

87.04780

**HG Energy, LLC**  
Roane County, West Virginia  
J. Smith #124  
J. Smith #124

**Wellbore #1**

**Design: Wellbore #1**

## **Survey Report - Geographic**

**04 August, 2015**

Received  
Office of Oil & Gas  
OCT 08 2015



10/30/2015

87-04780

HP  
Survey Report - Geographic



<b>Company:</b> HG Energy, LLC	<b>Local Co-ordinate Reference:</b> Well J. Smith #124
<b>Project:</b> Roane County, West Virginia	<b>TVD Reference:</b> WELL @ 1185.0usft (Decker #9)
<b>Site:</b> J. Smith #124	<b>MD Reference:</b> WELL @ 1185.0usft (Decker #9)
<b>Well:</b> J. Smith #124	<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>	Roane 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)		

**Site** J. Smith #124

<b>Site Position:</b>		<b>Northing:</b> 14,055,884.16 usft	<b>Latitude:</b> 38° 42' 23.300 N
<b>From:</b> Lat/Long		<b>Easting:</b> 1,559,956.54 usft	<b>Longitude:</b> 81° 16' 55.400 W
<b>Position Uncertainty:</b> 0.0 usft		<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> -0.18 °

**Well** J. Smith #124

<b>Well Position</b>	<b>+N/-S</b> 0.0 usft	<b>Northing:</b> 14,055,884.16 usft	<b>Latitude:</b> 38° 42' 23.300 N
	<b>+E/-W</b> 0.0 usft	<b>Easting:</b> 1,559,956.54 usft	<b>Longitude:</b> 81° 16' 55.400 W
<b>Position Uncertainty</b> 0.0 usft		<b>Wellhead Elevation:</b> 0.0 usft	<b>Ground Level:</b> 1,178.0 usft

**Wellbore** 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>
	IGRF2015	7/9/2015	-8.00	66.34	51,908

**Design** Wellbore #1

**Audit Notes:**

<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.0
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<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	74.28

<b>Survey Program</b>	<b>Date</b> 8/4/2015
<b>From (usft)</b>	<b>To (usft)</b>
500.0	2,813.0 MWD (Wellbore #1)
<b>Tool Name</b>	<b>Description</b>
MWD default	MWD - Standard

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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
0.0	0.00	0.00	0.0	0.0	0.0	14,055,884.16	1,559,956.54	38° 42' 23.300 N	81° 16' 55.400 W
500.0	0.00	0.00	500.0	0.0	0.0	14,055,884.16	1,559,956.54	38° 42' 23.300 N	81° 16' 55.400 W
<b>First MWD Survey @ 500' MD / 500' TVD</b>									
590.0	0.62	188.59	590.0	-0.5	-0.2	14,055,883.70	1,559,956.39	38° 42' 23.295 N	81° 16' 55.402 W
620.0	0.40	166.38	620.0	-0.7	-0.2	14,055,883.44	1,559,956.36	38° 42' 23.293 N	81° 16' 55.402 W
650.0	0.49	154.96	650.0	-0.9	-0.1	14,055,883.22	1,559,956.44	38° 42' 23.291 N	81° 16' 55.401 W
680.0	1.10	99.88	680.0	-1.1	0.2	14,055,883.06	1,559,956.78	38° 42' 23.289 N	81° 16' 55.397 W
710.0	1.81	102.08	710.0	-1.2	1.0	14,055,882.91	1,559,957.52	38° 42' 23.288 N	81° 16' 55.388 W
740.0	2.52	94.99	740.0	-1.4	2.1	14,055,882.75	1,559,958.64	38° 42' 23.286 N	81° 16' 55.373 W
770.0	3.31	89.57	769.9	-1.5	3.6	14,055,882.70	1,559,960.17	38° 42' 23.286 N	81° 16' 55.354 W
800.0	4.02	81.99	799.9	-1.3	5.5	14,055,882.86	1,559,962.07	38° 42' 23.287 N	81° 16' 55.330 W
830.0	4.82	79.17	829.8	-0.9	7.8	14,055,883.24	1,559,964.35	38° 42' 23.291 N	81° 16' 55.301 W

