

87-04764

HG Energy, LLC
Roane County, West Virginia
A.J. Epling #120
A.J. Epling #120

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

22 May, 2015

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Oil and Gas
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The DIRECTIONAL DRILLING COMPANY

WV Department of
Environment and Natural Resources
10/23/2015

87.04764

HP
Survey Report - Geographic



Company: HG Energy, LLC	Local Co-ordinate Reference: Well A.J. Epling #120
Project: Roane County, West Virginia	TVD Reference: WELL @ 1197.0usft (Decker #9)
Site: A.J. Epling #120	MD Reference: WELL @ 1197.0usft (Decker #9)
Well: A.J. Epling #120	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: Compass

Project Roane 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 A.J. Epling #120		
Site Position:	Northing: 14,057,084.55 usft	Latitude: 38° 42' 35.200 N
From: Lat/Long	Easting: 1,560,950.70 usft	Longitude: 81° 16' 42.900 W
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence: -0.17 °

Well A.J. Epling #120		
Well Position +N/-S 0.0 usft	Northing: 14,057,084.55 usft	Latitude: 38° 42' 35.200 N
+E/-W 0.0 usft	Easting: 1,560,950.70 usft	Longitude: 81° 16' 42.900 W
Position Uncertainty 0.0 usft	Wellhead Elevation: 0.0 usft	Ground Level: 1,189.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/13/2015	-7.99	66.36	51,927

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	78.54

Survey Program Date 5/22/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
550.0	2,871.0	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	14,057,084.55	1,560,950.70	38° 42' 35.200 N	81° 16' 42.900 W
550.0	0.00	0.00	550.0	0.0	0.0	14,057,084.55	1,560,950.70	38° 42' 35.200 N	81° 16' 42.900 W
First Survey @ 550' MD / 550' TVD									
618.0	1.19	118.25	618.0	-0.3	0.6	14,057,084.22	1,560,951.32	38° 42' 35.197 N	81° 16' 42.892 W
648.0	1.02	111.33	648.0	-0.6	1.1	14,057,083.97	1,560,951.85	38° 42' 35.194 N	81° 16' 42.886 W
678.0	1.68	92.65	678.0	-0.7	1.8	14,057,083.85	1,560,952.53	38° 42' 35.193 N	81° 16' 42.877 W
708.0	3.09	82.34	708.0	-0.6	3.1	14,057,083.94	1,560,953.77	38° 42' 35.194 N	81° 16' 42.861 W
738.0	4.42	77.31	737.9	-0.2	5.0	14,057,084.30	1,560,955.70	38° 42' 35.198 N	81° 16' 42.837 W
768.0	5.61	74.32	767.8	0.4	7.5	14,057,084.95	1,560,958.24	38° 42' 35.204 N	81° 16' 42.805 W
798.0	6.81	70.22	797.6	1.4	10.6	14,057,085.95	1,560,961.33	38° 42' 35.214 N	81° 16' 42.766 W
828.0	7.38	70.44	827.4	2.6	14.1	14,057,087.20	1,560,964.82	38° 42' 35.227 N	81° 16' 42.722 W
858.0	8.62	69.42	857.1	4.1	18.0	14,057,088.63	1,560,968.74	38° 42' 35.241 N	81° 16' 42.673 W

