

# HG Energy, LLC

Harrison County, West Virginia

J.M. Fultz #142

J.M. Fultz #142

Wellbore #1

Design: Wellbore #1

## Survey Report - Geographic

05 May, 2014

Received

JUN 18 2014

Office of Oil and Gas  
WV Dept. of Environmental Protection



DDC  
Survey Report - Geographic



<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well J.M. Fultz #142
<b>Project:</b>	Harrison County, West Virginia	<b>TVD Reference:</b>	WELL @ 1350.0usft (Decker #9)
<b>Site:</b>	J.M. Fultz #142	<b>MD Reference:</b>	WELL @ 1350.0usft (Decker #9)
<b>Well:</b>	J.M. Fultz #142	<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>	EDM 5000.1 Single User Db

<b>Project</b>	Harrison 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>	J.M. Fultz #142				
<b>Site Position:</b>		<b>Northing:</b>	14,261,429.10 usft	<b>Latitude:</b>	39° 16' 13.212 N
<b>From:</b>	Map	<b>Easting:</b>	1,779,732.34 usft	<b>Longitude:</b>	80° 30' 27.847 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.31 °

<b>Well</b>	J.M. Fultz #142					
<b>Well Position</b>	<b>+N-S</b>	0.0 usft	<b>Northing:</b>	14,261,429.10 usft	<b>Latitude:</b>	39° 16' 13.212 N
	<b>+E-W</b>	0.0 usft	<b>Easting:</b>	1,779,732.34 usft	<b>Longitude:</b>	80° 30' 27.847 W
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,342.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	4/28/2014	-8.66	66.77	52,267

<b>Design</b>	Wellbore #1				
<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	107.99	

Received

<b>Survey Program</b>	<b>Date</b>	5/5/2014			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
850.0	3,468.0	MWD (Wellbore #1)	MWD default	MWD - Standard	

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Office of Oil and Gas  
WV Dept. of Environmental Protection

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	14,261,429.10	1,779,732.34	39° 16' 13.212 N	80° 30' 27.847 W
850.0	0.00	0.00	850.0	0.0	0.0	14,261,429.10	1,779,732.34	39° 16' 13.212 N	80° 30' 27.847 W
<b>FIRST MWD SURVEY @ 850' MD / 850' TVD</b>									
863.0	1.70	109.10	863.0	-0.1	0.2	14,261,429.04	1,779,732.52	39° 16' 13.211 N	80° 30' 27.844 W
893.0	2.10	106.10	893.0	-0.4	1.1	14,261,428.74	1,779,733.47	39° 16' 13.208 N	80° 30' 27.832 W
923.0	3.00	104.40	923.0	-0.7	2.4	14,261,428.39	1,779,734.76	39° 16' 13.204 N	80° 30' 27.816 W
953.0	4.20	100.50	952.9	-1.1	4.3	14,261,427.99	1,779,736.60	39° 16' 13.200 N	80° 30' 27.792 W
983.0	5.50	101.40	982.8	-1.6	6.7	14,261,427.51	1,779,739.09	39° 16' 13.195 N	80° 30' 27.761 W
1,013.0	6.50	102.10	1,012.6	-2.2	9.8	14,261,426.87	1,779,742.16	39° 16' 13.189 N	80° 30' 27.722 W
1,043.0	7.70	104.00	1,042.4	-3.1	13.4	14,261,426.03	1,779,745.77	39° 16' 13.180 N	80° 30' 27.676 W
1,073.0	8.80	108.10	1,072.1	-4.3	17.6	14,261,424.83	1,779,749.90	39° 16' 13.168 N	80° 30' 27.623 W
1,103.0	9.60	112.00	1,101.7	-5.9	22.1	14,261,423.18	1,779,754.40	39° 16' 13.152 N	80° 30' 27.566 W