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Well: J. Smith #124  
Wellbore: Wellbore #1  
Design: Wellbore #1

Local Co-ordinate Reference: Well J. Smith #124  
TVD Reference: WELL @ 1185.0usft (Decker #9)  
MD Reference: WELL @ 1185.0usft (Decker #9)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
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
860.0	5.92	73.18	859.6	-0.2	10.5	14,055,883.92	1,559,967.07	38° 42' 23.298 N	81° 16' 55.267 W
890.0	6.98	69.87	889.5	0.8	13.7	14,055,885.00	1,559,970.26	38° 42' 23.309 N	81° 16' 55.227 W
920.0	8.31	68.77	919.2	2.3	17.5	14,055,886.41	1,559,974.00	38° 42' 23.323 N	81° 16' 55.180 W
950.0	9.50	64.98	948.8	4.1	21.7	14,055,888.24	1,559,978.26	38° 42' 23.341 N	81° 16' 55.126 W
980.0	10.61	63.88	978.4	6.3	26.4	14,055,890.51	1,559,982.98	38° 42' 23.364 N	81° 16' 55.067 W
1,010.0	11.80	62.60	1,007.8	9.0	31.6	14,055,893.13	1,559,988.19	38° 42' 23.390 N	81° 16' 55.001 W
1,040.0	13.21	61.19	1,037.1	12.0	37.4	14,055,896.20	1,559,993.92	38° 42' 23.420 N	81° 16' 54.929 W
1,070.0	14.32	60.00	1,066.2	15.5	43.6	14,055,899.70	1,560,000.13	38° 42' 23.455 N	81° 16' 54.850 W
1,100.0	15.51	58.99	1,095.2	19.5	50.2	14,055,903.63	1,560,006.78	38° 42' 23.494 N	81° 16' 54.767 W
1,130.0	16.88	57.40	1,124.0	23.9	57.3	14,055,908.04	1,560,013.89	38° 42' 23.538 N	81° 16' 54.677 W
1,160.0	17.90	58.06	1,152.6	28.7	64.9	14,055,912.82	1,560,021.47	38° 42' 23.585 N	81° 16' 54.582 W
1,190.0	17.99	59.38	1,181.2	33.5	72.8	14,055,917.62	1,560,029.37	38° 42' 23.633 N	81° 16' 54.482 W
1,220.0	18.78	62.60	1,209.6	38.0	81.1	14,055,922.21	1,560,037.65	38° 42' 23.679 N	81° 16' 54.378 W
1,250.0	19.80	64.10	1,238.0	42.5	90.0	14,055,926.65	1,560,046.50	38° 42' 23.723 N	81° 16' 54.266 W
1,280.0	20.59	65.60	1,266.1	46.9	99.3	14,055,931.05	1,560,055.88	38° 42' 23.767 N	81° 16' 54.148 W
1,310.0	21.92	66.39	1,294.1	51.3	109.3	14,055,935.47	1,560,065.81	38° 42' 23.811 N	81° 16' 54.023 W
1,340.0	22.89	67.09	1,321.8	55.8	119.8	14,055,939.98	1,560,076.32	38° 42' 23.856 N	81° 16' 53.891 W
1,370.0	24.08	69.39	1,349.3	60.2	130.9	14,055,944.41	1,560,087.42	38° 42' 23.900 N	81° 16' 53.751 W
1,400.0	25.41	71.28	1,376.6	64.5	142.7	14,055,948.63	1,560,099.25	38° 42' 23.942 N	81° 16' 53.602 W
1,430.0	26.51	73.97	1,403.5	68.4	155.2	14,055,952.54	1,560,111.78	38° 42' 23.981 N	81° 16' 53.444 W
1,460.0	27.71	76.70	1,430.3	71.8	168.5	14,055,956.00	1,560,125.00	38° 42' 24.015 N	81° 16' 53.277 W
1,490.0	28.99	77.10	1,456.7	75.1	182.3	14,055,959.23	1,560,138.88	38° 42' 24.048 N	81° 16' 53.102 W
1,520.0	30.00	77.36	1,482.8	78.3	196.7	14,055,962.49	1,560,153.28	38° 42' 24.081 N	81° 16' 52.920 W
1,550.0	31.20	78.20	1,508.6	81.6	211.7	14,055,965.72	1,560,168.21	38° 42' 24.113 N	81° 16' 52.732 W
1,580.0	31.82	78.20	1,534.2	84.8	227.0	14,055,968.93	1,560,183.56	38° 42' 24.145 N	81° 16' 52.538 W
1,610.0	32.48	77.67	1,559.6	88.1	242.6	14,055,972.26	1,560,199.17	38° 42' 24.179 N	81° 16' 52.342 W
