

33-05776

## **HG Energy, LLC**

Harrison County, West Virginia

W.F. Williams #234

W.F. Williams #234

Wellbore #1

Design: Wellbore #1

## **Survey Report - Geographic**

15 December, 2014

Received  
Office of Oil & Gas

JAN 26 2015



02/06/2015

33-05776

Survey Report - Geographic



<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well W.F. Williams #234
<b>Project:</b>	Harrison County, West Virginia	<b>TVD Reference:</b>	well @ 1174.0usft (Yost #2)
<b>Site:</b>	W.F. Williams #234	<b>MD Reference:</b>	well @ 1174.0usft (Yost #2)
<b>Well:</b>	W.F. Williams #234	<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 Compass

<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>	W.F. Williams #234				
<b>Site Position:</b>		<b>Northing:</b>	14,261,918.46 usft	<b>Latitude:</b>	39° 16' 17.900 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,782,492.72 usft	<b>Longitude:</b>	80° 29' 52.700 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.32 °

<b>Well</b>	W.F. Williams #234					
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b>	14,261,918.46 usft	<b>Latitude:</b>	39° 16' 17.900 N
	+E/-W	0.0 usft	<b>Easting:</b>	1,782,492.72 usft	<b>Longitude:</b>	80° 29' 52.700 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	0.0 usft	<b>Ground Level:</b>	1,168.0 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	11/10/2014	-8.68	66.72	52,203

<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	35.00

<b>Survey Program</b>	Date 12/15/2014				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
650.0	3,079.0	MWD Survey (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	14,261,918.46	1,782,492.72	39° 16' 17.900 N	80° 29' 52.700 W
650.0	0.00	0.00	650.0	0.0	0.0	14,261,918.46	1,782,492.72	39° 16' 17.900 N	80° 29' 52.700 W
<b>First Survey @ 650' MD / 650' TVD</b>									
713.0	5.10	151.80	712.9	-2.5	1.3	14,261,915.99	1,782,494.05	39° 16' 17.876 N	80° 29' 52.683 W
743.0	5.70	144.10	742.8	-4.9	2.8	14,261,913.61	1,782,495.55	39° 16' 17.852 N	80° 29' 52.664 W
773.0	5.20	125.40	772.7	-6.8	4.8	14,261,911.61	1,782,497.53	39° 16' 17.832 N	80° 29' 52.639 W
803.0	4.80	110.00	802.5	-8.1	7.1	14,261,910.40	1,782,499.82	39° 16' 17.820 N	80° 29' 52.610 W
833.0	4.20	94.10	832.4	-8.6	9.4	14,261,909.89	1,782,502.10	39° 16' 17.815 N	80° 29' 52.581 W
863.0	4.10	76.00	862.4	-8.4	11.5	14,261,910.07	1,782,504.23	39° 16' 17.816 N	80° 29' 52.554 W
893.0	4.70	58.00	892.3	-7.5	13.6	14,261,910.98	1,782,506.32	39° 16' 17.825 N	80° 29' 52.528 W
923.0	5.50	48.60	922.2	-5.9	15.7	14,261,912.58	1,782,508.44	39° 16' 17.841 N	80° 29' 52.501 W
953.0	6.70	41.00	952.0	-3.6	17.9	14,261,914.85	1,782,510.66	39° 16' 17.863 N	80° 29' 52.472 W



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<b>Site:</b>	W.F. Williams #234	<b>MD Reference:</b>	well @ 1174.0usft (Yost #2)
<b>Well:</b>	W.F. Williams #234	<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 Compass