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Site: A.J. Epling #120	MD Reference: WELL @ 1197.0usft (Decker #9)
Well: A.J. Epling #120	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
888.0	9.28	69.73	886.7	5.7	22.4	14,057,090.26	1,560,973.11	38° 42' 35.257 N	81° 16' 42.617 W
918.0	10.30	70.83	916.3	7.4	27.2	14,057,091.98	1,560,977.91	38° 42' 35.274 N	81° 16' 42.557 W
948.0	11.18	72.24	945.7	9.2	32.5	14,057,093.75	1,560,983.22	38° 42' 35.292 N	81° 16' 42.490 W
978.0	12.20	70.22	975.1	11.2	38.3	14,057,095.71	1,560,988.97	38° 42' 35.311 N	81° 16' 42.417 W
1,008.0	13.08	70.83	1,004.4	13.3	44.5	14,057,097.90	1,560,995.16	38° 42' 35.333 N	81° 16' 42.339 W
1,038.0	13.52	69.73	1,033.6	15.7	51.0	14,057,100.23	1,561,001.66	38° 42' 35.357 N	81° 16' 42.258 W
1,068.0	14.10	69.51	1,062.7	18.2	57.7	14,057,102.72	1,561,008.37	38° 42' 35.381 N	81° 16' 42.173 W
1,098.0	15.11	69.51	1,091.8	20.8	64.8	14,057,105.37	1,561,015.45	38° 42' 35.408 N	81° 16' 42.084 W
1,128.0	16.31	70.75	1,120.6	23.6	72.4	14,057,108.13	1,561,023.09	38° 42' 35.435 N	81° 16' 41.987 W
1,158.0	17.01	72.24	1,149.4	26.3	80.6	14,057,110.85	1,561,031.25	38° 42' 35.463 N	81° 16' 41.884 W
1,188.0	18.12	74.71	1,178.0	28.9	89.2	14,057,113.42	1,561,039.93	38° 42' 35.488 N	81° 16' 41.775 W
1,218.0	19.31	75.33	1,206.4	31.4	98.5	14,057,115.91	1,561,049.23	38° 42' 35.513 N	81° 16' 41.658 W
1,248.0	20.59	75.81	1,234.6	33.9	108.4	14,057,118.46	1,561,059.14	38° 42' 35.539 N	81° 16' 41.533 W
1,278.0	21.61	76.21	1,262.6	36.5	118.9	14,057,121.07	1,561,069.62	38° 42' 35.565 N	81° 16' 41.401 W
1,308.0	22.71	75.42	1,290.4	39.3	129.9	14,057,123.84	1,561,080.59	38° 42' 35.592 N	81° 16' 41.262 W
1,338.0	23.82	76.43	1,317.9	42.2	141.4	14,057,126.72	1,561,092.09	38° 42' 35.621 N	81° 16' 41.117 W
1,368.0	24.61	77.14	1,345.3	45.0	153.4	14,057,129.53	1,561,104.06	38° 42' 35.649 N	81° 16' 40.966 W
1,398.0	25.81	78.15	1,372.4	47.7	165.8	14,057,132.26	1,561,116.55	38° 42' 35.677 N	81° 16' 40.809 W
1,428.0	27.22	80.31	1,399.3	50.2	179.0	14,057,134.76	1,561,129.70	38° 42' 35.702 N	81° 16' 40.643 W
1,458.0	28.19	80.31	1,425.8	52.6	192.8	14,057,137.11	1,561,143.45	38° 42' 35.726 N	81° 16' 40.469 W
1,488.0	28.99	80.62	1,452.2	54.9	206.9	14,057,139.49	1,561,157.61	38° 42' 35.749 N	81° 16' 40.291 W
1,518.0	29.70	80.44	1,478.3	57.4	221.4	14,057,141.91	1,561,172.11	38° 42' 35.774 N	81° 16' 40.108 W
1,548.0	30.71	80.75	1,504.2	59.8	236.3	14,057,144.37	1,561,187.00	38° 42' 35.799 N	81° 16' 39.920 W
1,578.0	32.08	81.94	1,529.9	62.2	251.7	14,057,146.72	1,561,202.45	38° 42' 35.822 N	81° 16' 39.725 W
1,608.0	32.79	82.03	1,555.2	64.4	267.7	14,057,148.96	1,561,218.38	38° 42' 35.845 N	81° 16' 39.524 W
1,638.0	33.19	81.01	1,580.3	66.8	283.8	14,057,151.37	1,561,234.54	38° 42' 35.869 N	81° 16' 39.320 W
1,668.0	33.80	80.75	1,605.4	69.4	300.2	14,057,154.00	1,561,250.88	38° 42' 35.896 N	81° 16' 39.114 W
