

87.04774

HG Energy, LLC
Roane County, West Virginia
E. Smith #213
E. Smith #213

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

07 May, 2015



10/23/2015

87.04774

HP
Survey Report - Geographic



Company: HG Energy, LLC	Local Co-ordinate Reference: Well E. Smith #213
Project: Roane County, West Virginia	TVD Reference: well @ 1170.0usft (Decker #9)
Site: E. Smith #213	MD Reference: well @ 1170.0usft (Decker #9)
Well: E. Smith #213	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 E. Smith #213		
Site Position:	Northing: 14,057,451.71 usft	Latitude: 38° 42' 38.800 N
From: Lat/Long	Easting: 1,559,937.60 usft	Longitude: 81° 16' 55.700 W
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence: -0.18 °

Well E. Smith #213		
Well Position +N/-S 0.0 usft	Northing: 14,057,451.71 usft	Latitude: 38° 42' 38.800 N
+E/-W 0.0 usft	Easting: 1,559,937.60 usft	Longitude: 81° 16' 55.700 W
Position Uncertainty 0.0 usft	Wellhead Elevation: 0.0 usft	Ground Level: 1,162.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/14/2015	-8.04	66.34	51,950

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	207.76

Survey Program		Date	5/7/2015	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
550.0	2,630.0	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	14,057,451.71	1,559,937.60	38° 42' 38.800 N	81° 16' 55.700 W
550.0	0.00	0.00	550.0	0.0	0.0	14,057,451.71	1,559,937.60	38° 42' 38.800 N	81° 16' 55.700 W
First Survey @ 550' MD / 550' TVD									
618.0	0.40	176.34	618.0	-0.2	0.0	14,057,451.48	1,559,937.61	38° 42' 38.798 N	81° 16' 55.700 W
648.0	0.49	162.72	648.0	-0.5	0.1	14,057,451.25	1,559,937.66	38° 42' 38.795 N	81° 16' 55.699 W
678.0	0.49	158.14	678.0	-0.7	0.1	14,057,451.01	1,559,937.74	38° 42' 38.793 N	81° 16' 55.698 W
708.0	0.88	169.03	708.0	-1.1	0.2	14,057,450.66	1,559,937.83	38° 42' 38.790 N	81° 16' 55.697 W
738.0	1.50	177.53	738.0	-1.7	0.3	14,057,450.05	1,559,937.89	38° 42' 38.784 N	81° 16' 55.696 W
798.0	2.78	186.96	797.9	-3.9	0.2	14,057,447.82	1,559,937.75	38° 42' 38.761 N	81° 16' 55.698 W
828.0	3.00	190.36	827.9	-5.4	-0.1	14,057,446.32	1,559,937.52	38° 42' 38.747 N	81° 16' 55.701 W
858.0	3.40	190.93	857.9	-7.0	-0.4	14,057,444.68	1,559,937.21	38° 42' 38.730 N	81° 16' 55.705 W
888.0	4.02	189.43	887.8	-8.9	-0.7	14,057,442.77	1,559,936.87	38° 42' 38.711 N	81° 16' 55.709 W