**DDC**  
Survey Report - Geographic



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<b>Well:</b>	J.M. Fultz #142	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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**Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,133.0	9.90	107.80	1,131.3	-7.6	26.8	14,261,421.45	1,779,759.18	39° 16' 13.134 N	80° 30' 27.506 W
1,163.0	9.80	103.10	1,160.8	-9.0	31.8	14,261,420.09	1,779,764.12	39° 16' 13.121 N	80° 30' 27.443 W
1,193.0	9.90	99.40	1,190.4	-10.0	36.8	14,261,419.09	1,779,769.15	39° 16' 13.111 N	80° 30' 27.379 W
1,223.0	10.80	99.50	1,219.9	-10.9	42.1	14,261,418.20	1,779,774.47	39° 16' 13.102 N	80° 30' 27.311 W
1,253.0	11.70	100.30	1,249.3	-11.9	47.9	14,261,417.19	1,779,780.23	39° 16' 13.091 N	80° 30' 27.238 W
1,283.0	12.20	102.60	1,278.7	-13.1	54.0	14,261,415.96	1,779,786.32	39° 16' 13.079 N	80° 30' 27.161 W
1,313.0	12.50	101.40	1,308.0	-14.5	60.3	14,261,414.62	1,779,792.59	39° 16' 13.065 N	80° 30' 27.081 W
1,343.0	13.20	99.80	1,337.2	-15.7	66.8	14,261,413.40	1,779,799.15	39° 16' 13.053 N	80° 30' 26.998 W
1,373.0	14.10	99.50	1,366.4	-16.9	73.8	14,261,412.21	1,779,806.13	39° 16' 13.041 N	80° 30' 26.909 W
1,403.0	15.20	100.30	1,395.4	-18.2	81.3	14,261,410.91	1,779,813.61	39° 16' 13.027 N	80° 30' 26.814 W
1,433.0	16.60	104.70	1,424.2	-20.0	89.3	14,261,409.12	1,779,821.62	39° 16' 13.009 N	80° 30' 26.712 W
1,463.0	17.90	108.30	1,452.9	-22.5	97.8	14,261,406.58	1,779,830.14	39° 16' 12.984 N	80° 30' 26.604 W
1,493.0	19.80	112.00	1,481.3	-25.9	106.9	14,261,403.23	1,779,839.23	39° 16' 12.950 N	80° 30' 26.489 W
1,523.0	20.70	112.50	1,509.4	-29.8	116.5	14,261,399.30	1,779,848.84	39° 16' 12.911 N	80° 30' 26.367 W
1,553.0	20.70	111.60	1,537.5	-33.8	126.3	14,261,395.32	1,779,858.67	39° 16' 12.871 N	80° 30' 26.242 W
1,583.0	20.60	111.60	1,565.6	-37.7	136.2	14,261,391.42	1,779,868.51	39° 16' 12.832 N	80° 30' 26.117 W
1,613.0	20.60	111.70	1,593.6	-41.6	146.0	14,261,387.53	1,779,878.32	39° 16' 12.793 N	80° 30' 25.993 W
1,643.0	21.30	112.50	1,621.7	-45.6	155.9	14,261,383.49	1,779,888.26	39° 16' 12.752 N	80° 30' 25.866 W
1,673.0	21.90	113.00	1,649.6	-49.9	166.1	14,261,379.22	1,779,898.44	39° 16' 12.709 N	80° 30' 25.737 W
1,703.0	22.60	113.60	1,677.3	-54.4	176.5	14,261,374.73	1,779,908.87	39° 16' 12.664 N	80° 30' 25.605 W
1,733.0	23.00	110.60	1,705.0	-58.7	187.3	14,261,370.36	1,779,919.64	39° 16' 12.621 N	80° 30' 25.468 W
1,763.0	24.40	109.40	1,732.5	-62.9	198.6	14,261,366.24	1,779,930.97	39° 16' 12.579 N	80° 30' 25.324 W
1,793.0	25.50	109.60	1,759.7	-67.1	210.6	14,261,362.01	1,779,942.90	39° 16' 12.537 N	80° 30' 25.173 W
1,823.0	26.00	111.10	1,786.7	-71.6	222.8	14,261,357.48	1,779,955.12	39° 16' 12.491 N	80° 30' 25.018 W
1,853.0	25.80	111.70	1,813.7	-76.4	235.0	14,261,352.70	1,779,967.32	39° 16' 12.443 N	80° 30' 24.863 W
1,883.0	26.40	110.70	1,840.6	-81.2	247.3	14,261,347.92	1,779,979.63	39° 16' 12.396 N	80° 30' 24.707 W