1,698.0	34.60	80.93	1,630.2	72.1	316.8	14,057,156.68	1,561,267.53	38° 42' 35.923 N	81° 16' 38.904 W
1,728.0	35.22	79.65	1,654.8	75.0	333.8	14,057,159.58	1,561,284.45	38° 42' 35.952 N	81° 16' 38.691 W
1,758.0	35.48	79.25	1,679.2	78.2	350.8	14,057,162.76	1,561,301.52	38° 42' 35.984 N	81° 16' 38.476 W
1,788.0	35.79	77.84	1,703.6	81.7	367.9	14,057,166.23	1,561,318.65	38° 42' 36.019 N	81° 16' 38.260 W
1,818.0	36.90	76.65	1,727.8	85.6	385.3	14,057,170.16	1,561,335.99	38° 42' 36.058 N	81° 16' 38.041 W
1,848.0	38.09	76.52	1,751.6	89.8	403.0	14,057,174.39	1,561,353.75	38° 42' 36.100 N	81° 16' 37.817 W
1,878.0	40.39	77.31	1,774.8	94.1	421.5	14,057,178.69	1,561,372.23	38° 42' 36.143 N	81° 16' 37.584 W
1,908.0	42.11	77.05	1,797.4	98.5	440.8	14,057,183.07	1,561,391.52	38° 42' 36.187 N	81° 16' 37.340 W
1,938.0	43.79	76.83	1,819.3	103.1	460.7	14,057,187.69	1,561,411.43	38° 42' 36.234 N	81° 16' 37.089 W
1,968.0	45.84	76.94	1,840.6	107.9	481.3	14,057,192.49	1,561,432.02	38° 42' 36.282 N	81° 16' 36.830 W
1,998.0	46.80	76.65	1,861.3	112.9	502.4	14,057,197.45	1,561,453.14	38° 42' 36.331 N	81° 16' 36.563 W
2,028.0	48.08	77.05	1,881.6	117.9	524.0	14,057,202.47	1,561,474.66	38° 42' 36.382 N	81° 16' 36.292 W
2,058.0	49.70	77.93	1,901.3	122.8	546.0	14,057,207.37	1,561,496.73	38° 42' 36.431 N	81° 16' 36.014 W
2,088.0	51.30	78.02	1,920.4	127.6	568.7	14,057,212.19	1,561,519.37	38° 42' 36.479 N	81° 16' 35.728 W
2,118.0	52.59	78.41	1,938.9	132.5	591.8	14,057,217.01	1,561,542.49	38° 42' 36.528 N	81° 16' 35.436 W
2,148.0	53.78	78.24	1,956.9	137.3	615.3	14,057,221.87	1,561,566.01	38° 42' 36.576 N	81° 16' 35.140 W
2,178.0	54.71	78.02	1,974.4	142.3	639.1	14,057,226.88	1,561,589.84	38° 42' 36.627 N	81° 16' 34.839 W
2,208.0	55.99	78.24	1,991.5	147.4	663.3	14,057,231.96	1,561,613.99	38° 42' 36.677 N	81° 16' 34.535 W
2,238.0	57.09	77.62	2,008.0	152.6	687.8	14,057,237.19	1,561,638.46	38° 42' 36.730 N	81° 16' 34.226 W
2,268.0	58.20	77.93	2,024.1	158.0	712.5	14,057,242.56	1,561,663.23	38° 42' 36.784 N	81° 16' 33.914 W
2,298.0	57.89	78.24	2,040.0	163.3	737.4	14,057,247.81	1,561,688.13	38° 42' 36.836 N	81° 16' 33.600 W
2,328.0	57.00	77.44	2,056.1	168.6	762.2	14,057,253.14	1,561,712.85	38° 42' 36.890 N	81° 16' 33.288 W
2,358.0	57.00	77.53	2,072.4	174.0	786.7	14,057,258.59	1,561,737.41	38° 42' 36.945 N	81° 16' 32.978 W
2,388.0	57.09	77.31	2,088.8	179.5	811.3	14,057,264.07	1,561,761.98	38° 42' 36.999 N	81° 16' 32.668 W
2,418.0	56.92	77.14	2,105.1	185.1	835.8	14,057,269.64	1,561,786.52	38° 42' 37.055 N	81° 16' 32.359 W
2,448.0	57.40	77.05	2,121.4	190.7	860.4	14,057,275.27	1,561,811.09	38° 42' 37.112 N	81° 16' 32.049 W
2,478.0	57.49	76.21	2,137.5	196.6	885.0	14,057,281.11	1,561,835.69	38° 42' 37.170 N	81° 16' 31.739 W
2,508.0	57.71	76.74	2,153.6	202.5	909.6	14,057,287.04	1,561,860.32	38° 42' 37.229 N	81° 16' 31.428 W