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
983.0	7.80	36.90	981.8	-0.7	20.3	14,261,917.80	1,782,513.03	39° 16' 17.892 N	80° 29' 52.442 W
1,013.0	8.80	34.30	1,011.4	2.9	22.8	14,261,921.33	1,782,515.55	39° 16' 17.927 N	80° 29' 52.409 W
1,043.0	9.90	31.40	1,041.0	7.0	25.5	14,261,925.42	1,782,518.19	39° 16' 17.967 N	80° 29' 52.376 W
1,073.0	10.90	29.00	1,070.5	11.6	28.2	14,261,930.10	1,782,520.91	39° 16' 18.014 N	80° 29' 52.341 W
1,103.0	11.70	27.20	1,100.0	16.8	30.9	14,261,935.29	1,782,523.67	39° 16' 18.065 N	80° 29' 52.305 W
1,133.0	12.80	25.30	1,129.3	22.5	33.8	14,261,941.00	1,782,526.48	39° 16' 18.121 N	80° 29' 52.269 W
1,163.0	14.00	23.90	1,158.5	28.9	36.6	14,261,947.32	1,782,529.37	39° 16' 18.183 N	80° 29' 52.232 W
1,193.0	15.20	23.00	1,187.5	35.8	39.7	14,261,954.26	1,782,532.38	39° 16' 18.252 N	80° 29' 52.193 W
1,223.0	16.70	22.00	1,216.3	43.4	42.8	14,261,961.88	1,782,535.53	39° 16' 18.327 N	80° 29' 52.152 W
1,253.0	18.20	22.00	1,245.0	51.8	46.2	14,261,970.22	1,782,538.90	39° 16' 18.409 N	80° 29' 52.109 W
1,283.0	19.40	23.70	1,273.4	60.7	49.9	14,261,979.13	1,782,542.66	39° 16' 18.497 N	80° 29' 52.061 W
1,313.0	20.10	26.40	1,301.6	69.8	54.2	14,261,988.31	1,782,546.95	39° 16' 18.588 N	80° 29' 52.005 W
1,343.0	21.10	29.70	1,329.7	79.2	59.2	14,261,997.61	1,782,551.92	39° 16' 18.679 N	80° 29' 51.941 W
1,373.0	22.00	32.50	1,357.6	88.6	64.9	14,262,007.04	1,782,557.62	39° 16' 18.772 N	80° 29' 51.868 W
1,403.0	23.20	34.10	1,385.3	98.2	71.2	14,262,016.68	1,782,563.95	39° 16' 18.867 N	80° 29' 51.787 W
1,433.0	24.40	33.80	1,412.7	108.3	78.0	14,262,026.72	1,782,570.71	39° 16' 18.966 N	80° 29' 51.700 W
1,463.0	25.50	32.60	1,439.9	118.9	84.9	14,262,037.31	1,782,577.64	39° 16' 19.070 N	80° 29' 51.612 W
1,493.0	26.40	32.20	1,466.9	129.9	91.9	14,262,048.39	1,782,584.67	39° 16' 19.180 N	80° 29' 51.521 W
1,523.0	26.30	31.80	1,493.8	141.2	99.0	14,262,059.69	1,782,591.72	39° 16' 19.291 N	80° 29' 51.431 W
1,553.0	25.40	31.30	1,520.8	152.4	105.8	14,262,070.83	1,782,598.57	39° 16' 19.401 N	80° 29' 51.343 W
1,583.0	25.10	30.50	1,547.9	163.4	112.4	14,262,081.81	1,782,605.14	39° 16' 19.509 N	80° 29' 51.258 W
1,613.0	25.50	30.10	1,575.0	174.4	118.9	14,262,092.88	1,782,611.61	39° 16' 19.618 N	80° 29' 51.175 W
1,643.0	25.90	29.80	1,602.1	185.7	125.4	14,262,104.15	1,782,618.10	39° 16' 19.729 N	80° 29' 51.092 W
1,673.0	26.80	29.80	1,629.0	197.3	132.0	14,262,115.71	1,782,624.72	39° 16' 19.843 N	80° 29' 51.007 W
1,703.0	27.60	31.30	1,655.6	209.1	139.0	14,262,127.52	1,782,631.69	39° 16' 19.959 N	80° 29' 50.918 W
1,733.0	28.40	33.40	1,682.1	221.0	146.5	14,262,139.41	1,782,639.23	39° 16' 20.077 N	80° 29' 50.821 W
1,763.0	29.60	35.90	1,708.4	232.9	154.8	14,262,151.37	1,782,647.50	39° 16' 20.194 N	80° 29' 50.715 W