1,913.0	26.90	109.80	1,867.4	-85.8	259.9	14,261,343.27	1,779,992.25	39° 16' 12.349 N	80° 30' 24.546 W
1,943.0	28.10	109.00	1,894.0	-90.4	273.0	14,261,338.67	1,780,005.32	39° 16' 12.303 N	80° 30' 24.381 W
1,973.0	29.50	109.40	1,920.3	-95.2	286.6	14,261,333.91	1,780,018.96	39° 16' 12.255 N	80° 30' 24.207 W
2,003.0	30.90	109.80	1,946.2	-100.2	300.8	14,261,328.85	1,780,033.18	39° 16' 12.204 N	80° 30' 24.027 W
2,033.0	33.40	110.00	1,971.6	-105.7	315.8	14,261,323.42	1,780,048.19	39° 16' 12.150 N	80° 30' 23.836 W
2,063.0	34.60	110.40	1,996.5	-111.5	331.6	14,261,317.62	1,780,063.93	39° 16' 12.092 N	80° 30' 23.636 W
2,093.0	35.10	110.40	2,021.1	-117.5	347.7	14,261,311.65	1,780,080.00	39° 16' 12.032 N	80° 30' 23.432 W
2,123.0	35.90	110.50	2,045.5	-123.5	364.0	14,261,305.56	1,780,096.32	39° 16' 11.970 N	80° 30' 23.225 W
2,153.0	37.00	109.80	2,069.7	-129.7	380.7	14,261,299.42	1,780,113.06	39° 16' 11.909 N	80° 30' 23.013 W
2,183.0	38.10	109.40	2,093.5	-135.8	397.9	14,261,293.29	1,780,130.28	39° 16' 11.847 N	80° 30' 22.794 W
2,213.0	39.30	109.60	2,116.9	-142.1	415.6	14,261,287.03	1,780,147.96	39° 16' 11.784 N	80° 30' 22.570 W
2,243.0	39.40	109.20	2,140.1	-148.4	433.6	14,261,280.71	1,780,165.90	39° 16' 11.721 N	80° 30' 22.342 W
2,273.0	39.70	109.00	2,163.2	-154.6	451.6	14,261,274.46	1,780,183.95	39° 16' 11.658 N	80° 30' 22.113 W
2,303.0	39.00	108.00	2,186.4	-160.7	469.7	14,261,268.42	1,780,201.99	39° 16' 11.598 N	80° 30' 21.884 W
2,333.0	37.90	106.60	2,209.9	-166.2	487.5	14,261,262.87	1,780,219.80	39° 16' 11.542 N	80° 30' 21.658 W
2,363.0	36.90	104.90	2,233.7	-171.2	505.0	14,261,257.93	1,780,237.33	39° 16' 11.492 N	80° 30' 21.435 W
2,393.0	36.30	104.60	2,257.8	-175.7	522.3	14,261,253.37	1,780,254.63	39° 16' 11.446 N	80° 30' 21.215 W
2,423.0	37.10	105.10	2,281.9	-180.3	539.6	14,261,248.78	1,780,271.96	39° 16' 11.400 N	80° 30' 20.995 W
2,453.0	37.90	105.90	2,305.7	-185.2	557.2	14,261,243.89	1,780,289.56	39° 16' 11.350 N	80° 30' 20.772 W
2,483.0	38.20	107.20	2,329.3	-190.5	574.9	14,261,238.63	1,780,307.28	39° 16' 11.297 N	80° 30' 20.546 W
2,513.0	38.10	109.00	2,352.9	-196.2	592.6	14,261,232.87	1,780,324.90	39° 16' 11.239 N	80° 30' 20.323 W
2,543.0	37.60	108.80	2,376.6	-202.2	610.0	14,261,226.91	1,780,342.31	39° 16' 11.180 N	80° 30' 20.102 W
2,573.0	36.80	106.40	2,400.5	-207.7	627.3	14,261,221.42	1,780,359.60	39° 16' 11.124 N	80° 30' 19.882 W
2,603.0	36.40	106.50	2,424.6	-212.7	644.4	14,261,216.36	1,780,376.75	39° 16' 11.073 N	80° 30' 19.664 W
2,633.0	35.50	107.70	2,448.8	-217.9	661.2	14,261,211.18	1,780,393.58	39° 16' 11.021 N	80° 30' 19.451 W
2,663.0	35.10	108.30	2,473.3	-223.3	677.7	14,261,205.82	1,780,410.07	39° 16' 10.967 N	80° 30' 19.241 W
2,693.0	34.90	107.70	2,497.9	-228.6	694.1	14,261,200.51	1,780,426.44	39° 16' 10.914 N	80° 30' 19.034 W
2,723.0	34.40	108.10	2,522.6	-233.8	710.3	14,261,195.26	1,780,442.67	39° 16' 10.861 N	80° 30' 18.827 W
2,753.0	33.40	107.40	2,547.5	-238.9	726.3	14,261,190.16	1,780,458.60	39° 16' 10.810 N	80° 30' 18.625 W