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HP
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well A.J. Epling #120
Project:	Roane County, West Virginia	TVD Reference:	WELL @ 1197.0usft (Decker #9)
Site:	A.J. Epling #120	MD Reference:	WELL @ 1197.0usft (Decker #9)
Well:	A.J. Epling #120	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,538.0	57.40	76.34	2,169.7	208.4	934.2	14,057,292.93	1,561,884.94	38° 42' 37.288 N	81° 16' 31.117 W
2,568.0	56.92	75.33	2,185.9	214.5	958.7	14,057,299.10	1,561,909.38	38° 42' 37.350 N	81° 16' 30.809 W
<u>2,598.0</u>	57.00	75.11	2,202.3	221.0	983.0	<u>14,057,305.51</u>	<u>1,561,933.69</u>	38° 42' 37.414 N	81° 16' 30.503 W
2,628.0	56.21	75.02	2,218.8	227.4	1,007.2	14,057,311.97	1,561,957.90	38° 42' 37.479 N	81° 16' 30.197 W
2,658.0	55.19	74.23	2,235.7	234.0	1,031.1	14,057,318.54	1,561,981.79	38° 42' 37.545 N	81° 16' 29.896 W
2,688.0	53.60	74.14	2,253.2	240.6	1,054.6	14,057,325.19	1,562,005.26	38° 42' 37.611 N	81° 16' 29.600 W
2,718.0	51.61	73.35	2,271.4	247.3	1,077.4	14,057,331.85	1,562,028.14	38° 42' 37.678 N	81° 16' 29.312 W
2,748.0	50.11	72.11	2,290.3	254.2	1,099.7	14,057,338.76	1,562,050.36	38° 42' 37.747 N	81° 16' 29.032 W
2,778.0	48.61	70.53	2,309.9	261.5	1,121.2	14,057,346.05	1,562,071.92	38° 42' 37.819 N	81° 16' 28.760 W
2,808.0	47.02	70.04	2,330.0	269.0	1,142.1	14,057,353.54	1,562,092.85	38° 42' 37.894 N	81° 16' 28.496 W
2,871.0	47.02	70.04	2,373.0	284.7	1,185.5	14,057,369.28	1,562,136.17	38° 42' 38.051 N	81° 16' 27.950 W

