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DEC 10 2015

WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

**HG Energy, LLC**  
Lincoln County, West Virginia  
Edna May #154  
Edna May #154

Wellbore #1

Design: Wellbore #1

## Survey Report - Geographic

17 November, 2015





<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Edna May #154
<b>Project:</b>	Lincoln County, West Virginia	<b>TVD Reference:</b>	WELL @ 978.0usft (Decker #9)
<b>Site:</b>	Edna May #154	<b>MD Reference:</b>	WELL @ 978.0usft (Decker #9)
<b>Well:</b>	Edna May #154	<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>	Lincoln 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>	Edna May #154				
<b>Site Position:</b>		<b>Northing:</b>	13,885,426.10 usft	<b>Latitude:</b>	38° 14' 4.800 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,365,273.14 usft	<b>Longitude:</b>	81° 57' 29.700 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-0.59 °

<b>Well</b>	Edna May #154					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	13,885,426.10 usft	<b>Latitude:</b>	38° 14' 4.800 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,365,273.14 usft	<b>Longitude:</b>	81° 57' 29.700 W
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	0.0 usft	<b>Ground Level:</b>	970.0 usft

<b>Wellbore</b>	Wellbore #1				
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<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	10/27/2015	-7.44	66.03	51,698

<b>Design</b>	Wellbore #1				
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<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0

<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	22.12

<b>Survey Program</b>	Date 11/17/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
679.0	2,811.0	MWD (Wellbore #1)	MWD default	MWD - Standard

**Survey**

<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>
0.0	0.00	0.00	0.0	0.0	0.0	13,885,426.10	1,365,273.14	38° 14' 4.800 N	81° 57' 29.700 W
679.0	0.09	110.06	679.0	-0.2	0.5	13,885,425.91	1,365,273.64	38° 14' 4.798 N	81° 57' 29.694 W
<b>First Survey @ 679' MD / 679' TVD</b>									
709.0	0.22	95.87	709.0	-0.2	0.6	13,885,425.90	1,365,273.72	38° 14' 4.798 N	81° 57' 29.693 W
739.0	0.49	28.84	739.0	-0.1	0.7	13,885,426.01	1,365,273.84	38° 14' 4.799 N	81° 57' 29.691 W
769.0	1.59	27.17	769.0	0.4	1.0	13,885,426.49	1,365,274.09	38° 14' 4.804 N	81° 57' 29.688 W
799.0	2.78	22.63	799.0	1.4	1.4	13,885,427.53	1,365,274.56	38° 14' 4.814 N	81° 57' 29.682 W
829.0	4.02	22.37	828.9	3.1	2.1	13,885,429.17	1,365,275.24	38° 14' 4.831 N	81° 57' 29.674 W
859.0	5.21	20.47	858.8	5.3	3.0	13,885,431.42	1,365,276.12	38° 14' 4.853 N	81° 57' 29.663 W
889.0	6.41	22.15	888.7	8.2	4.1	13,885,434.25	1,365,277.23	38° 14' 4.881 N	81° 57' 29.650 W
919.0	7.69	21.75	918.4	11.6	5.5	13,885,437.67	1,365,278.60	38° 14' 4.915 N	81° 57' 29.633 W
979.0	9.90	23.73	977.7	20.0	9.0	13,885,446.12	1,365,282.17	38° 14' 4.999 N	81° 57' 29.589 W





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<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Edna May #154
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<b>Site:</b>	Edna May #154	<b>MD Reference:</b>	WELL @ 978.0usft (Decker #9)
<b>Well:</b>	Edna May #154	<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