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**DDC**  
Survey Report - Geographic

33-05761



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<b>Project:</b>	Harrison County, West Virginia	<b>TVD Reference:</b>	WELL @ 1350.0usft (Decker #9)
<b>Site:</b>	J.M. Fultz #142	<b>MD Reference:</b>	WELL @ 1350.0usft (Decker #9)
<b>Well:</b>	J.M. Fultz #142	<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>	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,783.0	32.50	105.90	2,572.7	-243.6	741.9	14,261,185.48	1,780,474.23	39° 16' 10.763 N	80° 30' 18.427 W
2,813.0	32.30	105.90	2,598.0	-248.0	757.4	14,261,181.08	1,780,489.69	39° 16' 10.718 N	80° 30' 18.230 W
2,843.0	31.60	106.60	2,623.4	-252.5	772.6	14,261,176.64	1,780,504.93	39° 16' 10.674 N	80° 30' 18.037 W
2,873.0	31.20	106.30	2,649.0	-256.9	787.6	14,261,172.21	1,780,519.92	39° 16' 10.629 N	80° 30' 17.846 W
2,903.0	31.50	107.70	2,674.7	-261.5	802.5	14,261,167.65	1,780,534.85	39° 16' 10.583 N	80° 30' 17.657 W
2,933.0	31.80	108.50	2,700.2	-266.3	817.5	14,261,162.76	1,780,549.81	39° 16' 10.534 N	80° 30' 17.467 W
2,963.0	32.50	109.80	2,725.6	-271.6	832.6	14,261,157.52	1,780,564.89	39° 16' 10.481 N	80° 30' 17.275 W
2,993.0	33.40	112.00	2,750.8	-277.4	847.8	14,261,151.70	1,780,580.13	39° 16' 10.423 N	80° 30' 17.082 W
3,023.0	34.20	111.70	2,775.7	-283.6	863.3	14,261,145.48	1,780,595.62	39° 16' 10.361 N	80° 30' 16.885 W
3,053.0	34.00	111.00	2,800.6	-289.7	878.9	14,261,139.36	1,780,611.29	39° 16' 10.299 N	80° 30' 16.687 W
3,083.0	33.80	110.00	2,825.5	-295.6	894.6	14,261,133.50	1,780,626.96	39° 16' 10.241 N	80° 30' 16.488 W
3,113.0	32.60	107.80	2,850.6	-300.9	910.2	14,261,128.18	1,780,642.49	39° 16' 10.187 N	80° 30' 16.290 W
3,143.0	31.20	105.30	2,876.0	-305.4	925.3	14,261,123.65	1,780,657.69	39° 16' 10.142 N	80° 30' 16.097 W
3,173.0	30.20	105.70	2,901.8	-309.5	940.1	14,261,119.56	1,780,672.44	39° 16' 10.100 N	80° 30' 15.910 W
3,203.0	29.10	106.20	2,927.9	-313.6	954.4	14,261,115.49	1,780,686.71	39° 16' 10.059 N	80° 30' 15.729 W
3,233.0	28.80	108.30	2,954.1	-317.9	968.2	14,261,111.18	1,780,700.58	39° 16' 10.016 N	80° 30' 15.553 W
3,263.0	28.50	109.60	2,980.5	-322.6	981.8	14,261,106.51	1,780,714.18	39° 16' 9.969 N	80° 30' 15.380 W
3,293.0	29.10	110.90	3,006.8	-327.6	995.4	14,261,101.51	1,780,727.74	39° 16' 9.919 N	80° 30' 15.208 W
3,323.0	30.50	112.10	3,032.8	-333.1	1,009.3	14,261,096.04	1,780,741.61	39° 16' 9.864 N	80° 30' 15.032 W
3,353.0	31.10	111.60	3,058.6	-338.8	1,023.5	14,261,090.32	1,780,755.87	39° 16' 9.807 N	80° 30' 14.851 W
3,383.0	30.30	109.80	3,084.4	-344.2	1,037.9	14,261,084.91	1,780,770.20	39° 16' 9.752 N	80° 30' 14.669 W
3,413.0	29.30	106.80	3,110.4	-348.9	1,052.0	14,261,080.22	1,780,784.34	39° 16' 9.705 N	80° 30' 14.489 W
3,468.0	29.30	106.80	3,158.4	-356.7	1,077.8	14,261,072.44	1,780,810.11	39° 16' 9.627 N	80° 30' 14.162 W

TD @ 3468' MD / 3158' TVD

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
850.0	850.0	0.0	0.0	FIRST MWD SURVEY @ 850' MD / 850' TVD	
3,468.0	3,158.4	-356.7	1,077.8	TD @ 3468' MD / 3158' TVD	

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

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Office of Oil and Gas  
WV Dept. of Environmental Protection

06/27/2017

# HG Energy, LLC

Harrison County, West Virginia

J.M. Fultz #142

J.M. Fultz #142

Wellbore #1

Design: Wellbore #1

## HG Energy EOW Report

06 May, 2014



33-05761

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<b>Design:</b> Wellbore #1	<b>Database:</b> EDM 5000.1 Single User Db

<b>Project</b> Harrison County, West Virginia	<b>System Datum:</b> Mean Sea Level
<b>Map System:</b> Universal Transverse Mercator	
<b>Geo Datum:</b> NAD83 West Virginia - HARN	
<b>Map Zone:</b> Zone 17N (84 W to 78 W)	

<b>Site</b> J.M. Fultz #142				
<b>Site Position:</b>	<b>Northing:</b> 14,261,429.10 usft	<b>Latitude:</b> 39° 16' 13.212 N		
<b>From:</b> Map	<b>Easting:</b> 1,779,732.34 usft	<b>Longitude:</b> 80° 30' 27.847 W		
<b>Position Uncertainty:</b> 0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> 0.31 °		

