

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

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

17 November, 2015

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Oil and Gas
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Environmental Protection
02/05/2016

HP
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Edna May #154
Project:	Lincoln County, West Virginia	TVD Reference:	WELL @ 978.0usft (Decker #9)
Site:	Edna May #154	MD Reference:	WELL @ 978.0usft (Decker #9)
Well:	Edna May #154	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 #154				
Site Position:		Northing:	13,885,426.10 usft	Latitude:	38° 14' 4.800 N
From:	Lat/Long	Easting:	1,365,273.14 usft	Longitude:	81° 57' 29.700 W
Position Uncertainty:	0.0 usft	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				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/27/2015	-7.44	66.03	51,698

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	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	

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	13,885,426.10	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
First Survey @ 679' MD / 679' TVD									
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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Well:	Edna May #154	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
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' 10.839 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' 26.010 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

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Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Edna May #154
Project:	Lincoln County, West Virginia	TVD Reference:	WELL @ 978.0usft (Decker #9)
Site:	Edna May #154	MD Reference:	WELL @ 978.0usft (Decker #9)
Well:	Edna May #154	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
2,689.0	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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HG Energy, LLC

Lincoln County, West Virginia

Edna May #154

Edna May #154

Wellbore #1

Design: Wellbore #1

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Well: Edna May #154	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
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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	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/27/2015	-7.44	66.03	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 - 811.0 MWD (Wellbore #1)	MWD default	MWD - Standard

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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	
679.0	0.09	110.06	679.0	-0.2	0.5	0.0	0.01	0.5	110.06	
First Survey @ 679' MD / 679' TVD										
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	19.09	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	22.79	27.26	1,266.3	93.4	40.4	101.8	5.57	101.8	23.39	
1,309.0	25.19	29.95	1,321.2	114.7	52.0	125.8	4.99	125.9	24.41	
1,339.0	26.91	30.25	1,348.1	126.1	58.6	138.9	5.75	139.0	24.95	
1,399.0	30.99	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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HG Energy EOW Report



Company: HG Energy, LLC	Local Co-ordinate Reference: Well Edna May #154
Project: Lincoln County, West Virginia	TVD Reference: WELL @ 978.0usft (Decker #9)
Site: Edna May #154	MD Reference: WELL @ 978.0usft (Decker #9)
Well: Edna May #154	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: Compass

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	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	31.70	25.54	1,891.8	450.7	241.1	508.3	1.03	511.1	28.14
2,059.0	32.52	26.07	1,917.0	465.4	248.1	524.5	1.21	527.4	28.07
2,089.0	33.05	25.45	1,942.1	480.1	255.2	540.8	1.16	543.7	28.00
2,119.0	31.26	24.66	1,967.5	494.5	262.0	556.8	6.19	559.6	27.91
2,149.0	38.68	22.37	1,993.5	508.2	268.0	571.7	9.22	574.5	27.80
2,179.0	38.69	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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 Office of Oil and Gas
 WV Department of Environmental Protection
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STEFAN KLIN
1000 ...

DEC 1 3 2011

TO THE DIRECTOR
OF THE ...

BY: [Signature]

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)	E/W (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

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
811.0	2,634.3	649.9	302.7	TD @ 2811' MD / 2634' TVD

Checked By: _____ Approved By: _____ Date: _____

WV Department of Environmental Protection
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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



DESIGN TARGET DETAILS							
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
Target Edna May #154	2411.0	644.5	261.8	13886070.64	1365535.97	38° 14' 11.200 N	81° 57' 26.500 W
*plan hits target center							

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	

WELL DETAILS:						Edna May #154
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Ground Level:
0.0	0.0	13886428.10	1365273.14	38° 14' 4.800 N	81° 57' 29.700 W	970.0

ANNOTATIONS								
MD	Inc	Azi	TVD	+N-S	+E-W	VSec	Departure	Annotation
679.0	0.09	110.06	679.0	-0.2	0.5	0.0	0.5	First Survey @ 679' MD / 679' TVD
2811.0	5.73	6.06	2634.3	649.9	302.7	716.9	722.4	TD @ 2811' MD / 2634' TVD

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Azimuths to Grid North
 Correction: -6.85°
 Magnetic Field
 Strength: 51697.6snT
 Dip Angle: 66.03°
 Date: 10/27/2015
 Model: IGRF2015

HG Energy