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,009.0	11.09	25.14	1,007.2	25.0	11.3	13,885,451.09	1,365,284.43	38° 14' 5.048 N	81° 57' 29.562 W
1,039.0	12.02	25.94	1,036.6	30.4	13.9	13,885,456.51	1,365,287.02	38° 14' 5.102 N	81° 57' 29.530 W
1,069.0	12.90	24.13	1,065.9	36.3	16.6	13,885,462.38	1,365,289.76	38° 14' 5.160 N	81° 57' 29.496 W
1,099.0	13.92	22.54	1,095.1	42.7	19.4	13,885,468.77	1,365,292.51	38° 14' 5.224 N	81° 57' 29.463 W
1,129.0	14.72	21.26	1,124.2	49.6	22.1	13,885,475.65	1,365,295.28	38° 14' 5.292 N	81° 57' 29.429 W
1,159.0	16.00	20.25	1,153.1	57.0	24.9	13,885,483.08	1,365,298.09	38° 14' 5.366 N	81° 57' 29.395 W
1,189.0	17.59	20.87	1,181.8	65.1	28.0	13,885,491.20	1,365,301.14	38° 14' 5.447 N	81° 57' 29.358 W
1,219.0	19.40	21.66	1,210.3	74.0	31.4	13,885,500.07	1,365,304.59	38° 14' 5.535 N	81° 57' 29.315 W
1,249.0	20.99	24.83	1,238.4	83.5	35.5	13,885,509.57	1,365,308.69	38° 14' 5.629 N	81° 57' 29.265 W
1,279.0	22.40	27.26	1,266.3	93.4	40.4	13,885,519.53	1,365,313.56	38° 14' 5.728 N	81° 57' 29.205 W
1,339.0	25.19	29.95	1,321.2	114.7	52.0	13,885,540.76	1,365,325.17	38° 14' 5.939 N	81° 57' 29.063 W
1,369.0	26.91	30.25	1,348.1	126.1	58.6	13,885,552.16	1,365,331.78	38° 14' 6.052 N	81° 57' 28.981 W
1,399.0	28.99	30.25	1,374.6	138.2	65.7	13,885,564.30	1,365,338.86	38° 14' 6.173 N	81° 57' 28.894 W
1,429.0	30.40	30.03	1,400.7	151.1	73.2	13,885,577.16	1,365,346.33	38° 14' 6.301 N	81° 57' 28.802 W
1,459.0	30.80	30.34	1,426.5	164.3	80.9	13,885,590.36	1,365,354.00	38° 14' 6.432 N	81° 57' 28.708 W
1,489.0	31.29	30.65	1,452.2	177.6	88.7	13,885,603.69	1,365,361.86	38° 14' 6.565 N	81° 57' 28.611 W
1,519.0	31.82	30.96	1,477.8	191.1	96.8	13,885,617.17	1,365,369.90	38° 14' 6.699 N	81° 57' 28.512 W
1,549.0	32.39	31.44	1,503.2	204.7	105.0	13,885,630.81	1,365,378.16	38° 14' 6.835 N	81° 57' 28.410 W
1,579.0	33.72	31.27	1,528.3	218.7	113.5	13,885,644.78	1,365,386.67	38° 14' 6.974 N	81° 57' 28.305 W
1,609.0	34.51	31.66	1,553.2	233.0	122.3	13,885,659.14	1,365,395.45	38° 14' 7.117 N	81° 57' 28.197 W
1,639.0	34.69	31.36	1,577.9	247.6	131.2	13,885,673.66	1,365,404.36	38° 14' 7.261 N	81° 57' 28.087 W
1,669.0	35.09	29.46	1,602.5	262.4	139.9	13,885,688.46	1,365,413.04	38° 14' 7.409 N	81° 57' 27.980 W
1,699.0	36.59	28.67	1,626.8	277.7	148.4	13,885,703.81	1,365,421.57	38° 14' 7.561 N	81° 57' 27.875 W
1,729.0	37.52	28.36	1,650.7	293.6	157.1	13,885,719.70	1,365,430.20	38° 14' 7.719 N	81° 57' 27.769 W
1,759.0	38.00	28.76	1,674.5	309.7	165.8	13,885,735.83	1,365,438.98	38° 14' 7.880 N	81° 57' 27.661 W
1,789.0	38.80	28.76	1,698.0	326.1	174.8	13,885,752.17	1,365,447.95	38° 14' 8.042 N	81° 57' 27.551 W
1,819.0	39.28	28.93	1,721.3	342.6	183.9	13,885,768.72	1,365,457.07	38° 14' 8.207 N	81° 57' 27.439 W