<b>Well</b> J.M. Fultz #142				
<b>Well Position</b> +N/-S 0.0 usft	<b>Northing:</b> 14,261,429.10 usft	<b>Latitude:</b> 39° 16' 13.212 N		
+E/-W 0.0 usft	<b>Easting:</b> 1,779,732.34 usft	<b>Longitude:</b> 80° 30' 27.847 W		
<b>Position Uncertainty</b> 0.0 usft	<b>Wellhead Elevation:</b> usft	<b>Ground Level:</b> 1,342.0 usft		

<b>Wellbore</b> Wellbore #1					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	4/28/2014	-8.66	66.77	52,267

<b>Design</b> Wellbore #1				
<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	107.99

<b>Survey Program</b> Date 5/5/2014				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
850.0	3,468.0	MWD (Wellbore #1)	MWD default	MWD - Standard

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33-05761



DDC  
HG Energy EOW Report

Company: HG Energy, LLC  
 Project: Harrison County, West Virginia  
 Site: J.M. Fultz #142  
 Well: J.M. Fultz #142  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well J.M. Fultz #142  
 TVD Reference: WELL @ 1350.0usft (Decker #9)  
 MD Reference: WELL @ 1350.0usft (Decker #9)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: EDM 5000.1 Single User Db

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 WV Dept. of Environmental Protection

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	0.00	0.0	0.0	0.0	0.00	0.0	0.00	
850.0	0.00	0.00	850.0	0.0	0.0	0.0	0.00	0.0	0.00	
FIRST MWD SURVEY @ 850' MD / 850' TVD										
863.0	1.70	109.10	863.0	-0.1	0.2	0.2	13.08	0.2	109.10	
893.0	2.10	106.10	893.0	-0.4	1.1	1.2	1.37	1.2	107.71	
923.0	3.00	104.40	923.0	-0.7	2.4	2.5	3.01	2.5	106.33	
953.0	4.20	100.50	952.9	-1.1	4.3	4.4	4.08	4.4	104.53	
983.0	5.50	101.40	982.8	-1.6	6.7	6.9	4.34	6.9	103.24	
1,013.0	6.50	102.10	1,012.6	-2.2	9.8	10.0	3.34	10.1	102.79	
1,043.0	7.70	104.00	1,042.4	-3.1	13.4	13.7	4.08	13.8	102.88	
1,073.0	8.80	108.10	1,072.1	-4.3	17.6	18.0	4.16	18.1	103.67	
1,103.0	9.60	112.00	1,101.7	-5.9	22.1	22.8	3.38	22.8	105.02	
1,133.0	9.90	107.80	1,131.3	-7.6	26.8	27.9	2.57	27.9	105.90	
1,163.0	9.80	103.10	1,160.8	-9.0	31.8	33.0	2.70	33.0	105.83	
1,193.0	9.90	99.40	1,190.4	-10.0	36.8	38.1	2.14	38.1	105.22	
1,223.0	10.80	99.50	1,219.9	-10.9	42.1	43.4	3.00	43.5	104.50	
1,253.0	11.70	100.30	1,249.3	-11.9	47.9	49.2	3.04	49.3	103.96	
1,283.0	12.20	102.60	1,278.7	-13.1	54.0	55.4	2.30	55.6	103.68	
1,313.0	12.50	101.40	1,308.0	-14.5	60.3	61.8	1.32	62.0	103.51	
1,343.0	13.20	99.80	1,337.2	-15.7	66.8	68.4	2.62	68.6	103.22	
1,373.0	14.10	99.50	1,366.4	-16.9	73.8	75.4	3.01	75.7	102.89	
1,403.0	15.20	100.30	1,395.4	-18.2	81.3	82.9	3.73	83.3	102.62	
1,433.0	16.60	104.70	1,424.2	-20.0	89.3	91.1	6.16	91.5	102.62	
1,463.0	17.90	108.30	1,452.9	-22.5	97.8	100.0	5.61	100.4	102.97	
1,493.0	19.80	112.00	1,481.3	-25.9	106.9	109.7	7.48	110.0	103.60	
1,523.0	20.70	112.50	1,509.4	-29.8	116.5	120.0	3.05	120.3	104.35	
1,553.0	20.70	111.60	1,537.5	-33.8	126.3	130.6	1.06	130.8	104.97	



DDC  
HG Energy EOW Report



WV Dept. of Environmental Protection  
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 Received