1,640.0	33.01	77.49	1,584.8	91.6	258.5	14,055,975.75	1,560,215.02	38° 42' 24.214 N	81° 16' 52.142 W
1,670.0	34.38	76.97	1,609.8	95.3	274.7	14,055,979.43	1,560,231.25	38° 42' 24.250 N	81° 16' 51.937 W
1,700.0	35.09	76.97	1,634.4	99.1	291.4	14,055,983.29	1,560,247.90	38° 42' 24.289 N	81° 16' 51.727 W
1,730.0	35.88	75.86	1,658.8	103.2	308.3	14,055,987.38	1,560,264.83	38° 42' 24.330 N	81° 16' 51.514 W
1,760.0	36.72	76.00	1,683.0	107.5	325.5	14,055,991.70	1,560,282.05	38° 42' 24.373 N	81° 16' 51.296 W
1,790.0	38.09	76.00	1,708.8	111.9	343.2	14,055,996.11	1,560,299.73	38° 42' 24.417 N	81° 16' 51.073 W
1,820.0	39.81	76.48	1,730.2	116.4	361.5	14,056,000.59	1,560,318.05	38° 42' 24.462 N	81° 16' 50.842 W
1,850.0	42.20	77.10	1,752.8	120.9	380.7	14,056,005.08	1,560,337.21	38° 42' 24.507 N	81° 16' 50.601 W
1,880.0	44.59	77.58	1,774.6	125.4	400.8	14,056,009.60	1,560,357.32	38° 42' 24.553 N	81° 16' 50.347 W
1,910.0	47.02	78.38	1,795.5	129.9	421.8	14,056,014.08	1,560,378.36	38° 42' 24.597 N	81° 16' 50.082 W
1,940.0	49.01	79.17	1,815.6	134.3	443.7	14,056,018.41	1,560,400.23	38° 42' 24.641 N	81° 16' 49.806 W
1,970.0	50.69	78.38	1,834.9	138.7	466.2	14,056,022.88	1,560,422.72	38° 42' 24.686 N	81° 16' 49.522 W
2,000.0	52.01	78.46	1,853.7	143.4	489.1	14,056,027.58	1,560,445.67	38° 42' 24.733 N	81° 16' 49.233 W
2,030.0	52.89	78.20	1,872.0	148.2	512.4	14,056,032.39	1,560,468.97	38° 42' 24.781 N	81° 16' 48.939 W
2,060.0	54.00	77.49	1,889.8	153.3	536.0	14,056,037.47	1,560,492.52	38° 42' 24.832 N	81° 16' 48.642 W
2,090.0	54.49	76.39	1,907.4	158.8	559.7	14,056,042.97	1,560,516.24	38° 42' 24.887 N	81° 16' 48.343 W
2,120.0	55.41	74.98	1,924.6	164.9	583.5	14,056,049.04	1,560,540.03	38° 42' 24.948 N	81° 16' 48.043 W
2,150.0	56.70	74.89	1,941.3	171.4	607.5	14,056,055.51	1,560,564.07	38° 42' 25.013 N	81° 16' 47.740 W
2,180.0	57.40	74.89	1,957.6	177.9	631.8	14,056,062.08	1,560,588.37	38° 42' 25.078 N	81° 16' 47.433 W
2,210.0	57.89	75.29	1,973.7	184.4	656.3	14,056,068.60	1,560,612.86	38° 42' 25.144 N	81° 16' 47.125 W
2,240.0	58.42	74.76	1,989.5	191.0	680.9	14,056,075.18	1,560,637.48	38° 42' 25.210 N	81° 16' 46.814 W
2,270.0	58.51	74.19	2,005.2	197.9	705.6	14,056,082.02	1,560,662.11	38° 42' 25.278 N	81° 16' 46.503 W
2,300.0	58.51	73.48	2,020.9	205.0	730.1	14,056,089.15	1,560,686.68	38° 42' 25.349 N	81° 16' 46.194 W
2,330.0	58.20	72.78	2,036.6	212.4	754.6	14,056,096.56	1,560,711.12	38° 42' 25.423 N	81° 16' 45.886 W
2,360.0	58.51	72.56	2,052.4	220.0	779.0	14,056,104.17	1,560,735.50	38° 42' 25.499 N	81° 16' 45.578 W
2,390.0	58.68	72.87	2,068.0	227.6	803.4	14,056,111.77	1,560,759.95	38° 42' 25.575 N	81° 16' 45.270 W
2,420.0	59.30	72.69	2,083.5	235.2	828.0	14,056,119.39	1,560,784.51	38° 42' 25.651 N	81° 16' 44.960 W
2,450.0	59.70	72.38	2,098.7	243.0	852.6	14,056,127.14	1,560,809.17	38° 42' 25.729 N	81° 16' 44.649 W
2,480.0	60.01	72.47	2,113.8	250.8	877.4	14,056,134.98	1,560,833.90	38° 42' 25.807 N	81° 16' 44.338 W

