2015	-7.44	66.03	51,702

Design Wellbore #1

Audit Notes: Version: 1.0 Phase: ACTUAL Tie On Depth: 0.0

Vertical Section:	Depth From (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	355.03

Survey Program Date 11/2/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
678.0	2,841.0	MWD (Wellbore #1)	MWD default	MWD - Standard



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Well: Edna May #227
Wellbore: Wellbore #1
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Local Co-ordinate Reference: Well Edna May #227
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Survey

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	0.00	0.0	0.00	
678.0	0.88	122.67	678.0	-2.8	4.4	-3.2	0.13	5.2	122.67	
First Survey @ 678' MD / 678' TVD										
708.0	0.71	143.65	708.0	-3.1	4.7	-3.5	1.11	5.6	123.35	
738.0	0.31	124.26	738.0	-3.3	4.9	-3.7	1.43	5.9	123.99	
768.0	1.19	358.98	768.0	-3.0	4.9	-3.4	4.64	5.8	121.46	
798.0	2.61	348.48	798.0	-2.0	4.8	-2.4	4.85	5.2	113.03	
828.0	4.42	343.06	827.9	-0.3	4.3	-0.6	6.13	4.3	93.43	
858.0	6.32	342.35	857.8	2.4	3.5	2.1	6.34	4.2	55.11	
888.0	7.91	343.28	887.5	6.0	2.4	5.7	5.31	6.4	21.71	
918.0	9.10	343.98	917.2	10.2	1.1	10.1	3.98	10.3	6.30	
948.0	10.38	344.55	946.8	15.1	-0.2	15.1	4.28	15.1	359.07	
978.0	11.62	345.57	976.2	20.6	-1.7	20.7	4.18	20.7	355.24	
1,008.0	13.39	347.24	1,005.5	27.0	-3.2	27.1	6.02	27.2	353.15	
1,038.0	14.89	348.87	1,034.6	34.1	-4.7	34.4	5.17	34.5	352.08	
1,068.0	16.22	350.15	1,063.5	42.0	-6.2	42.4	4.58	42.5	351.60	
1,098.0	17.41	350.85	1,092.2	50.6	-7.6	51.1	4.02	51.2	351.41	
1,128.0	19.00	350.06	1,120.7	59.8	-9.2	60.4	5.36	60.5	351.26	
1,158.0	20.50	349.84	1,148.9	69.8	-11.0	70.5	5.01	70.7	351.07	
1,188.0	22.32	349.75	1,176.9	80.6	-12.9	81.4	6.07	81.6	350.90	
1,218.0	24.22	350.68	1,204.4	92.3	-14.9	93.2	6.45	93.5	350.82	
1,248.0	25.90	351.47	1,231.6	104.8	-16.9	105.9	5.71	106.2	350.85	
1,278.0	27.80	353.15	1,258.4	118.3	-18.7	119.4	6.82	119.7	351.02	
1,308.0	29.52	355.28	1,284.7	132.6	-20.1	133.8	6.67	134.1	351.36	
1,338.0	30.80	356.47	1,310.6	147.6	-21.2	148.9	4.71	149.1	351.82	
1,368.0	32.08	359.46	1,336.2	163.2	-21.8	164.5	6.72	164.7	352.41	
1,398.0	33.80	1.84	1,361.4	179.5	-21.6	180.7	7.17	180.8	353.15	



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Project: Lincoln County, West Virginia
Site: Edna May #227
Well: Edna May #227
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Edna May #227
TVD Reference: WELL @ 968.0usft (Decker #9)
MD Reference: WELL @ 968.0usft (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)	D Leg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
1,428.0	35.48	3.78	1,386.1	196.6	-20.7	197.6	6.70	197.7	353.98
1,458.0	36.81	4.88	1,410.3	214.2	-19.4	215.1	4.93	215.1	354.83
1,488.0	37.21	4.26	1,434.3	232.2	-18.0	232.9	1.82	232.9	355.58
1,518.0	37.52	4.97	1,458.1	250.4	-16.5	250.9	1.77	250.9	356.23
1,548.0	36.41	6.07	1,482.1	268.3	-14.8	268.6	4.31	268.7	356.85
1,578.0	36.01	6.86	1,506.3	285.9	-12.8	286.0	2.05	286.2	357.44
1,608.0	36.10	6.07	1,530.5	303.5	-10.8	303.3	1.58	303.7	357.97
1,638.0	36.50	6.38	1,554.7	321.1	-8.8	320.7	1.47	321.3	358.42
1,668.0	36.28	7.04	1,578.9	338.8	-6.8	338.1	1.50	338.9	358.86
1,698.0	35.31	7.88	1,603.2	356.2	-4.5	355.3	3.62	356.2	359.28
1,728.0	35.71	7.97	1,627.6	373.5	-2.1	372.2	1.34	373.5	359.68
1,758.0	35.88	7.88	1,652.0	390.8	0.3	389.3	0.59	390.8	0.05
1,788.0	34.60	6.64	1,676.5	408.0	2.5	406.3	4.89	408.0	0.35
1,818.0	33.98	6.47	1,701.2	424.8	4.5	422.8	2.09	424.8	0.60
1,848.0	34.11	5.28	1,726.1	441.5	6.2	439.3	2.26	441.6	0.80
1,878.0	33.32	4.75	1,751.1	458.1	7.6	455.7	2.81	458.2	0.95
1,908.0	32.61	3.96	1,776.2	474.4	8.9	471.8	2.77	474.5	1.07
1,938.0	32.39	3.87	1,801.5	490.5	10.0	487.8	0.75	490.6	1.16
1,968.0	32.48	2.94	1,826.8	506.5	10.9	503.7	1.69	506.6	1.24
2,028.0	32.70	2.77	1,877.4	538.8	12.5	535.7	0.40	538.9	1.33
2,058.0	33.01	3.78	1,902.6	555.0	13.5	551.8	2.10	555.2	1.39
2,088.0	33.32	3.16	1,927.7	571.4	14.5	568.0	1.53	571.6	1.45
2,118.0	32.70	2.94	1,952.9	587.7	15.3	584.2	2.10	587.9	1.49
2,148.0	31.42	1.44	1,978.3	603.7	15.9	600.0	5.02	603.9	1.51
2,178.0	30.40	358.98	2,004.0	619.1	16.0	615.4	5.41	619.3	1.48
2,208.0	29.12	356.47	2,030.1	633.9	15.4	630.2	5.95	634.1	1.39
2,238.0	27.09	355.36	2,056.5	648.0	14.4	644.4	6.99	648.2	1.27