1,849.0	39.28	28.84	1,744.5	359.3	193.1	13,885,785.35	1,365,466.24	38° 14' 8.372 N	81° 57' 27.326 W
1,879.0	37.38	28.76	1,768.0	375.6	202.1	13,885,801.65	1,365,475.20	38° 14' 8.534 N	81° 57' 27.216 W
1,909.0	35.79	28.45	1,792.1	391.3	210.6	13,885,817.35	1,365,483.76	38° 14' 8.690 N	81° 57' 27.110 W
1,939.0	35.09	28.14	1,816.6	406.6	218.9	13,885,832.66	1,365,492.01	38° 14' 8.843 N	81° 57' 27.009 W
1,969.0	33.58	27.17	1,841.3	421.6	226.7	13,885,847.65	1,365,499.87	38° 14' 8.991 N	81° 57' 26.912 W
1,999.0	32.48	25.94	1,866.5	436.2	234.0	13,885,862.28	1,365,507.18	38° 14' 9.137 N	81° 57' 26.823 W
2,029.0	32.70	25.54	1,891.8	450.7	241.1	13,885,876.83	1,365,514.20	38° 14' 9.281 N	81° 57' 26.737 W
2,059.0	32.92	26.07	1,917.0	465.4	248.1	13,885,891.47	1,365,521.27	38° 14' 9.427 N	81° 57' 26.650 W
2,089.0	33.01	25.45	1,942.1	480.1	255.2	13,885,906.17	1,365,528.37	38° 14' 9.573 N	81° 57' 26.563 W
2,119.0	31.20	24.66	1,967.5	494.5	262.0	13,885,920.61	1,365,535.12	38° 14' 9.716 N	81° 57' 26.480 W
2,149.0	28.68	22.37	1,993.5	508.2	268.0	13,885,934.33	1,365,541.10	38° 14' 9.853 N	81° 57' 26.407 W
2,179.0	26.69	20.03	2,020.1	521.2	273.0	13,885,947.32	1,365,546.15	38° 14' 9.982 N	81° 57' 26.345 W
2,209.0	25.01	19.55	2,047.1	533.5	277.4	13,885,959.63	1,365,550.58	38° 14' 10.104 N	81° 57' 26.291 W
2,239.0	22.80	18.67	2,074.5	545.0	281.4	13,885,971.11	1,365,554.57	38° 14' 10.218 N	81° 57' 26.243 W
2,269.0	21.21	17.34	2,102.3	555.7	284.9	13,885,981.80	1,365,558.04	38° 14' 10.324 N	81° 57' 26.200 W
2,299.0	18.60	15.84	2,130.6	565.5	287.8	13,885,991.58	1,365,560.97	38° 14' 10.421 N	81° 57' 26.165 W
2,329.0	16.31	14.43	2,159.2	574.2	290.2	13,886,000.27	1,365,563.32	38° 14' 10.507 N	81° 57' 26.137 W
2,359.0	14.49	13.64	2,188.1	581.9	292.1	13,886,007.99	1,365,565.26	38° 14' 10.584 N	81° 57' 26.113 W
2,389.0	13.52	13.47	2,217.2	589.0	293.8	13,886,015.05	1,365,566.96	38° 14' 10.654 N	81° 57' 26.093 W
2,419.0	12.68	12.54	2,246.4	595.6	295.4	13,886,021.68	1,365,568.49	38° 14' 10.719 N	81° 57' 26.075 W
2,449.0	11.89	11.26	2,275.7	601.8	296.7	13,886,027.92	1,365,569.81	38° 14' 10.781 N	81° 57' 26.059 W
2,479.0	10.61	7.87	2,305.2	607.6	297.7	13,886,033.69	1,365,570.79	38° 14' 10.838 N	81° 57' 26.047 W
2,509.0	9.90	8.13	2,334.7	612.9	298.4	13,886,038.98	1,365,571.54	38° 14' 10.891 N	81° 57' 26.039 W
2,539.0	9.10	7.87	2,364.3	617.8	299.1	13,886,043.88	1,365,572.22	38° 14' 10.939 N	81° 57' 26.031 W
2,569.0	8.48	7.56	2,393.9	622.3	299.7	13,886,048.42	1,365,572.84	38° 14' 10.984 N	81° 57' 26.024 W
2,599.0	7.69	8.13	2,423.6	626.5	300.3	13,886,052.60	1,365,573.42	38° 14' 11.026 N	81° 57' 26.017 W
2,629.0	7.20	5.75	2,453.4	630.4	300.7	13,886,056.46	1,365,573.89	38° 14' 11.064 N	81° 57' 26.012 W
2,659.0	6.89	7.34	2,483.1	634.0	301.2	13,886,060.12	1,365,574.31	38° 14' 11.100 N	81° 57' 26.007 W