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 Design: Wellbore #1

Local Co-ordinate Reference: Well J. Smith #124  
 TVD Reference: WELL @ 1185.0usft (Decker #9)  
 MD Reference: WELL @ 1185.0usft (Decker #9)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 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
2,510.0	60.32	71.77	2,128.7	258.8	902.1	14,056,142.97	1,560,858.67	38° 42' 25.886 N	81° 16' 44.025 W
2,540.0	60.72	71.37	2,143.4	267.1	926.9	14,056,151.22	1,560,883.44	38° 42' 25.969 N	81° 16' 43.713 W
2,570.0	60.89	70.27	2,158.1	275.7	951.6	14,056,159.83	1,560,908.18	38° 42' 26.055 N	81° 16' 43.401 W
2,600.0	61.20	70.58	2,172.6	284.5	976.4	14,056,168.62	1,560,932.91	38° 42' 26.142 N	81° 16' 43.089 W
2,630.0	61.69	70.09	2,186.9	293.3	1,001.2	14,056,177.49	1,560,957.72	38° 42' 26.231 N	81° 16' 42.777 W
2,660.0	62.31	68.99	2,201.0	302.6	1,026.0	14,056,186.75	1,560,982.54	38° 42' 26.323 N	81° 16' 42.464 W
2,690.0	62.09	68.46	2,215.0	312.2	1,050.7	14,056,196.38	1,561,007.27	38° 42' 26.419 N	81° 16' 42.152 W
2,720.0	61.69	67.58	2,229.2	322.1	1,075.3	14,056,206.28	1,561,031.81	38° 42' 26.518 N	81° 16' 41.843 W
2,750.0	61.90	67.21	2,243.3	332.3	1,099.7	14,056,216.44	1,561,056.21	38° 42' 26.619 N	81° 16' 41.535 W
2,813.0	61.90	67.21	2,273.0	353.8	1,150.9	14,056,237.97	1,561,107.45	38° 42' 26.833 N	81° 16' 40.889 W