1,793.0	29.30	36.20	1,734.5	244.8	163.5	14,262,163.30	1,782,656.18	39° 16' 20.312 N	80° 29' 50.603 W
1,823.0	28.40	35.10	1,760.8	256.6	171.9	14,262,175.06	1,782,664.62	39° 16' 20.428 N	80° 29' 50.495 W
1,853.0	28.70	34.10	1,787.1	268.4	180.0	14,262,186.86	1,782,672.76	39° 16' 20.544 N	80° 29' 50.391 W
1,883.0	29.10	33.50	1,813.4	280.4	188.1	14,262,198.91	1,782,680.83	39° 16' 20.663 N	80° 29' 50.287 W
1,913.0	29.00	32.60	1,839.6	292.7	196.0	14,262,211.12	1,782,688.77	39° 16' 20.783 N	80° 29' 50.186 W
1,943.0	29.50	32.90	1,865.8	305.0	204.0	14,262,223.44	1,782,696.70	39° 16' 20.904 N	80° 29' 50.084 W
1,973.0	30.00	33.80	1,891.8	317.4	212.2	14,262,235.88	1,782,704.89	39° 16' 21.027 N	80° 29' 49.979 W
2,003.0	30.00	33.40	1,917.8	329.9	220.5	14,262,248.37	1,782,713.19	39° 16' 21.150 N	80° 29' 49.872 W
2,033.0	29.30	32.10	1,943.9	342.4	228.5	14,262,260.85	1,782,721.22	39° 16' 21.273 N	80° 29' 49.769 W
2,063.0	27.80	32.10	1,970.2	354.5	236.1	14,262,273.00	1,782,728.84	39° 16' 21.392 N	80° 29' 49.672 W
2,093.0	27.40	33.90	1,996.8	366.2	243.7	14,262,284.65	1,782,736.40	39° 16' 21.507 N	80° 29' 49.574 W
2,123.0	27.60	35.40	2,023.4	377.6	251.6	14,262,296.05	1,782,744.28	39° 16' 21.619 N	80° 29' 49.473 W
2,153.0	28.10	37.50	2,050.0	388.9	259.9	14,262,307.32	1,782,752.61	39° 16' 21.730 N	80° 29' 49.367 W
2,183.0	27.80	37.80	2,076.5	400.0	268.5	14,262,318.45	1,782,761.20	39° 16' 21.840 N	80° 29' 49.257 W
2,213.0	26.80	36.50	2,103.1	411.0	276.8	14,262,329.42	1,782,769.51	39° 16' 21.948 N	80° 29' 49.150 W
2,243.0	26.70	35.10	2,129.9	421.9	284.7	14,262,340.37	1,782,777.41	39° 16' 22.056 N	80° 29' 49.049 W
2,273.0	27.00	35.70	2,156.7	433.0	292.5	14,262,351.41	1,782,785.25	39° 16' 22.165 N	80° 29' 48.948 W
2,303.0	27.20	36.90	2,183.4	444.0	300.6	14,262,362.43	1,782,793.35	39° 16' 22.273 N	80° 29' 48.845 W
2,333.0	26.50	36.30	2,210.1	454.8	308.7	14,262,373.30	1,782,801.42	39° 16' 22.380 N	80° 29' 48.741 W
2,363.0	26.60	36.00	2,237.0	465.7	316.6	14,262,384.13	1,782,809.33	39° 16' 22.487 N	80° 29' 48.640 W
2,393.0	27.10	37.10	2,263.7	476.6	324.7	14,262,395.01	1,782,817.40	39° 16' 22.594 N	80° 29' 48.536 W
2,423.0	27.40	36.80	2,290.4	487.5	332.9	14,262,405.99	1,782,825.66	39° 16' 22.702 N	80° 29' 48.430 W
2,453.0	26.80	35.70	2,317.1	498.6	341.0	14,262,417.01	1,782,833.74	39° 16' 22.811 N	80° 29' 48.327 W
2,483.0	26.50	34.30	2,343.9	509.6	348.7	14,262,428.03	1,782,841.46	39° 16' 22.919 N	80° 29' 48.228 W
2,513.0	24.90	32.10	2,371.0	520.5	355.9	14,262,438.91	1,782,848.59	39° 16' 23.026 N	80° 29' 48.137 W
2,543.0	24.00	30.20	2,398.3	531.1	362.3	14,262,449.54	1,782,855.01	39° 16' 23.131 N	80° 29' 48.054 W
2,573.0	24.80	29.70	2,425.6	541.8	368.5	14,262,460.27	1,782,861.20	39° 16' 23.237 N	80° 29' 47.975 W
2,603.0	24.80	28.90	2,452.8	552.8	374.6	14,262,471.25	1,782,867.36	39° 16' 23.345 N	80° 29' 47.895 W