**HP**  
Survey Report - Geographic



<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well Edna May #154
<b>Project:</b>	Lincoln County, West Virginia	<b>TVD Reference:</b>	WELL @ 978.0usft (Decker #9)
<b>Site:</b>	Edna May #154	<b>MD Reference:</b>	WELL @ 978.0usft (Decker #9)
<b>Well:</b>	Edna May #154	<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

**Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,689.0	6.41	3.64	2,512.9	637.5	301.5	13,886,063.57	1,365,574.64	38° 14' 11.134 N	81° 57' 26.003 W
2,719.0	5.79	6.06	2,542.8	640.7	301.8	13,886,066.75	1,365,574.91	38° 14' 11.166 N	81° 57' 26.000 W
2,811.0	5.79	6.06	2,634.3	649.9	302.7	13,886,075.98	1,365,575.89	38° 14' 11.257 N	81° 57' 25.989 W

**TD @ 2811' MD / 2634' TVD**

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
679.0	679.0	-0.2	0.5	First Survey @ 679' MD / 679' TVD
2,811.0	2,634.3	649.9	302.7	TD @ 2811' MD / 2634' TVD

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

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Lincoln County, West Virginia  
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Wellbore #1

Design: Wellbore #1

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HG Energy EOW Report



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MORGANTOWN, WV

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**Project:** Lincoln County, West Virginia  
**Site:** Edna May #154  
**Well:** Edna May #154  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Edna May #154  
**TVD Reference:** WELL @ 978.0usft (Decker #9)  
**MD Reference:** WELL @ 978.0usft (Decker #9)  
**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 #154

**Site Position:** Northing: 13,885,426.10 usft Latitude: 38° 14' 4.800 N  
**From:** Easting: 1,365,273.14 usft Longitude: 81° 57' 29.700 W  
**Position Uncertainty:** Slot Radius: 13-3/16 " Grid Convergence: -0.59 °

**Well** Edna May #154

**Well Position** +N/-S 0.0 usft Northing: 13,885,426.10 usft Latitude: 38° 14' 4.800 N  
+E/-W 0.0 usft Easting: 1,365,273.14 usft Longitude: 81° 57' 29.700 W  
**Position Uncertainty** 0.0 usft Wellhead Elevation: 0.0 usft Ground Level: 970.0 usft

**Wellbore** Wellbore #1

**Magnetics** Model Name IGRF2015 Sample Date 10/27/2015 Declination (°) -7.44 Dip Angle (°) 66.03 Field Strength (nT) 51,698

**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 22.12

**Survey Program** Date 11/17/2015

**From (usft)** To (usft) Survey (Wellbore) Tool Name Description  
679.0 2,811.0 MWD (Wellbore #1) MWD default MWD - Standard