TD @ 2871' MD / 2373' TVD

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
550.0	550.0	0.0	0.0	First Survey @ 550' MD / 550' TVD
2,871.0	2,373.0	284.7	1,185.5	TD @ 2871' MD / 2373' TVD

Checked By: _____ Approved By: _____ Date: _____

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WV Department of
Environmental Protection

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Roane County, West Virginia
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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 A.J. Epling #120		
Site Position: From: Lat/Long	Northing: 14,057,084.55 usft	Latitude: 38° 42' 35.200 N
Position Uncertainty: 0.0 usft	Easting: 1,560,950.70 usft	Longitude: 81° 16' 42.900 W
	Slot Radius: 13-3/16 "	Grid Convergence: -0.17 °

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+E/-W 0.0 usft	Easting: 1,560,950.70 usft	Longitude: 81° 16' 42.900 W
Position Uncertainty 0.0 usft	Wellhead Elevation: 0.0 usft	Ground Level: 1,189.0 usft

Wellbore Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/13/2015	-7.99	66.36	51,927

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	78.54

Survey Program Date 5/22/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
550.0	2,871.0	MWD (Wellbore #1)	MWD default	MWD - Standard

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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	
550.0	0.00	0.00	550.0	0.0	0.0	0.0	0.00	0.0	0.00	
First Survey @ 550' MD / 550' TVD										
618.0	1.19	118.25	618.0	-0.3	0.6	0.5	1.75	0.7	118.25	
648.0	1.02	111.33	648.0	-0.6	1.1	1.0	0.72	1.3	116.81	
678.0	1.68	92.65	678.0	-0.7	1.8	1.7	2.62	2.0	110.80	
708.0	3.09	82.34	708.0	-0.6	3.1	2.9	4.89	3.1	101.20	
738.0	4.42	77.31	737.9	-0.2	5.0	4.9	4.56	5.0	92.83	
768.0	5.61	74.32	767.8	0.4	7.5	7.5	4.06	7.6	86.94	
798.0	6.81	70.22	797.6	1.4	10.6	10.7	4.26	10.7	82.49	
828.0	7.38	70.44	827.4	2.6	14.1	14.4	1.90	14.4	79.37	
858.0	8.62	69.42	857.1	4.1	18.0	18.5	4.16	18.5	77.24	
888.0	9.28	69.73	886.7	5.7	22.4	23.1	2.21	23.1	75.70	
918.0	10.30	70.83	916.3	7.4	27.2	28.1	3.46	28.2	74.73	
948.0	11.18	72.24	945.7	9.2	32.5	33.7	3.06	33.8	74.20	
978.0	12.20	70.22	975.1	11.2	38.3	39.7	3.66	39.9	73.74	
1,008.0	13.08	70.83	1,004.4	13.3	44.5	46.2	2.97	46.4	73.29	
1,038.0	13.52	69.73	1,033.6	15.7	51.0	53.1	1.69	53.3	72.90	
1,068.0	14.10	69.51	1,062.7	18.2	57.7	60.1	1.94	60.5	72.51	
1,098.0	15.11	69.51	1,091.8	20.8	64.8	67.6	3.37	68.0	72.18	
1,128.0	16.31	70.75	1,120.6	23.6	72.4	75.6	4.15	76.1	71.96	
1,158.0	17.01	72.24	1,149.4	26.3	80.6	84.2	2.73	84.7	71.92	
1,188.0	18.12	74.71	1,178.0	28.9	89.2	93.2	4.46	93.8	72.07	
1,218.0	19.31	75.33	1,206.4	31.4	98.5	102.8	4.02	103.4	72.35	
1,248.0	20.59	75.81	1,234.6	33.9	108.4	113.0	4.30	113.6	72.64	
1,278.0	21.61	76.21	1,262.6	36.5	118.9	123.8	3.43	124.4	72.93	
1,308.0	22.71	75.42	1,290.4	39.3	129.9	135.1	3.80	135.7	73.17	