TD @ 2813' MD / 2273' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.0	500.0	0.0	0.0	First MWD Survey @ 500' MD / 500' TVD
2,813.0	2,273.0	353.8	1,150.9	TD @ 2813' MD / 2273' TVD

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

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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (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	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.0	0.00	
First MWD Survey @ 500' MD / 500' TVD										
590.0	0.62	198.59	590.0	-0.5	-0.2	-0.3	0.69	0.5	198.59	
620.0	0.40	166.38	620.0	-0.7	-0.2	-0.4	1.18	0.7	194.26	
650.0	0.49	154.96	650.0	-0.9	-0.1	-0.4	0.42	0.9	186.31	
680.0	1.10	98.88	680.0	-1.1	0.2	-0.1	3.04	1.1	167.97	
710.0	1.81	102.08	710.0	-1.2	1.0	0.6	2.37	1.6	141.84	
740.0	2.52	94.99	740.0	-1.4	2.1	1.6	2.53	2.5	123.78	
770.0	3.31	89.57	768.9	-1.5	3.6	3.1	2.79	3.9	111.89	
800.0	4.02	81.99	789.9	-1.3	5.5	5.0	2.86	5.7	103.26	
830.0	4.82	78.17	829.8	-0.9	7.8	7.3	2.76	7.9	96.72	
860.0	5.92	73.18	859.6	-0.2	10.5	10.1	4.11	10.5	91.28	
890.0	6.98	69.87	889.5	0.8	13.7	13.4	3.74	13.7	86.50	
920.0	8.31	68.77	919.2	2.3	17.5	17.4	4.46	17.6	82.65	
950.0	9.50	64.98	948.8	4.1	21.7	22.0	4.42	22.1	79.35	
980.0	10.61	63.88	978.4	6.3	26.4	27.2	3.75	27.2	76.50	
1,010.0	11.80	62.60	1,007.8	9.0	31.6	32.9	4.05	32.9	74.17	
1,040.0	13.21	61.19	1,037.1	12.0	37.4	39.2	4.81	39.3	72.15	
1,070.0	14.32	60.00	1,066.2	15.5	43.6	46.2	3.82	46.3	70.37	
1,100.0	15.51	58.99	1,095.2	19.5	50.2	53.6	4.06	53.9	68.82	
1,130.0	16.88	57.40	1,124.0	23.9	57.3	61.7	4.80	62.1	67.39	
1,160.0	17.90	58.06	1,152.6	28.7	64.9	70.3	3.46	71.0	66.18	
1,190.0	17.99	59.38	1,181.2	33.5	72.8	79.2	1.39	80.2	65.32	
1,220.0	18.78	62.60	1,209.6	38.0	81.1	88.4	4.29	89.6	64.87	
1,250.0	19.80	64.10	1,238.0	42.5	90.0	98.1	3.78	99.5	64.72	
1,280.0	20.59	65.80	1,266.1	46.9	99.3	108.3	3.15	109.8	64.73	