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Survey Calculation Method: Minimum Curvature  
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Survey	MD (ustf)	Inc (°)	Azi (azimuth) (°)	TVD (ustf)	N/S (ustf)	E/W (ustf)	V. Sec (ustf)	DLeg (°/100ustf)	Closure Distance (ustf)	Closure Azimuth (°)
	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00
	679.0	0.09	110.06	679.0	-0.2	0.5	0.0	0.01	0.5	110.06
<b>First Survey @ 679' MD / 679' TVD</b>										
	709.0	0.22	95.87	709.0	-0.2	0.6	0.0	0.45	0.6	108.74
	739.0	0.49	28.84	739.0	-0.1	0.7	0.2	1.51	0.7	97.36
	769.0	1.59	27.17	769.0	0.4	1.0	0.7	3.67	1.0	67.60
	799.0	2.78	22.63	799.0	1.4	1.4	1.9	4.01	2.0	44.75
	829.0	4.02	22.37	828.9	3.1	2.1	3.6	4.13	3.7	34.32
	859.0	5.21	20.47	858.8	5.3	3.0	6.1	4.00	6.1	29.21
	889.0	6.41	22.15	888.7	8.2	4.1	9.1	4.04	9.1	26.62
	919.0	7.69	21.75	918.4	11.6	5.5	12.8	4.27	12.8	25.27
	979.0	9.90	23.73	977.7	20.0	9.0	21.9	3.72	22.0	24.26
	1,009.0	11.09	25.14	1,007.2	25.0	11.3	27.4	4.06	27.4	24.31
	1,039.0	12.02	25.94	1,036.6	30.4	13.9	33.4	3.15	33.4	24.53
	1,069.0	12.90	24.13	1,065.9	36.3	16.6	39.9	3.21	39.9	24.61
	1,099.0	13.92	22.54	1,095.1	42.7	19.4	46.8	3.62	46.9	24.41
	1,129.0	14.72	21.26	1,124.2	49.6	22.1	54.2	2.87	54.3	24.07
	1,159.0	16.00	20.25	1,153.1	57.0	24.9	62.2	4.36	62.2	23.64
	1,189.0	17.59	20.87	1,181.8	65.1	28.0	70.9	5.33	70.9	23.27
	1,219.0	19.40	21.66	1,210.3	74.0	31.4	80.4	6.09	80.4	23.03
	1,249.0	20.99	24.83	1,238.4	83.5	35.5	90.7	6.43	90.7	23.06
	1,279.0	22.40	27.26	1,266.3	93.4	40.4	101.8	5.57	101.8	23.39
	1,339.0	25.19	29.95	1,321.2	114.7	52.0	125.8	4.99	125.9	24.41
	1,369.0	26.91	30.25	1,348.1	126.1	58.6	138.9	5.75	139.0	24.95
	1,399.0	28.99	30.25	1,374.6	138.2	65.7	152.8	6.93	153.0	25.43
	1,429.0	30.40	30.03	1,400.7	151.1	73.2	167.5	4.71	167.9	25.85
	1,459.0	30.80	30.34	1,426.5	164.3	80.9	182.6	1.43	183.1	26.21





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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

HP  
HG Energy EOW Report



Company: HG Energy, LLC  
Project: Lincoln County, West Virginia  
Site: Edna May #154  
Well: Edna May #154  
Wellbore: Wellbore #1  
Design: Wellbore #1

Local Co-ordinate Reference: Well Edna May #154  
TVD Reference: WELL @ 978.0ustf (Decker #9)  
MD Reference: WELL @ 978.0ustf (Decker #9)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: Compass

Survey	MD (ustf)	Inc (°)	Azi (azimuth) (°)	TVD (ustf)	N/S (ustf)	EW (ustf)	V. Sec (ustf)	Dleg (°/100ustf)	Closure Distance (ustf)	Closure Azimuth (°)
	1,489.0	31.29	30.65	1,452.2	177.6	88.7	197.9	1.72	198.5	26.54
	1,519.0	31.82	30.96	1,477.8	191.1	96.8	213.4	1.85	214.2	26.86
	1,549.0	32.39	31.44	1,503.2	204.7	105.0	229.2	2.08	230.1	27.16
	1,579.0	33.72	31.27	1,528.3	218.7	113.5	245.3	4.44	246.4	27.44
	1,609.0	34.51	31.66	1,553.2	233.0	122.3	261.9	2.73	263.2	27.69
	1,639.0	34.69	31.36	1,577.9	247.6	131.2	278.7	0.83	280.2	27.92
	1,669.0	35.09	29.46	1,602.5	262.4	139.9	295.7	3.86	297.3	28.07
	1,699.0	36.59	28.67	1,626.8	277.7	148.4	313.2	5.23	314.9	28.12
	1,729.0	37.52	28.36	1,650.7	293.6	157.1	331.1	3.16	333.0	28.14
	1,759.0	38.00	28.76	1,674.5	309.7	165.8	349.4	1.80	351.3	28.17
	1,789.0	38.80	28.76	1,698.0	326.1	174.8	367.9	2.67	370.0	28.20
	1,819.0	39.28	28.93	1,721.3	342.6	183.9	386.7	1.64	388.9	28.23
	1,849.0	39.28	28.84	1,744.5	359.3	193.1	405.5	0.19	407.9	28.26
	1,879.0	37.38	28.76	1,768.0	375.6	202.1	424.0	6.34	426.5	28.28
	1,909.0	35.79	28.45	1,792.1	391.3	210.6	441.8	5.34	444.3	28.29
	1,939.0	35.09	28.14	1,816.6	406.6	218.9	459.1	2.41	461.7	28.30
	1,969.0	33.58	27.17	1,841.3	421.6	226.7	475.9	5.35	478.7	28.27
	1,999.0	32.48	25.94	1,866.5	436.2	234.0	492.2	4.29	495.0	28.22
	2,029.0	32.70	25.54	1,891.8	450.7	241.1	508.3	1.03	511.1	28.14
	2,059.0	32.92	26.07	1,917.0	465.4	248.1	524.5	1.21	527.4	28.07
	2,089.0	33.01	25.45	1,942.1	480.1	255.2	540.8	1.16	543.7	28.00
	2,119.0	31.20	24.66	1,967.5	494.5	262.0	556.8	6.19	559.6	27.91
	2,149.0	28.68	22.37	1,993.5	508.2	268.0	571.7	9.22	574.5	27.80
	2,179.0	26.69	20.03	2,020.1	521.2	273.0	585.7	7.56	588.4	27.65
	2,209.0	25.01	19.55	2,047.1	533.5	277.4	598.7	5.64	601.4	27.47
	2,239.0	22.80	18.67	2,074.5	545.0	281.4	610.9	7.46	613.4	27.31
	2,269.0	21.21	17.34	2,102.3	555.7	284.9	622.1	5.55	624.5	27.14