**Company:** HG Energy, LLC  
**Project:** Harrison County, West Virginia  
**Site:** J.M. Fultz #142  
**Well:** J.M. Fultz #142  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well J.M. Fultz #142  
**TVD Reference:** WELL @ 1350.0usft (Decker #9)  
**MD Reference:** WELL @ 1350.0usft (Decker #9)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
1,583.0	20.60	111.60	1,565.6	-37.7	136.2	141.1	0.33	141.3	105.47
1,613.0	20.60	111.70	1,593.6	-41.6	146.0	151.7	0.12	151.8	105.90
1,643.0	21.30	112.50	1,621.7	-45.6	155.9	162.4	2.52	162.5	106.30
1,673.0	21.90	113.00	1,649.6	-49.9	166.1	173.4	2.09	173.4	106.71
1,703.0	22.60	113.60	1,677.3	-54.4	176.5	184.7	2.45	184.7	107.12
1,733.0	23.00	110.60	1,705.0	-58.7	187.3	196.3	4.10	196.3	107.41
1,763.0	24.40	109.40	1,732.5	-62.9	198.6	208.3	4.94	208.3	107.56
1,793.0	25.50	109.60	1,759.7	-67.1	210.6	221.0	3.68	221.0	107.67
1,823.0	26.00	111.10	1,786.7	-71.6	222.8	234.0	2.74	234.0	107.82
1,853.0	25.80	111.70	1,813.7	-76.4	235.0	247.1	1.10	247.1	108.01
1,883.0	26.40	110.70	1,840.6	-81.2	247.3	260.3	2.48	260.3	108.17
1,913.0	26.90	109.80	1,867.4	-85.8	259.9	273.7	2.14	273.7	108.27
1,943.0	28.10	109.00	1,894.0	-90.4	273.0	287.6	4.19	287.6	108.33
1,973.0	29.50	109.40	1,920.3	-95.2	286.6	302.0	4.71	302.0	108.37
2,003.0	30.90	109.80	1,946.2	-100.2	300.8	317.1	4.71	317.1	108.43
2,033.0	33.40	110.00	1,971.6	-105.7	315.8	333.0	8.34	333.1	108.50
2,063.0	34.60	110.40	1,996.5	-111.5	331.6	349.8	4.07	349.8	108.58
2,093.0	35.10	110.40	2,021.1	-117.5	347.7	366.9	1.67	367.0	108.67
2,123.0	35.90	110.50	2,045.5	-123.5	364.0	384.3	2.67	384.4	108.75
2,153.0	37.00	109.80	2,069.7	-129.7	380.7	402.2	3.92	402.2	108.81
2,183.0	38.10	109.40	2,093.5	-135.8	397.9	420.4	3.76	420.5	108.84
2,213.0	39.30	109.60	2,116.9	-142.1	415.6	439.2	4.02	439.2	108.87
2,243.0	39.40	109.20	2,140.1	-148.4	433.6	458.2	0.91	458.3	108.89
2,273.0	39.70	109.00	2,163.2	-154.6	451.6	477.3	1.09	477.4	108.90
2,303.0	39.00	108.00	2,186.4	-160.7	469.7	496.3	3.15	496.4	108.89
2,333.0	37.90	106.60	2,209.9	-166.2	487.5	515.0	4.68	515.0	108.83
2,363.0	36.90	104.90	2,233.7	-171.2	505.0	533.2	4.79	533.2	108.72

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DDC  
HG Energy EOW Report



WV Dept. of Environmental Protection  
 Office of Oil and Gas  
 JUN 18 2014  
 Received