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OCT 08 2015



87-04780

Company: HG Energy, LLC  
 Project: Roane County, West Virginia  
 Site: J. Smith #124  
 Well: J. Smith #124  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well J. Smith #124  
 TVD Reference: WELL @ 1185.0usft (Decker #9)  
 MD Reference: WELL @ 1185.0usft (Decker #9)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 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 (°)
1,310.0	21.92	66.39	1,294.1	51.3	109.3	119.1	4.53	120.7	64.85
1,340.0	22.89	67.09	1,321.8	55.8	119.8	130.4	3.35	132.1	65.01
1,370.0	24.08	69.39	1,349.3	60.2	130.9	142.3	5.01	144.1	65.28
1,400.0	25.41	71.28	1,376.6	64.5	142.7	154.8	5.16	158.6	65.69
1,430.0	26.51	73.97	1,403.5	68.4	155.2	168.0	5.37	169.6	66.23
1,460.0	27.71	76.70	1,430.3	71.8	168.5	181.6	5.76	183.1	66.90
1,490.0	28.99	77.10	1,456.7	75.1	182.3	195.9	4.31	197.2	67.62
1,520.0	30.00	77.36	1,482.8	78.3	196.7	210.6	3.39	211.8	68.29
1,550.0	31.20	78.20	1,508.6	81.6	211.7	225.8	4.25	226.8	68.93
1,580.0	31.82	78.20	1,534.2	84.8	227.0	241.5	2.07	242.3	69.52
1,610.0	32.48	77.67	1,559.6	88.1	242.6	257.4	2.39	258.1	70.04
1,640.0	33.01	77.49	1,584.8	91.6	258.5	273.6	1.80	274.2	70.49
1,670.0	34.38	76.97	1,609.8	95.3	274.7	290.2	4.67	290.8	70.87
1,700.0	35.08	76.97	1,634.4	99.1	291.4	307.3	2.37	307.8	71.21
1,730.0	35.88	75.86	1,658.8	103.2	308.3	324.7	3.40	325.1	71.49
1,760.0	36.72	76.00	1,683.0	107.5	325.5	342.5	2.81	342.8	71.72
1,790.0	38.09	76.00	1,706.8	111.9	343.2	360.7	4.57	361.0	71.93
1,820.0	39.81	76.48	1,730.2	116.4	361.5	379.5	5.82	379.8	72.15
1,850.0	42.20	77.10	1,752.8	120.9	380.7	399.2	8.08	399.4	72.38
1,880.0	44.59	77.58	1,774.6	125.4	400.8	419.8	8.04	420.0	72.62
1,910.0	47.02	78.38	1,795.5	129.9	421.8	441.2	8.32	441.4	72.88
1,940.0	49.01	79.17	1,815.6	134.3	443.7	463.5	6.92	463.6	73.16
1,970.0	50.69	78.38	1,834.9	138.7	468.2	486.3	5.95	486.4	73.43
2,000.0	52.01	78.46	1,853.7	143.4	489.1	509.7	4.40	509.7	73.66
2,030.0	52.89	78.20	1,872.0	148.2	512.4	533.4	3.01	533.4	73.87
2,060.0	54.00	77.49	1,889.8	153.3	536.0	557.5	4.16	557.5	74.04
2,090.0	54.49	76.39	1,907.4	158.8	559.7	581.8	3.39	581.8	74.16



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HG Energy EOW Report



87-04780

Company: HG Energy, LLC  
 Project: Roane County, West Virginia  
 Site: J. Smith #124  
 Well: J. Smith #124  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well J. Smith #124  
 TVD Reference: WELL @ 1185.0usft (Decker #8)  
 MD Reference: WELL @ 1185.0usft (Decker #8)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: Compass