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Survey Report - Geographic



<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well W.F. Williams #234
<b>Project:</b>	Harrison County, West Virginia	<b>TVD Reference:</b>	well @ 1174.0usft (Yost #2)
<b>Site:</b>	W.F. Williams #234	<b>MD Reference:</b>	well @ 1174.0usft (Yost #2)
<b>Well:</b>	W.F. Williams #234	<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 Compass

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,633.0	24.60	28.30	2,480.1	563.8	380.6	14,262,482.25	1,782,873.36	39° 16' 23.453 N	80° 29' 47.818 W
2,663.0	24.70	28.60	2,507.3	574.8	386.6	14,262,493.26	1,782,879.32	39° 16' 23.562 N	80° 29' 47.742 W
2,693.0	25.70	30.20	2,534.5	585.9	392.9	14,262,504.38	1,782,885.59	39° 16' 23.672 N	80° 29' 47.661 W
2,723.0	26.20	31.89	2,561.5	597.2	399.6	14,262,515.63	1,782,892.36	39° 16' 23.782 N	80° 29' 47.574 W
2,753.0	25.50	32.60	2,588.5	608.2	406.6	14,262,526.69	1,782,899.34	39° 16' 23.891 N	80° 29' 47.485 W
2,783.0	23.20	31.59	2,615.8	618.7	413.2	14,262,537.16	1,782,905.92	39° 16' 23.995 N	80° 29' 47.400 W
2,813.0	20.60	29.60	2,643.6	628.3	418.9	14,262,546.79	1,782,911.62	39° 16' 24.089 N	80° 29' 47.327 W
2,843.0	19.70	28.50	2,671.8	637.4	423.9	14,262,555.82	1,782,916.64	39° 16' 24.178 N	80° 29' 47.263 W
2,873.0	19.20	26.90	2,700.1	646.2	428.6	14,262,564.66	1,782,921.29	39° 16' 24.266 N	80° 29' 47.203 W
2,903.0	19.40	25.60	2,728.4	655.1	432.9	14,262,573.56	1,782,925.67	39° 16' 24.353 N	80° 29' 47.146 W
2,933.0	19.50	25.40	2,756.7	664.1	437.2	14,262,582.57	1,782,929.97	39° 16' 24.442 N	80° 29' 47.091 W
2,963.0	19.00	24.80	2,785.0	673.1	441.4	14,262,591.53	1,782,934.17	39° 16' 24.531 N	80° 29' 47.037 W
2,993.0	18.20	23.50	2,813.4	681.8	445.4	14,262,600.26	1,782,938.08	39° 16' 24.617 N	80° 29' 46.987 W
3,023.0	16.70	21.50	2,842.1	690.1	448.8	14,262,608.57	1,782,941.53	39° 16' 24.699 N	80° 29' 46.942 W
3,079.0	16.70	21.50	2,895.7	705.1	454.7	14,262,623.54	1,782,947.43	39° 16' 24.846 N	80° 29' 46.866 W

TD @ 3079' MD / 2895' TVD

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
650.0	650.0	0.0	0.0	First Survey @ 650' MD / 650' TVD
3,079.0	2,895.7	705.1	454.7	TD @ 3079' MD / 2895' TVD

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

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<b>Site:</b> W.F. Williams #234	<b>MD Reference:</b> well @ 1174.0usft (Yost #2)
<b>Well:</b> W.F. Williams #234	<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 Compass

<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> W.F. Williams #234			
<b>Site Position:</b>	<b>Northing:</b> 14,261,918.46 usft	<b>Latitude:</b> 39° 16' 17.900 N	
<b>From:</b> Lat/Long	<b>Easting:</b> 1,782,492.72 usft	<b>Longitude:</b> 80° 29' 52.700 W	
<b>Position Uncertainty:</b> 0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> 0.32 °	

<b>Well</b> W.F. Williams #234			
<b>Well Position</b> +N/-S 0.0 usft	<b>Northing:</b> 14,261,918.46 usft	<b>Latitude:</b> 39° 16' 17.900 N	
+E/-W 0.0 usft	<b>Easting:</b> 1,782,492.72 usft	<b>Longitude:</b> 80° 29' 52.700 W	
<b>Position Uncertainty</b> 0.0 usft	<b>Wellhead Elevation:</b> 0.0 usft	<b>Ground Level:</b> 1,168.0 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	11/10/2014	-8.68	66.72	52,203

<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	35.00

<b>Survey Program</b>	<b>Date</b> 12/15/2014			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
650.0	3,079.0	MWD Survey (Wellbore #1)	MWD default	MWD - Standard