**Company:** HG Energy, LLC  
**Project:** Harrison County, West Virginia  
**Site:** J.M. Fultz #142  
**Well:** J.M. Fultz #142  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well J.M. Fultz #142  
**TVD Reference:** WELL @ 1350.0usft (Decker #9)  
**MD Reference:** WELL @ 1350.0usft (Decker #9)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,393.0	36.30	104.60	2,257.8	-175.7	522.3	551.0	2.09	551.1	108.60
2,423.0	37.10	105.10	2,281.9	-180.3	539.6	568.9	2.85	569.0	108.48
2,453.0	37.90	105.90	2,305.7	-185.2	557.2	587.2	3.12	587.2	108.39
2,483.0	38.20	107.20	2,329.3	-190.5	574.9	605.7	2.85	605.7	108.33
2,513.0	38.10	109.00	2,352.9	-196.2	592.6	624.2	3.72	624.2	108.32
2,543.0	37.60	108.80	2,376.6	-202.2	610.0	642.6	1.72	642.6	108.34
2,573.0	36.80	106.40	2,400.5	-207.7	627.3	660.7	5.52	660.7	108.32
2,603.0	36.40	106.50	2,424.6	-212.7	644.4	678.6	1.35	678.6	108.27
2,633.0	35.50	107.70	2,448.8	-217.9	661.2	696.2	3.81	696.2	108.24
2,663.0	35.10	108.30	2,473.3	-223.3	677.7	713.6	1.76	713.6	108.23
2,693.0	34.90	107.70	2,497.9	-228.6	694.1	730.8	1.33	730.8	108.23
2,723.0	34.40	108.10	2,522.6	-233.8	710.3	747.8	1.83	747.8	108.22
2,753.0	33.40	107.40	2,547.5	-238.9	726.3	764.6	3.58	764.6	108.21
2,783.0	32.50	105.90	2,572.7	-243.6	741.9	780.9	4.05	780.9	108.18
2,813.0	32.30	105.90	2,598.0	-248.0	757.4	796.9	0.67	796.9	108.13
2,843.0	31.60	106.60	2,623.4	-252.5	772.6	812.8	2.64	812.8	108.10
2,873.0	31.20	106.30	2,649.0	-256.9	787.6	828.4	1.43	828.4	108.06
2,903.0	31.50	107.70	2,674.7	-261.5	802.5	844.0	2.63	844.0	108.05
2,933.0	31.80	108.50	2,700.2	-266.3	817.5	859.8	1.72	859.8	108.05
2,963.0	32.50	109.80	2,725.6	-271.6	832.6	875.7	3.28	875.7	108.07
2,993.0	33.40	112.00	2,750.8	-277.4	847.8	892.0	4.99	892.0	108.12
3,023.0	34.20	111.70	2,775.7	-283.6	863.3	908.7	2.72	908.7	108.19
3,053.0	34.00	111.00	2,800.6	-289.7	878.9	925.5	1.47	925.5	108.24
3,083.0	33.80	110.00	2,825.5	-295.6	894.6	942.2	1.98	942.2	108.28
3,113.0	32.60	107.80	2,850.6	-300.9	910.2	958.6	5.67	958.6	108.30
3,143.0	31.20	105.30	2,876.0	-305.4	925.3	974.4	6.42	974.5	108.27
3,173.0	30.20	105.70	2,901.8	-309.5	940.1	989.7	3.40	989.8	108.22

33-05761

**DDC**  
HG Energy EOW Report



<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well J.M. Fultz #142
<b>Project:</b>	Harrison County, West Virginia	<b>TVD Reference:</b>	WELL @ 1350.0usft (Decker #9)
<b>Site:</b>	J.M. Fultz #142	<b>MD Reference:</b>	WELL @ 1350.0usft (Decker #9)
<b>Well:</b>	J.M. Fultz #142	<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>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)	
3,203.0	29.10	106.20	2,927.9	-313.6	954.4	1,004.6	3.76	1,004.6	108.19	
3,233.0	28.80	108.30	2,954.1	-317.9	968.2	1,019.1	3.53	1,019.1	108.18	
3,263.0	28.50	109.60	2,980.5	-322.6	981.8	1,033.5	2.31	1,033.5	108.19	
3,293.0	29.10	110.90	3,006.8	-327.6	995.4	1,047.9	2.89	1,047.9	108.22	
3,323.0	30.50	112.10	3,032.8	-333.1	1,009.3	1,062.8	5.07	1,062.8	108.26	
3,353.0	31.10	111.60	3,058.6	-338.8	1,023.5	1,078.1	2.17	1,078.1	108.31	
3,383.0	30.30	109.80	3,084.4	-344.2	1,037.9	1,093.4	4.06	1,093.4	108.35	
3,413.0	29.30	106.80	3,110.4	-348.9	1,052.0	1,108.3	5.98	1,108.3	108.35	
3,468.0	29.30	106.80	3,158.4	-356.7	1,077.8	1,135.2	0.00	1,135.3	108.31	

TD @ 3468' MD / 3158' TVD

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
850.0	850.0	0.0	0.0	FIRST MWD SURVEY @ 850' MD / 850' TVD	
3,468.0	3,158.4	-356.7	1,077.8	TD @ 3468' MD / 3158' TVD	

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

Office of Oil  
and Gas  
Department of Environment

JUK  
RC

33-05761



J.M. Fultz #142  
 Harrison County, West Virginia  
 Q131082 & AM-140395  
 Design #1