OCT 08 2015

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	D Leg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,120.0	55.41	74.98	1,924.6	164.9	583.5	606.3	4.92	606.3	74.22
2,150.0	56.70	74.89	1,941.3	171.4	607.5	631.2	4.31	631.2	74.25
2,180.0	57.40	74.89	1,957.6	177.9	631.8	656.4	2.33	656.4	74.27
2,210.0	57.89	75.29	1,973.7	184.4	656.3	681.7	1.98	681.7	74.30
2,240.0	58.42	74.76	1,989.5	191.0	680.9	707.2	2.32	707.2	74.33
2,270.0	58.51	74.19	2,005.2	197.9	705.6	732.8	1.65	732.8	74.33
2,300.0	58.51	73.48	2,020.9	205.0	730.1	758.4	2.02	758.4	74.32
2,330.0	58.20	72.78	2,036.6	212.4	754.6	783.9	2.24	783.9	74.28
2,360.0	58.51	72.56	2,052.4	220.0	779.0	809.4	1.21	809.4	74.23
2,390.0	58.68	72.87	2,068.0	227.6	803.4	835.0	1.05	835.0	74.18
2,420.0	59.30	72.69	2,083.5	235.2	828.0	860.7	2.13	860.7	74.14
2,450.0	59.70	72.38	2,098.7	243.0	852.6	886.6	1.60	886.6	74.09
2,480.0	60.01	72.47	2,113.8	250.8	877.4	912.5	1.07	912.5	74.05
2,510.0	60.32	71.77	2,128.7	258.8	902.1	938.5	2.27	938.5	73.99
2,540.0	60.72	71.37	2,143.4	267.1	926.9	964.6	1.77	964.6	73.93
2,570.0	60.89	70.27	2,158.1	275.7	951.6	990.7	3.25	990.8	73.84
2,600.0	61.20	70.58	2,172.6	284.5	976.4	1,016.9	1.37	1,017.0	73.76
2,630.0	61.69	70.09	2,186.9	293.3	1,001.2	1,043.2	2.17	1,043.3	73.67
2,660.0	62.31	68.98	2,201.0	302.6	1,026.0	1,069.6	3.84	1,069.7	73.57
2,690.0	62.09	68.46	2,215.0	312.2	1,050.7	1,096.0	1.73	1,096.1	73.45
2,720.0	61.69	67.58	2,229.2	322.1	1,075.3	1,122.3	2.91	1,122.5	73.32
2,750.0	61.90	67.21	2,243.3	332.3	1,099.7	1,148.6	1.29	1,148.8	73.19
2,813.0	61.80	67.21	2,273.0	353.8	1,150.9	1,203.7	0.00	1,204.1	72.91

TD @ 2813' MD / 2273' TVD



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HG Energy EOW Report

Local Co-ordinate Reference: Well J. Smith #124  
 TVD Reference: WELL @ 1185.0usft (Decker #9)  
 MD Reference: WELL @ 1185.0usft (Decker #9)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: Compass

Company: HG Energy, LLC  
 Project: Roane County, West Virginia  
 Site: J. Smith #124  
 Well: J. Smith #124  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.0	500.0	0.0	0.0	First MWD Survey @ 500' MD / 500' TVD
2,813.0	2,273.0	353.8	1,150.9	TD @ 2813' MD / 2273' TVD

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

Date: \_\_\_\_\_

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87.04780

Company Name: HG Energy, LLC  
 J. Smith #124  
 Roane County, West Virginia  
 Rig: Decker #9  
 Created By: Shane Robbins  
 Date: 8/4/2015

J. Smith #124  
 Roane County, West Virginia  
 Q150577 & AM-150499  
 Design #1



PROJECT DETAILS: Roane County, West Virginia  
 Geodetic System: Universal Transverse Mercator  
 DATUM: NAD83 West Virginia - IIAHN  
 Ellipsoid: GRS 1980  
 Zone: 17N (84 W to 78 W)  
 System Datum: Mean Sea Level

DESIGN TARGET DETAILS

Name	TVD	41/2 W	41/2 W	Northing	Easting	Latitude	Longitude
Target J. Smith #124	2355.0	275.1	858.8	14655144.27	1649916.17	38° 42' 24.000 N	81° 18' 43.300 W
*Plan this target center							

ANNOVATION

MS	Log	AI	TVD	41/2 W	41/2 W	VSEC Deparure	Annotation
600.0	0.00	0.00	400.0	0.0	0.0	0.0	Per MWD Survey @ 500' MD / 500' TVD
2813.0	61.20	67.21	2373.0	352.8	1186.8	1232.7	TD @ 2813' MD / 2373' TVD

WELL DETAILS: J. Smith #124

41/2 W	Northing	Easting	Latitude	Longitude
0.0	1465584.15	165998.84	38° 42' 23.300 N	81° 18' 53.400 W

Ground Level: 1174.0

Azimuths to Grid North  
 Correction: -7.82°  
 Magnetic Field  
 Strength: 51907.8snT  
 Dip Angle: 66.34°  
 Date: 7/9/2015  
 Model: IGRF2015

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