HP
HG Energy EOW Report



Company: HG Energy, LLC
Project: Lincoln County, West Virginia
Site: Edna May #227
Well: Edna May #227
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Edna May #227
TVD Reference: WELL @ 968.0usft (Decker #9)
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Survey Calculation Method: Minimum Curvature
Database: Compass

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	D Leg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,268.0	25.10	353.06	2,083.5	661.2	13.1	657.5	7.44	661.3	1.13
2,298.0	23.20	348.56	2,110.9	673.3	11.1	669.8	8.81	673.4	0.95
2,328.0	21.70	343.76	2,138.6	684.4	8.4	681.1	7.89	684.4	0.71
2,358.0	20.42	338.08	2,166.6	694.6	4.9	691.5	8.03	694.6	0.41
2,388.0	19.18	331.77	2,194.8	703.8	0.6	701.1	8.23	703.8	0.05
2,418.0	18.78	326.66	2,223.2	712.1	-4.3	709.8	5.70	712.2	359.65
2,448.0	18.52	323.97	2,251.6	720.0	-9.8	718.2	3.00	720.1	359.22
2,478.0	18.12	320.36	2,280.1	727.5	-15.6	726.1	4.01	727.6	358.77
2,508.0	18.29	317.14	2,308.6	734.5	-21.8	733.6	3.40	734.8	358.30
2,538.0	18.38	314.37	2,337.1	741.3	-28.3	741.0	2.92	741.8	357.81
2,568.0	18.60	311.94	2,365.5	747.8	-35.3	748.0	2.67	748.6	357.30
2,598.0	18.78	309.48	2,393.9	754.1	-42.6	754.9	2.70	755.3	356.77
2,628.0	19.18	309.48	2,422.3	760.3	-50.1	761.7	1.33	761.9	356.23
2,658.0	20.11	308.07	2,450.6	766.6	-58.0	768.7	3.48	768.8	355.68
2,688.0	20.19	308.07	2,478.7	772.9	-66.1	775.8	0.27	775.8	355.11
2,748.0	17.28	306.74	2,535.5	784.7	-81.4	788.8	4.90	788.9	354.08
2,778.0	15.82	305.77	2,564.3	789.7	-88.3	794.4	4.95	794.6	353.62
2,841.0	15.82	305.77	2,624.9	799.8	-102.2	805.6	0.00	806.3	352.72

TD @ 2841' MD / 2625' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
678.0	678.0	-2.8		
2,841.0	2,624.9	799.8		
				4.4 First Survey @ 678' MD / 678' TVD
				-102.2 TD @ 2841' MD / 2625' TVD

HP
HG Energy EOW Report



Company: HG Energy, LLC
Project: Lincoln County, West Virginia
Site: Edna May #227
Well: Edna May #227
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Edna May #227
TVD Reference: WELL @ 968.0usft (Decker #9)
MD Reference: WELL @ 968.0usft (Decker #9)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

Checked By: _____ Approved By: _____ Date: _____

Company Name: HG Energy, LLC
 Edna May #227
 Lincoln County, West Virginia
 Rig: Decker #9
 Created By: Shane Robbins
 Date: 11/2/2015

Edna May #227
 Lincoln County, West Virginia
Q150759 & AM-150656
 Design #1



DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Eastng	Latitude	Longitude
Target Edna May #227 - plan his target center	2461.0	819.9	-71.3	13888591.77	1384265.02	38° 14' 9.400 N	81° 87' 42.600 W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/S	+E/W	VS_Dep	Zmag	Zmag	Xmag	Ymag
678.0	0.88	122.87	678.0	-2.8	4.4	3.2	5.2	5.2	678 MD / 678° TVD	
2841.0	15.82	306.77	2824.3	798.8	-102.2	885.6	881.6	881.6	TD @ 2841° MD / 2835° TVD	

PROJECT DETAILS:

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

WELL DETAILS:

Edna May #227		880.0	
+N/S	+E/W	Ground Level	Longitude
0.0	0.0	13888881.84	1384338.27
		38° 14' 1.300 N	81° 87' 41.600 W

HG Energy

M **G** **T**

Azimuths to Grid North
 Correction: -6.84°
 Magnetic Field
 Strength: 51702.0snT
 Dip Angle: 66.03°
 Date: 10/13/2015
 Model: IGRF2015