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HG Energy EOW Report



87-04764

Company: HG Energy, LLC	Local Co-ordinate Reference: Well A.J. Epling #120
Project: Roane County, West Virginia	TVD Reference: WELL @ 1197.0usft (Decker #9)
Site: A.J. Epling #120	MD Reference: WELL @ 1197.0usft (Decker #9)
Well: A.J. Epling #120	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 (°)
1,338.0	23.82	76.43	1,317.9	42.2	141.4	146.9	3.93	147.5	73.39
1,368.0	24.61	77.14	1,345.3	45.0	153.4	159.2	2.81	159.8	73.65
1,398.0	25.81	78.15	1,372.4	47.7	165.8	172.0	4.25	172.6	73.95
1,428.0	27.22	80.31	1,399.3	50.2	179.0	185.4	5.69	185.9	74.33
1,458.0	28.19	80.31	1,425.8	52.6	192.8	199.4	3.23	199.8	74.75
1,488.0	28.99	80.62	1,452.2	54.9	206.9	213.7	2.71	214.1	75.13
1,518.0	29.70	80.44	1,478.3	57.4	221.4	228.4	2.38	228.7	75.48
1,548.0	30.71	80.75	1,504.2	59.8	236.3	243.5	3.41	243.8	75.79
1,578.0	32.08	81.94	1,529.9	62.2	251.7	259.1	5.01	259.3	76.13
1,608.0	32.79	82.03	1,555.2	64.4	267.7	275.1	2.37	275.3	76.47
1,638.0	33.19	81.01	1,580.3	66.8	283.8	291.5	2.28	291.6	76.75
1,668.0	33.80	80.75	1,605.4	69.4	300.2	308.0	2.09	308.1	76.97
1,698.0	34.60	80.93	1,630.2	72.1	316.8	324.8	2.69	324.9	77.17
1,728.0	35.22	79.65	1,654.8	75.0	333.8	342.0	3.20	342.1	77.33
1,758.0	35.48	79.25	1,679.2	78.2	350.8	359.4	1.16	359.4	77.43
1,788.0	35.79	77.84	1,703.6	81.7	367.9	376.8	2.93	376.9	77.48
1,818.0	36.90	76.65	1,727.8	85.6	385.3	394.6	4.38	394.7	77.47
1,848.0	38.09	76.52	1,751.6	89.8	403.0	412.9	3.98	412.9	77.43
1,878.0	40.39	77.31	1,774.8	94.1	421.5	431.8	7.85	431.9	77.41
1,908.0	42.11	77.05	1,797.4	98.5	440.8	451.6	5.76	451.7	77.40
1,938.0	43.79	76.83	1,819.3	103.1	460.7	472.0	5.62	472.1	77.38
1,968.0	45.84	76.94	1,840.6	107.9	481.3	493.2	6.84	493.3	77.36
1,998.0	46.80	76.65	1,861.3	112.9	502.4	514.9	3.28	515.0	77.34
2,028.0	48.08	77.05	1,881.6	117.9	524.0	536.9	4.38	537.1	77.32
2,058.0	49.70	77.93	1,901.3	122.8	546.0	559.5	5.83	559.7	77.32
2,088.0	51.30	78.02	1,920.4	127.6	568.7	582.7	5.34	582.8	77.35
2,118.0	52.59	78.41	1,938.9	132.5	591.8	606.3	4.42	606.4	77.38

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HG Energy EOW Report



87-04724

Company: HG Energy, LLC	Local Co-ordinate Reference: Well A.J. Epling #120
Project: Roane County, West Virginia	TVD Reference: WELL @ 1197.0usft (Decker #9)
Site: A.J. Epling #120	MD Reference: WELL @ 1197.0usft (Decker #9)
Well: A.J. Epling #120	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 (°)
2,148.0	53.78	78.24	1,956.9	137.3	615.3	630.3	3.99	630.4	77.42
2,178.0	54.71	78.02	1,974.4	142.3	639.1	654.7	3.16	654.8	77.45
2,208.0	55.99	78.24	1,991.5	147.4	663.3	679.4	4.31	679.5	77.47
2,238.0	57.09	77.62	2,008.0	152.6	687.8	704.4	4.05	704.5	77.49
2,268.0	58.20	77.93	2,024.1	158.0	712.5	729.7	3.80	729.8	77.50
2,298.0	57.89	78.24	2,040.0	163.3	737.4	755.2	1.36	755.3	77.52
2,328.0	57.00	77.44	2,056.1	168.6	762.2	780.5	3.72	780.6	77.53
2,358.0	57.00	77.53	2,072.4	174.0	786.7	805.6	0.25	805.7	77.53
2,388.0	57.09	77.31	2,088.8	179.5	811.3	830.8	0.68	830.9	77.52
2,418.0	56.92	77.14	2,105.1	185.1	835.8	855.9	0.74	856.1	77.51
2,448.0	57.40	77.05	2,121.4	190.7	860.4	881.1	1.62	881.3	77.50
2,478.0	57.49	76.21	2,137.5	196.6	885.0	906.4	2.38	906.6	77.48
2,508.0	57.71	76.74	2,153.6	202.5	909.6	931.7	1.66	931.9	77.45
2,538.0	57.40	76.34	2,169.7	208.4	934.2	957.0	1.53	957.2	77.43
2,568.0	56.92	75.33	2,185.9	214.5	958.7	982.2	3.25	982.4	77.39
<u>2,598.0</u>	57.00	75.11	2,202.3	221.0	983.0	1,007.3	0.67	<u>1,007.5</u>	77.33
2,628.0	56.21	75.02	2,218.8	227.4	1,007.2	1,032.3	2.65	1,032.6	77.28
2,658.0	55.19	74.23	2,235.7	234.0	1,031.1	1,057.0	4.04	1,057.3	77.21
2,688.0	53.60	74.14	2,253.2	240.6	1,054.6	1,081.3	5.31	1,081.7	77.15
2,718.0	51.61	73.35	2,271.4	247.3	1,077.4	1,105.1	6.96	1,105.5	77.07
2,748.0	50.11	72.11	2,290.3	254.2	1,099.7	1,128.2	5.94	1,128.7	76.98
2,778.0	48.61	70.53	2,309.9	261.5	1,121.2	1,150.8	6.40	1,151.3	76.87
2,808.0	47.02	70.04	2,330.0	269.0	1,142.1	1,172.8	5.44	1,173.4	76.75
2,871.0	47.02	70.04	2,373.0	284.7	1,185.5	1,218.4	0.00	1,219.2	76.49