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HG Energy EOW Report



<b>Company:</b> HG Energy, LLC	<b>Local Co-ordinate Reference:</b> Well W.F. Williams #234
<b>Project:</b> Harrison County, West Virginia	<b>TVD Reference:</b> well @ 1174.0usft (Yost #2)
<b>Site:</b> W.F. Williams #234	<b>MD Reference:</b> well @ 1174.0usft (Yost #2)
<b>Well:</b> W.F. Williams #234	<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 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 (°)			
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	
<b>First Survey @ 650' MD / 650' TVD</b>												
713.0	5.10	151.80	712.9	-2.5	1.3	-1.3	8.10	2.8	151.80			
743.0	5.70	144.10	742.8	-4.9	2.8	-2.4	3.13	5.6	149.76			
773.0	5.20	125.40	772.7	-6.8	4.8	-2.8	6.12	8.4	144.91			
803.0	4.80	110.00	802.5	-8.1	7.1	-2.5	4.65	10.7	138.64			
833.0	4.20	94.10	832.4	-8.6	9.4	-1.6	4.59	12.7	132.44			
863.0	4.10	76.00	862.4	-8.4	11.5	-0.3	4.36	14.2	126.09			
893.0	4.70	58.00	892.3	-7.5	13.6	1.7	4.99	15.5	118.82			
923.0	5.50	48.60	922.2	-5.9	15.7	4.2	3.85	16.8	110.51			
953.0	6.70	41.00	952.0	-3.6	17.9	7.3	4.81	18.3	101.36			
983.0	7.80	36.90	981.8	-0.7	20.3	11.1	4.05	20.3	91.85			
1,013.0	8.80	34.30	1,011.4	2.9	22.8	15.4	3.56	23.0	82.84			
1,043.0	9.90	31.40	1,041.0	7.0	25.5	20.3	3.99	26.4	74.70			
1,073.0	10.90	29.00	1,070.5	11.6	28.2	25.7	3.63	30.5	67.55			
1,103.0	11.70	27.20	1,100.0	16.8	30.9	31.5	2.91	35.2	61.46			
1,133.0	12.80	25.30	1,129.3	22.5	33.8	37.8	3.90	40.6	56.27			
1,163.0	14.00	23.90	1,158.5	28.9	36.6	44.7	4.14	46.7	51.77			
1,193.0	15.20	23.00	1,187.5	35.8	39.7	52.1	4.07	53.4	47.92			
1,223.0	16.70	22.00	1,216.3	43.4	42.8	60.1	5.08	61.0	44.59			
1,253.0	18.20	22.00	1,245.0	51.8	46.2	68.9	5.00	69.4	41.74			
1,283.0	19.40	23.70	1,273.4	60.7	49.9	78.3	4.40	78.6	39.46			
1,313.0	20.10	26.40	1,301.6	69.8	54.2	88.3	3.83	88.4	37.83			
1,343.0	21.10	29.70	1,329.7	79.2	59.2	98.8	5.11	98.8	36.79			
1,373.0	22.00	32.50	1,357.6	88.6	64.9	109.8	4.55	109.8	36.22			
1,403.0	23.20	34.10	1,385.3	98.2	71.2	121.3	4.49	121.3	35.95			

33.05776



JAN 26 2015

HG Energy EOW Report



<b>Company:</b> HG Energy, LLC	<b>Local Co-ordinate Reference:</b> Well W.F. Williams #234
<b>Project:</b> Harrison County, West Virginia	<b>TVD Reference:</b> well @ 1174.0usft (Yost #2)
<b>Site:</b> W.F. Williams #234	<b>MD Reference:</b> well @ 1174.0usft (Yost #2)
<b>Well:</b> W.F. Williams #234	<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 Compass

33.05776

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)		
1,433.0	24.40	33.80	1,412.7	108.3	78.0	133.4	4.02	133.4	35.77		
1,463.0	25.50	32.60	1,439.9	118.9	84.9	146.1	4.04	146.1	35.54		
1,493.0	26.40	32.20	1,466.9	129.9	91.9	159.2	3.06	159.2	35.28		
1,523.0	26.30	31.80	1,493.8	141.2	99.0	172.5	0.68	172.5	35.03		
1,553.0	25.40	31.30	1,520.8	152.4	105.8	185.5	3.09	185.5	34.79		
1,583.0	25.10	30.50	1,547.9	163.4	112.4	198.3	1.51	198.3	34.54		
1,613.0	25.50	30.10	1,575.0	174.4	118.9	211.1	1.45	211.1	34.28		
1,643.0	25.90	29.80	1,602.1	185.7	125.4	224.0	1.40	224.1	34.03		
1,673.0	26.80	29.80	1,629.0	197.3	132.0	237.3	3.00	237.3	33.79		
1,703.0	27.60	31.30	1,655.6	209.1	139.0	251.0	3.51	251.0	33.61		
1,733.0	28.40	33.40	1,682.1	221.0	146.5	265.0	4.23	265.1	33.55		
1,763.0	29.60	35.90	1,708.4	232.9	154.8	279.6	5.68	279.7	33.61		
1,793.0	29.30	36.20	1,734.5	244.8	163.5	294.3	1.11	294.4	33.73		
1,823.0	28.40	35.10	1,760.8	256.6	171.9	308.8	3.48	308.9	33.82		
1,853.0	28.70	34.10	1,787.1	268.4	180.0	323.1	1.88	323.2	33.85		
1,883.0	29.10	33.50	1,813.4	280.4	188.1	337.6	1.65	337.7	33.85		
1,913.0	29.00	32.60	1,839.6	292.7	196.0	352.2	1.49	352.3	33.82		
1,943.0	29.50	32.90	1,865.8	305.0	204.0	366.8	1.74	366.9	33.78		
1,973.0	30.00	33.80	1,891.8	317.4	212.2	381.7	2.23	381.8	33.76		
2,003.0	30.00	33.40	1,917.8	329.9	220.5	396.7	0.67	396.8	33.75		
2,033.0	29.30	32.10	1,943.9	342.4	228.5	411.5	3.17	411.6	33.72		
2,063.0	27.80	32.10	1,970.2	354.5	236.1	425.9	5.00	426.0	33.66		
2,093.0	27.40	33.90	1,996.8	366.2	243.7	439.7	3.08	439.9	33.64		
2,123.0	27.60	35.40	2,023.4	377.6	251.6	453.6	2.40	453.7	33.67		
2,153.0	28.10	37.50	2,050.0	388.9	259.9	467.6	3.67	467.7	33.76		
2,183.0	27.80	37.80	2,076.5	400.0	268.5	481.6	1.10	481.7	33.87		
2,213.0	26.80	36.50	2,103.1	411.0	276.8	495.4	3.88	495.5	33.96		