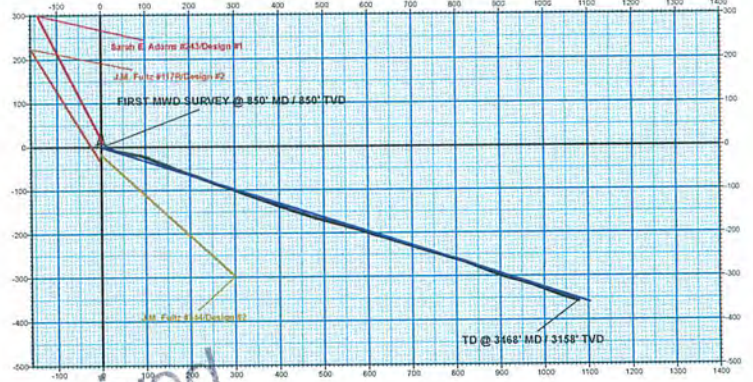
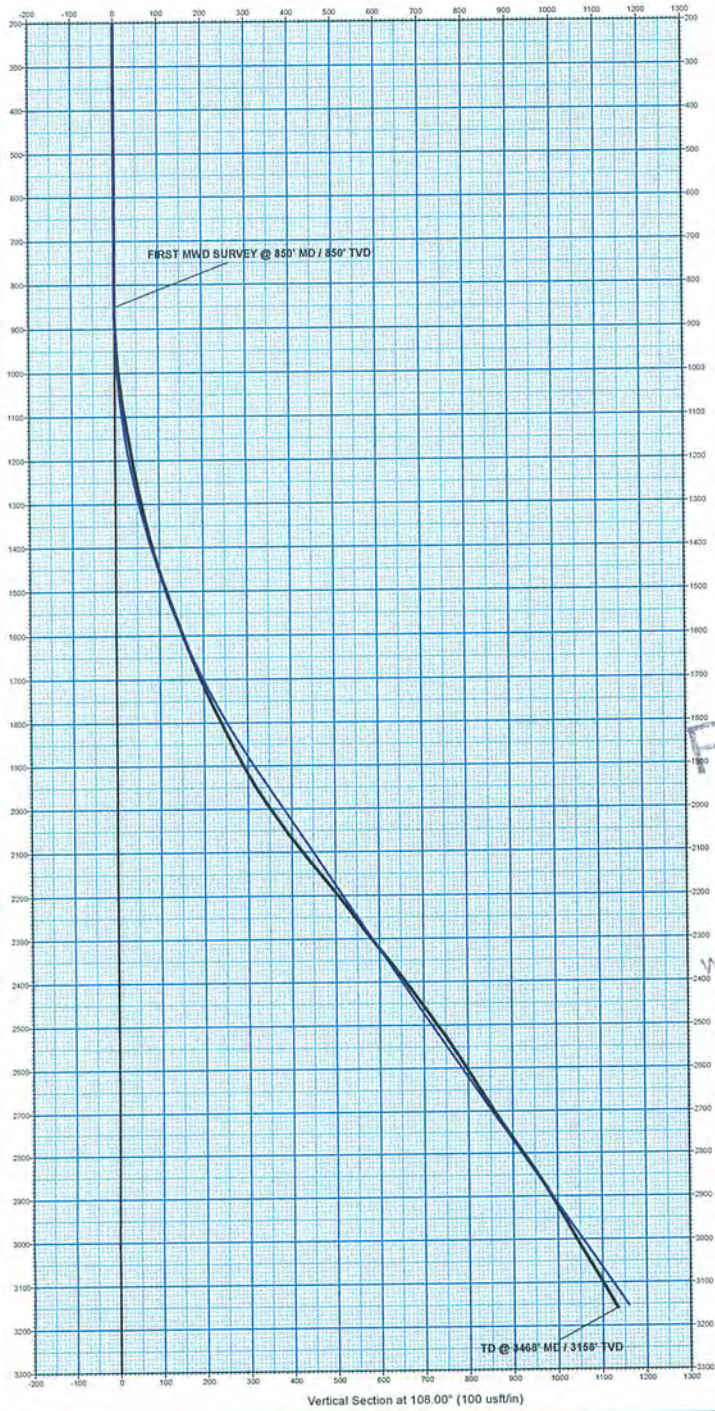
Company Name: HG Energy, LLC  
 J.M. Fultz #142  
 Harrison County, West Virginia  
 Rig: Decker #9  
 Created By: James Dawson  
 Date: 5/5/2014

PROJECT DETAILS: Harrison 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



# HG Energy

**Azimuths to Grid North**  
 Correction:  $-8.97^\circ$   
 Magnetic Field Strength: 52267.2snT  
 Dip Angle:  $66.77^\circ$   
 Date: 4/28/2014  
 Model: IGRF2010



Received  
 JUN 18 2014  
 Office of Oil and Gas  
 WV Dept. of Environmental Protection

WELL DETAILS:		J.M. Fultz #142			
Ground Level:		1342.0			
Northing	Easting	14261429.10	1779732.34	39° 16' 13.212 N	80° 30' 27.847 W

DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude Longitude
Target J.M. Fultz #142 - plan hits target center	2982.0	-322.9	993.9	14261106.30	1780726.24	39° 16' 9.966 N 80° 30' 15.227 W

ANNOTATIONS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
850.0	0.00	0.00	850.0	0.0	0.0	0.0	0.0	FIRST MWD SURVEY @ 850' MD / 850' TVD
3468.0	29.30	106.80	3158.4	-356.7	1077.8	1135.2	1136.7	TD @ 3468' MD / 3158' TVD

Vertical Section at 108.00° (100 usft/m)