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 WV GEOLOGICAL SURVEY  
 MORGANTOWN, WV

**HP**  
 HG Energy EOW Report

**Company:** HG Energy, LLC  
**Project:** Lincoln County, West Virginia  
**Site:** Edna May #154  
**Well:** Edna May #154  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Edna May #154  
**TVD Reference:** WELL @ 978.0usft (Decker #9)  
**MD Reference:** WELL @ 978.0usft (Decker #9)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Compass

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	Dleg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
	2,299.0	18.60	15.84	2,130.6	565.5	287.8	632.2	8.86	634.5	26.98
	2,329.0	16.31	14.43	2,159.2	574.2	290.2	641.2	7.76	643.3	26.81
	2,359.0	14.49	13.64	2,188.1	581.9	292.1	649.1	6.11	651.1	26.66
	2,389.0	13.52	13.47	2,217.2	589.0	293.8	656.2	3.24	658.2	26.51
	2,419.0	12.68	12.54	2,246.4	595.6	295.4	663.0	2.89	664.8	26.38
	2,449.0	11.89	11.26	2,275.7	601.8	296.7	669.2	2.79	671.0	26.24
	2,479.0	10.61	7.87	2,305.2	607.6	297.7	675.0	4.80	676.6	26.10
	2,509.0	9.90	8.13	2,334.7	612.9	298.4	680.1	2.37	681.7	25.96
	2,539.0	9.10	7.87	2,364.3	617.8	299.1	684.9	2.67	686.4	25.83
	2,569.0	8.48	7.56	2,393.9	622.3	299.7	689.4	2.07	690.7	25.71
	2,599.0	7.69	8.13	2,423.6	626.5	300.3	693.5	2.65	694.7	25.61
	2,629.0	7.20	5.75	2,453.4	630.4	300.7	697.2	1.93	698.4	25.51
	2,659.0	6.89	7.34	2,483.1	634.0	301.2	700.8	1.22	701.9	25.41
	2,689.0	6.41	3.64	2,512.9	637.5	301.5	704.1	2.14	705.2	25.31
	2,719.0	5.79	6.06	2,542.8	640.7	301.8	707.1	2.24	708.2	25.22
	2,811.0	5.79	6.06	2,634.3	649.9	302.7	716.0	0.00	716.9	24.98
<b>TD @ 2811' MD / 2634' TVD</b>										

Design Annotations		Local Coordinates		Comment	
Measured Depth (usft)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)		
679.0	679.0	-0.2	0.5	First Survey @ 679' MD / 679' TVD	
2,811.0	2,634.3	649.9	302.7	TD @ 2811' MD / 2634' TVD	