<b>Company:</b>	HG Energy, LLC	<b>Local Co-ordinate Reference:</b>	Well W.F. Williams #234
<b>Project:</b>	Harrison County, West Virginia	<b>TVD Reference:</b>	well @ 1174.0usft (Yost #2)
<b>Site:</b>	W.F. Williams #234	<b>MD Reference:</b>	well @ 1174.0usft (Yost #2)
<b>Well:</b>	W.F. Williams #234	<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 Compass

33-05776

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)	
2,243.0	26.70	35.10	2,129.9	421.9	284.7	508.9	2.13	509.0	34.01	
2,273.0	27.00	35.70	2,156.7	433.0	292.5	522.4	1.35	522.5	34.05	
2,303.0	27.20	36.90	2,183.4	444.0	300.6	536.1	1.94	536.2	34.10	
2,333.0	26.50	36.30	2,210.1	454.8	308.7	549.7	2.50	549.7	34.16	
2,363.0	26.60	36.00	2,237.0	465.7	316.6	563.1	0.56	563.1	34.21	
2,393.0	27.10	37.10	2,263.7	476.6	324.7	576.6	2.35	576.6	34.27	
2,423.0	27.40	36.80	2,290.4	487.5	332.9	590.3	1.10	590.4	34.33	
2,453.0	26.80	35.70	2,317.1	498.6	341.0	604.0	2.61	604.0	34.37	
2,483.0	26.50	34.30	2,343.9	509.6	348.7	617.4	2.32	617.5	34.39	
2,513.0	24.90	32.10	2,371.0	520.5	355.9	630.4	6.21	630.5	34.36	
2,543.0	24.00	30.20	2,398.3	531.1	362.3	642.8	3.98	642.9	34.30	
2,573.0	24.80	29.70	2,425.6	541.8	368.5	655.2	2.75	655.2	34.22	
2,603.0	24.80	28.90	2,452.8	552.8	374.6	667.7	1.12	667.8	34.13	
2,633.0	24.60	28.30	2,480.1	563.8	380.6	680.2	1.07	680.3	34.02	
2,663.0	24.70	28.60	2,507.3	574.8	386.6	692.6	0.53	692.7	33.92	
2,693.0	25.70	30.20	2,534.5	585.9	392.9	705.3	4.03	705.4	33.84	
2,723.0	26.20	31.89	2,561.5	597.2	399.6	718.4	2.98	718.6	33.79	
2,753.0	25.50	32.60	2,588.5	608.2	406.6	731.5	2.55	731.6	33.76	
2,783.0	23.20	31.59	2,615.8	618.7	413.2	743.8	7.79	744.0	33.74	
2,813.0	20.60	29.60	2,643.6	628.3	418.9	755.0	9.01	755.2	33.69	
2,843.0	19.70	28.50	2,671.8	637.4	423.9	765.2	3.25	765.5	33.63	
2,873.0	19.20	26.90	2,700.1	646.2	428.6	775.2	2.44	775.4	33.55	
2,903.0	19.40	25.60	2,728.4	655.1	432.9	785.0	1.58	785.2	33.46	
2,933.0	19.50	25.40	2,756.7	664.1	437.2	794.8	0.40	795.1	33.36	
2,963.0	19.00	24.80	2,785.0	673.1	441.4	804.5	1.79	804.9	33.26	
2,993.0	18.20	23.50	2,813.4	681.8	445.4	813.9	3.00	814.4	33.15	
3,023.0	16.70	21.50	2,842.1	690.1	448.8	822.7	5.38	823.2	33.04	