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Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well E. Smith #213
Project:	Roane County, West Virginia	TVD Reference:	well @ 1170.0usft (Decker #9)
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Well:	E. Smith #213	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	
918.0	4.82	193.04	917.7	-11.2	-1.2	14,057,440.50	1,559,936.42	38° 42' 38.689 N	81° 16' 55.714 W	
948.0	5.61	193.75	947.6	-13.9	-1.8	14,057,437.85	1,559,935.78	38° 42' 38.663 N	81° 16' 55.722 W	
1,008.0	7.51	194.14	1,007.2	-20.5	-3.5	14,057,431.20	1,559,934.13	38° 42' 38.597 N	81° 16' 55.743 W	
1,038.0	8.22	194.23	1,036.9	-24.5	-4.5	14,057,427.22	1,559,933.12	38° 42' 38.558 N	81° 16' 55.756 W	
1,068.0	8.79	195.64	1,066.6	-28.8	-5.6	14,057,422.93	1,559,931.98	38° 42' 38.515 N	81° 16' 55.770 W	
1,098.0	9.81	197.54	1,096.2	-33.4	-7.0	14,057,418.29	1,559,930.59	38° 42' 38.469 N	81° 16' 55.787 W	
1,128.0	10.96	199.58	1,125.7	-38.6	-8.7	14,057,413.16	1,559,928.86	38° 42' 38.419 N	81° 16' 55.809 W	
1,158.0	12.28	200.05	1,155.1	-44.2	-10.8	14,057,407.48	1,559,926.81	38° 42' 38.362 N	81° 16' 55.834 W	
1,188.0	13.08	200.62	1,184.3	-50.4	-13.1	14,057,401.30	1,559,924.52	38° 42' 38.301 N	81° 16' 55.863 W	
1,218.0	14.18	201.86	1,213.5	-57.0	-15.6	14,057,394.72	1,559,921.96	38° 42' 38.236 N	81° 16' 55.895 W	
1,248.0	15.20	203.75	1,242.5	-64.0	-18.6	14,057,387.71	1,559,919.01	38° 42' 38.166 N	81° 16' 55.932 W	
1,278.0	16.31	204.24	1,271.4	-71.5	-21.9	14,057,380.26	1,559,915.69	38° 42' 38.093 N	81° 16' 55.974 W	
1,308.0	17.41	206.35	1,300.1	-79.3	-25.6	14,057,372.40	1,559,911.97	38° 42' 38.015 N	81° 16' 56.020 W	
1,338.0	18.69	205.95	1,328.6	-87.7	-29.7	14,057,364.06	1,559,907.88	38° 42' 37.932 N	81° 16' 56.072 W	
1,368.0	20.02	206.92	1,356.9	-96.6	-34.1	14,057,355.16	1,559,903.45	38° 42' 37.844 N	81° 16' 56.127 W	
1,398.0	21.39	206.04	1,385.0	-106.1	-38.9	14,057,345.66	1,559,898.72	38° 42' 37.750 N	81° 16' 56.187 W	
1,428.0	22.80	206.84	1,412.8	-116.2	-43.9	14,057,335.56	1,559,893.69	38° 42' 37.650 N	81° 16' 56.250 W	
1,458.0	23.91	207.06	1,440.3	-126.8	-49.3	14,057,324.96	1,559,888.30	38° 42' 37.545 N	81° 16' 56.317 W	
1,488.0	25.19	206.92	1,467.6	-137.9	-54.9	14,057,313.85	1,559,882.65	38° 42' 37.435 N	81° 16' 56.388 W	
1,518.0	26.38	207.76	1,494.6	-149.5	-60.9	14,057,302.26	1,559,876.65	38° 42' 37.320 N	81° 16' 56.463 W	
1,548.0	27.88	209.44	1,521.3	-161.5	-67.5	14,057,290.25	1,559,870.10	38° 42' 37.201 N	81° 16' 56.546 W	
1,578.0	28.59	207.63	1,547.8	-173.9	-74.3	14,057,277.78	1,559,863.32	38° 42' 37.078 N	81° 16' 56.631 W	
1,608.0	29.92	210.14	1,573.9	-186.8	-81.4	14,057,264.95	1,559,856.24	38° 42' 36.951 N	81° 16' 56.720 W	
1,638.0	31.02	208.55	1,599.8	-200.0	-88.8	14,057,251.69	1,559,848.79	38° 42' 36.819 N	81° 16' 56.813 W	
1,668.0	32.08	209.13	1,625.4	-213.8	-96.4	14,057,237.94	1,559,841.21	38° 42' 36.683 N	81° 16' 56.908 W	
1,698.0	32.21	208.83	1,650.8	-227.7	-104.1	14,057,223.98	1,559,833.48	38° 42' 36.545 N	81° 16' 57.005 W	
1,728.0	32.21	206.13	1,676.1	-241.9	-111.5	14,057,209.80	1,559,826.10	38° 42' 36.404 N	81° 16' 57.098 W	
1,758.0	33.01	205.03	1,701.4	-256.5	-118.5	14,057,195.21	1,559,819.12	38° 42' 36.260 N	81° 16' 57.185 W	
1,788.0	34.60	206.22	1,726.3	-271.5	-125.7	14,057,180.17	1,559,811.90	38° 42' 36.111 N	81° 16' 57.276 W	
1,818.0	36.50	206.92	1,750.7	-287.1	-133.5	14,057,164.57	1,559,804.10	38° 42' 35.957 N	81° 16' 57.374 W	
1,848.0	39.20	208.55	1,774.4	-303.4	-142.1	14,057,148.28	1,559,795.53	38° 42' 35.795 N	81° 16' 57.481 W	