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 TD @ 2871 MD / 2373 TVD

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HG Energy EOW Report



Company: HG Energy, LLC	Local Co-ordinate Reference: Well A.J. Epling #120
Project: Roane County, West Virginia	TVD Reference: WELL @ 1197.0usft (Decker #9)
Site: A.J. Epling #120	MD Reference: WELL @ 1197.0usft (Decker #9)
Well: A.J. Epling #120	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: Compass

87-04764

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N-S (usft)	+E-W (usft)		
550.0	550.0	0.0	0.0	First Survey @ 550' MD / 550' TVD	
2,871.0	2,373.0	284.7	1,185.5	TD @ 2871' MD / 2373' TVD	

Checked By: _____ Approved By: _____ Date: _____

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A.J. Epling #120
Roane County, West Virginia
Q150420 & AM-150361
Design #1

Company Name: HG Energy, LLC
A.J. Epling #120
Roane County, West Virginia
Rig: Decker #9
Created By: Shane Robbins
Date: 5/22/2015

PROJECT DETAILS:
Geodetic System: Universal Transverse Mercator
Datum: GRS 1980
Ellipsoid: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

DESIGN TARGET DETAILS

Name	TVD	+E/W	Northing	Eastings	Latitude	Longitude
Target A.J. Epling #120	2511.5	191.3	983114057293.83	1619333.83	38° 42' 37.200 N	81° 15' 30.800 W
+plan this target center						

ANNOTATIONS

MD	Inc.	ABO	1500	+E/W	Northing	Eastings	Latitude	Longitude
550.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2371.5	47.23	70.24	2373.0	254.7	1165.6	1218.4	1231.3	TD @ 3371 MD / 2373 TVD