HG Energy EOW Report



**Company:** HG Energy, LLC  
**Project:** Harrison County, West Virginia  
**Site:** W.F. Williams #234  
**Well:** W.F. Williams #234  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:**  
**TVD Reference:** well @ 1174.0usft (Yost #2)  
**MD Reference:** well @ 1174.0usft (Yost #2)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM Compass

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeq (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
	3,079.0		16.70	2,895.7	705.1	454.7	838.4	0.00	839.0	32.82
TD @ 3079' MD / 2895' TVD										

Design Annotations	Measured Depth (usft)		Vertical Depth (usft)		Local Coordinates		Comment
	Depth (usft)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)			
	650.0	650.0	0.0	0.0	0.0	454.7	First Survey @ 650' MD / 650' TVD
	3,079.0	2,895.7	705.1	454.7	0.0	454.7	TD @ 3079' MD / 2895' TVD

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

**Received**  
**Office of Oil & Gas**  
**JAN 26 2015**

3305776 02/06/2015



Company Name: HG Energy, LLC  
 W.F. Williams #234  
 Harrison County, West Virginia  
 Rig: Yost #2  
 Created By: Jerry Arsenault  
 Date: 12/15/2014

W.F. Williams #234  
 Harrison County, West Virginia  
 G141219 & AM-141190  
 Design #1