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



Company Name: HG Energy, LLC  
 Edna May #154  
 Lincoln County, West Virginia  
 Rig: Decker #9  
 Created By: Shane Robbins  
 Date: 11/17/2015

Edna May #154  
 Lincoln County, West Virginia  
**Q150774 & AM-150667**  
 Design #1

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WV GEOLOGICAL SURVEY  
 MORGANTOWN, WV



DESIGN TARGET DETAILS

Name	TVD	AK-S	EE-W	Heading	Latitude	Longitude
Target Edna #154	241.0	44.3	55.1318897184	13525351	38 14 11.83 N	81 57 23.50 W
* Refer this target center						

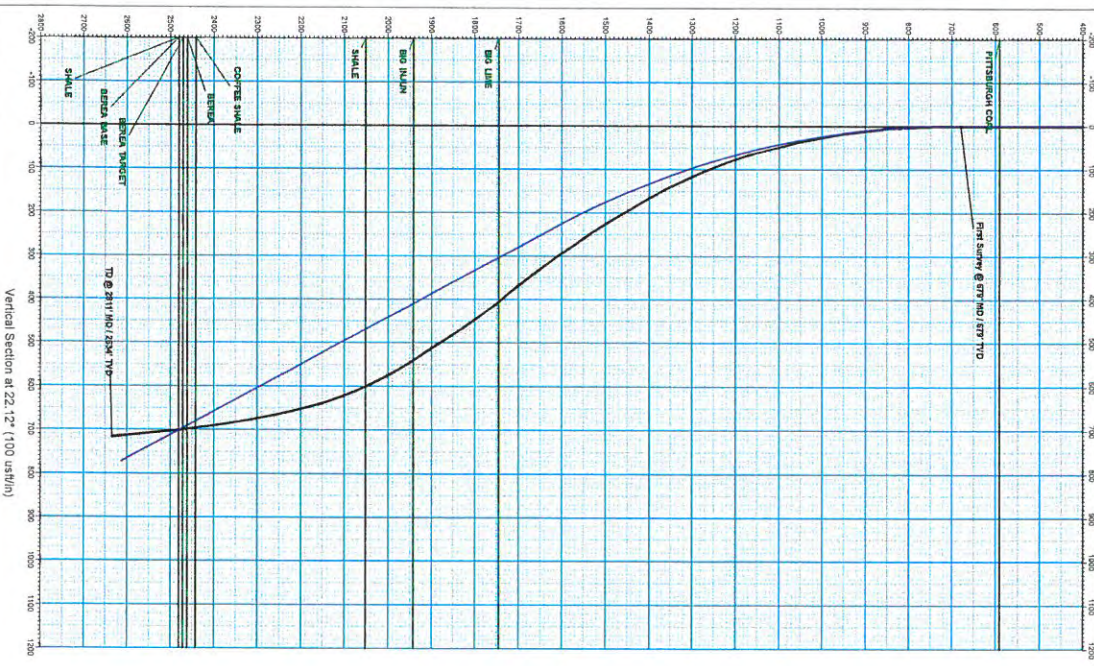
PROJECT DETAILS

Lincoln County, West Virginia

Geodetic System:	Universal Transverse Mercator
Datum:	NAD83 West Virginia - HARN
Ellipsoid:	GRS 1980
System Datum:	Mean Sea Level

ANNOTATIONS

NO	Inc	Ad	TVD	+H-S	+E/W	Vec/Departure	Annotation
273	0.0	110.06	813.0	4.2	0.0	0.0	First Survey @ 879 MD / 879 TVD
579	5.79	524	2524.0	39.2	71.0	1.0	TD @ 2411 MD / 2524 TVD
2811							TD @ 2411 MD / 2524 TVD



WELL DETAILS

Edna May #154

Ground Level	RTD	Latitude	Longitude
+H-S	+E/W	1358528.10	81 57 23.700 W
0.0	0.0	136273.14	

**Magnetic Field**  
 Strength: 51697.65nT  
 Dip Angle: 66.03°  
 Date: 10/27/2015  
 Model: IGRF2015

Correction: -6.85°

Azimuths to Grid North

# HG Energy