WELL DETAILS: A.J. Epling #120

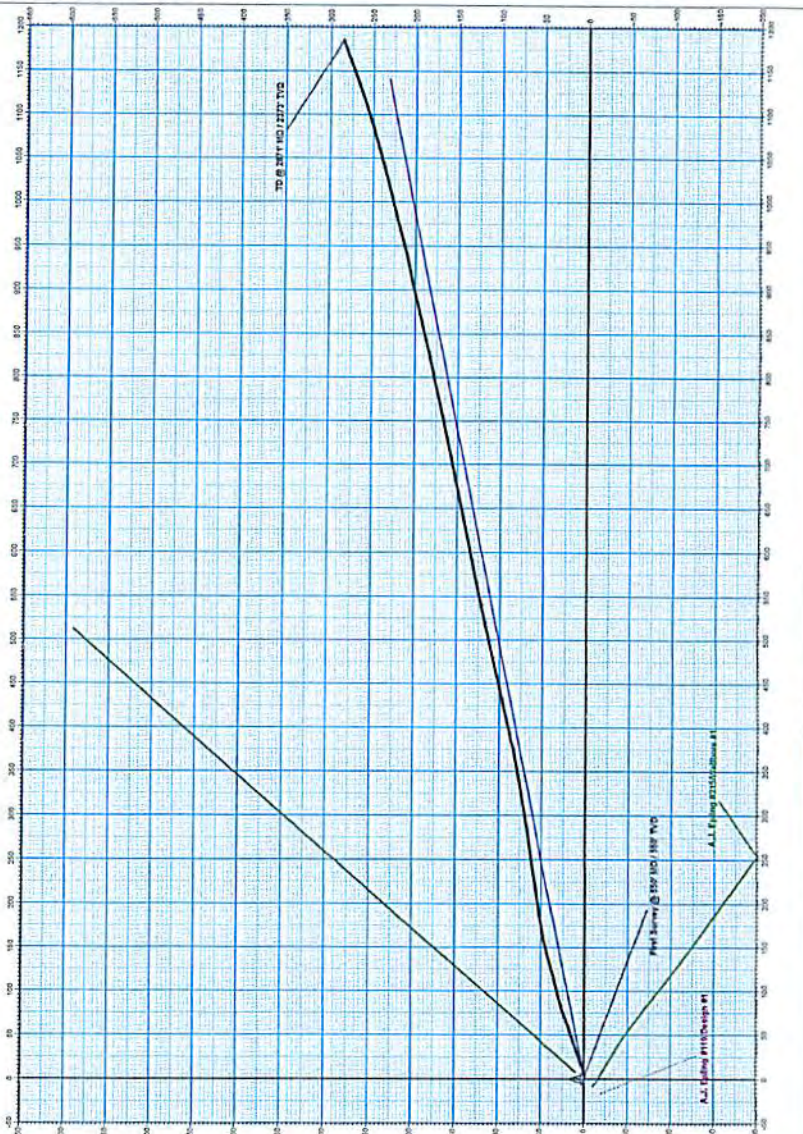
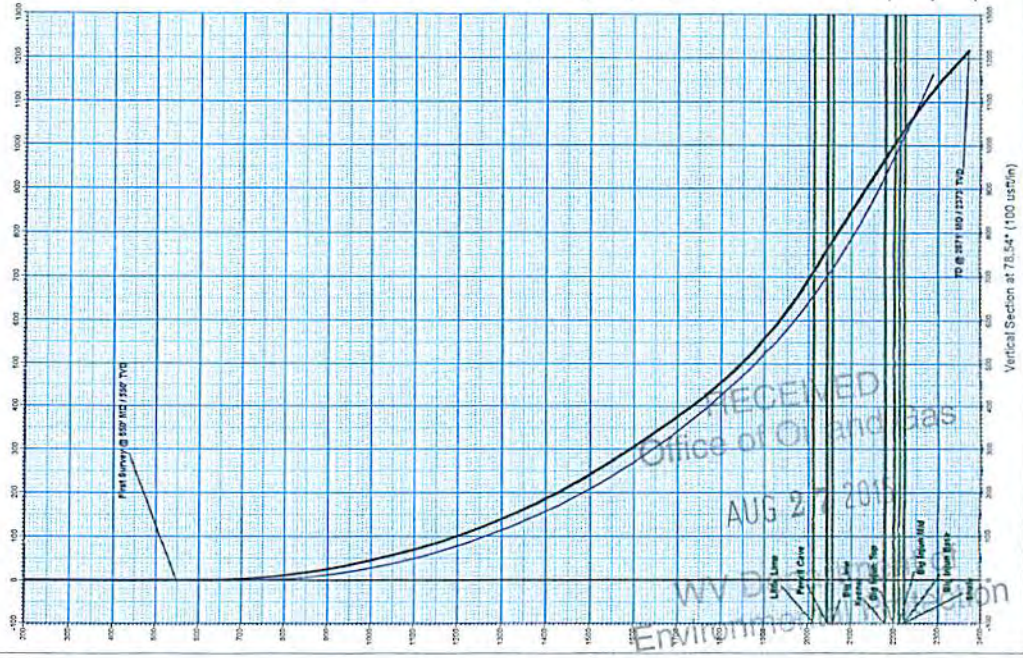
+M/S	+E/W	Ground Level	1118.8	Latitude	Longitude
0.0	0.0	1452784.55	1650552.75	38° 42' 38.200 N	81° 15' 42.800 W

M T G

Azimuths to Grid North
Correction: -7.82°

Magnetic Field
Strength: 51927.25nT
Dip Angle: 66.36°
Date: 5/13/2015
Model: IGRF2015

HG Energy



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