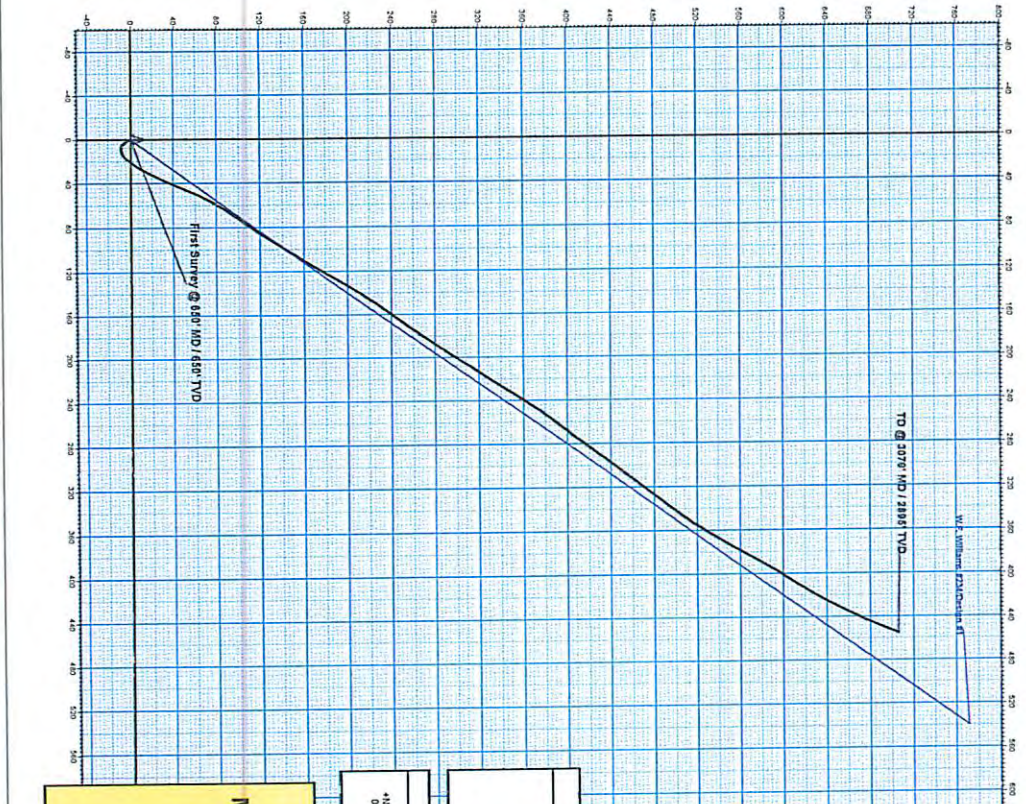
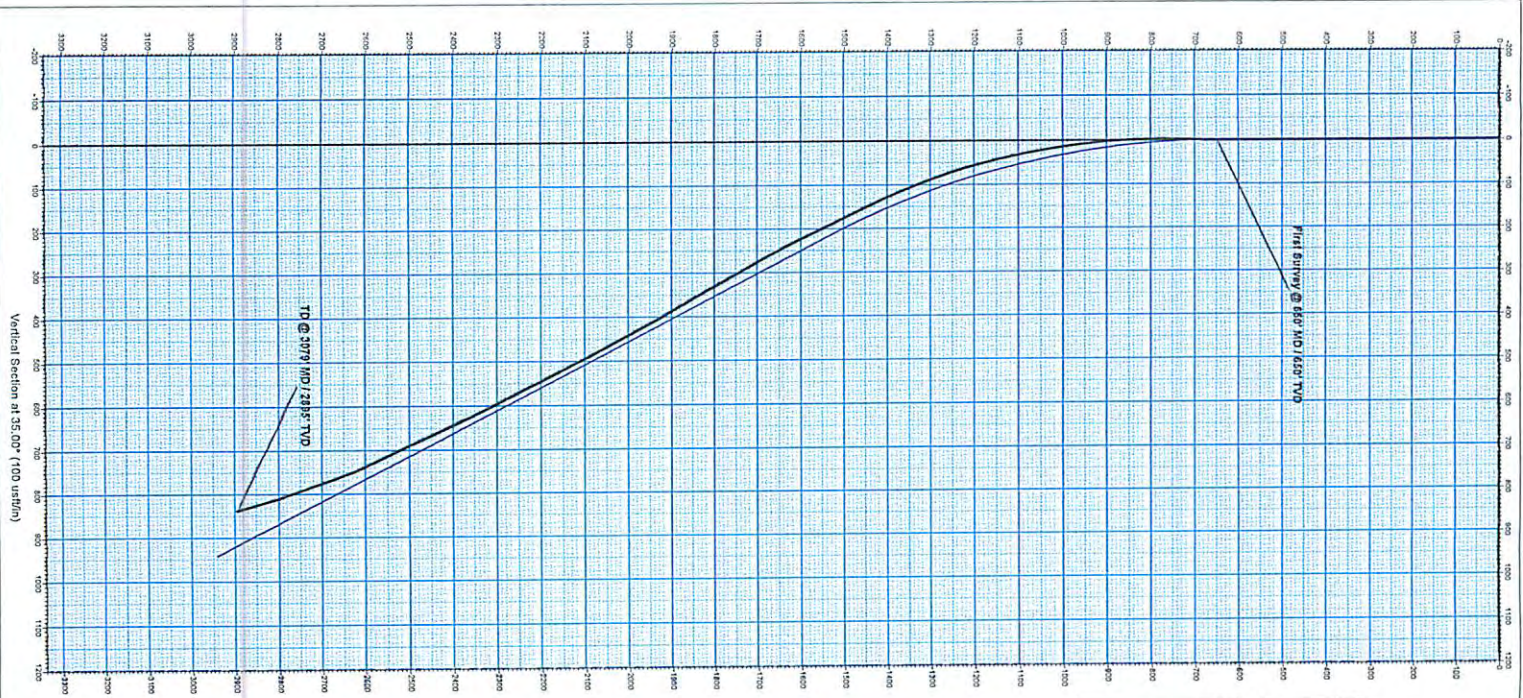
DESIGN TARGET DETAILS

Name	TVD	*N/S	*E/W	Nothing	Easting	Latitude
W.F. Williams #234	6812.5	6812.5	6812.5	17252912.5	39° 16' 24.01" N	80° 29' 42.88" W
*plan file target center						

ANNOTATIONS

MD	Inc	Adj	TVD	+/-	*E/W	Vac-Depature	Annotation
650.0	0.00	0.00	650.0	0.0	45.1	650.0	First Survey @ 650' MD / 650' TVD
3075.0	16.20	21.00	2850.0	70.51	63.14	658.4	TD @ 3075' MD / 2850' TVD

Office of Oil & Gas  
 12/15/2014



**Azimuths to Grid North**

Correction: -9.00°

Magnetic Field Strength: 52202.5mT  
 Dip Angle: 66.72°  
 Date: 11/10/2014  
 Model: IGRF2010

WELL DETAILS: W.F. Williams #234

*N/S	*E/W	Nothing	Easting	Latitude	Longitude
0.0	0.0	14291918.45	1782021.2	39° 16' 17.50" N	80° 29' 42.88" W

PROJECT DETAILS: Harrison County, West Virginia

Geoidetic System:	Universal Transverse Mercator
Datum:	NAD83 West Virginia - HARN
Ellipsoid:	GRS 1980 (64 IV to 78 V)
Zone:	Zone 17N (64 IV to 78 V)
System Datum:	Mean Sea Level



HG Energy

02/06/2015

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