1,878.0	41.98	208.64	1,797.2	-320.6	-151.4	14,057,131.15	1,559,786.18	38° 42' 35.625 N	81° 16' 57.598 W	
1,908.0	44.01	208.82	1,819.1	-338.5	-161.2	14,057,113.21	1,559,776.35	38° 42' 35.448 N	81° 16' 57.722 W	
1,938.0	45.21	207.06	1,840.5	-357.1	-171.1	14,057,094.59	1,559,766.48	38° 42' 35.263 N	81° 16' 57.846 W	
1,968.0	46.31	208.42	1,861.4	-376.1	-181.1	14,057,075.57	1,559,756.48	38° 42' 35.075 N	81° 16' 57.971 W	
1,998.0	47.28	208.64	1,882.0	-395.4	-191.6	14,057,056.36	1,559,746.03	38° 42' 34.885 N	81° 16' 58.102 W	
2,028.0	48.52	207.76	1,902.1	-415.0	-202.1	14,057,036.75	1,559,735.52	38° 42' 34.690 N	81° 16' 58.234 W	
2,058.0	49.58	207.85	1,921.7	-435.0	-212.6	14,057,016.70	1,559,724.95	38° 42' 34.492 N	81° 16' 58.367 W	
2,118.0	51.08	208.42	1,960.1	-475.7	-234.4	14,056,975.98	1,559,703.17	38° 42' 34.089 N	81° 16' 58.640 W	
2,148.0	51.48	207.63	1,978.8	-496.4	-245.4	14,056,955.32	1,559,692.17	38° 42' 33.884 N	81° 16' 58.778 W	
2,178.0	51.88	209.52	1,997.4	-517.1	-256.7	14,056,934.65	1,559,680.91	38° 42' 33.679 N	81° 16' 58.919 W	
2,208.0	51.88	209.92	2,015.9	-537.6	-268.4	14,056,914.15	1,559,669.21	38° 42' 33.476 N	81° 16' 59.066 W	
2,238.0	50.29	206.84	2,034.8	-558.1	-279.5	14,056,893.62	1,559,658.11	38° 42' 33.273 N	81° 16' 59.205 W	
2,268.0	50.20	208.25	2,054.0	-578.5	-290.1	14,056,873.18	1,559,647.45	38° 42' 33.070 N	81° 16' 59.339 W	
2,298.0	50.29	208.03	2,073.2	-598.9	-301.0	14,056,852.84	1,559,636.57	38° 42' 32.869 N	81° 16' 59.476 W	
2,328.0	50.60	208.64	2,092.3	-619.2	-312.0	14,056,832.48	1,559,625.59	38° 42' 32.667 N	81° 16' 59.613 W	
2,358.0	50.99	208.33	2,111.2	-639.7	-323.1	14,056,812.05	1,559,614.51	38° 42' 32.465 N	81° 16' 59.753 W	
2,388.0	51.08	207.94	2,130.1	-660.2	-334.1	14,056,791.48	1,559,603.51	38° 42' 32.261 N	81° 16' 59.891 W	
2,418.0	51.22	207.54	2,148.9	-680.9	-345.0	14,056,770.80	1,559,592.63	38° 42' 32.056 N	81° 17' 0.027 W	
2,448.0	51.08	206.75	2,167.7	-701.7	-355.6	14,056,750.01	1,559,581.97	38° 42' 31.850 N	81° 17' 0.161 W	
2,478.0	52.01	206.53	2,186.4	-722.7	-366.2	14,056,729.01	1,559,571.44	38° 42' 31.642 N	81° 17' 0.293 W	
2,508.0	52.50	207.76	2,204.7	-743.8	-377.0	14,056,707.90	1,559,560.62	38° 42' 31.433 N	81° 17' 0.429 W	
2,538.0	51.61	206.92	2,223.2	-764.8	-387.8	14,056,686.89	1,559,549.75	38° 42' 31.225 N	81° 17' 0.565 W	
2,568.0	50.11	204.63	2,242.1	-785.8	-398.0	14,056,665.94	1,559,539.63	38° 42' 31.018 N	81° 17' 0.692 W	

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Survey Report - Geographic



Company: HG Energy, LLC	Local Co-ordinate Reference: Well E. Smith #213
Project: Roane County, West Virginia	TVD Reference: well @ 1170.0usft (Decker #9)
Site: E. Smith #213	MD Reference: well @ 1170.0usft (Decker #9)
Well: E. Smith #213	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
2,630.0	50.11	204.63	2,281.9	-829.0	-417.8	14,056,622.70	1,559,519.80	38° 42' 30.590 N	81° 17' 0.940 W
TD @ 2630' MD / 2282' 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
2,630.0	2,281.9	-829.0	-417.8	TD @ 2630' MD / 2282' TVD

Checked By: _____ Approved By: _____ Date: _____

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Roane County, West Virginia
E. Smith #213
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Wellbore #1

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+E/-W 0.0 usft	Easting: 1,559,937.59 usft	Longitude: 81° 16' 55.700 W
Position Uncertainty 0.0 usft	Wellhead Elevation: 0.0 usft	Ground Level: 1,162.0 usft

Wellbore Wellbore #1					
Magnetics	Model Name IGRF2010	Sample Date 4/14/2015	Declination (°) -8.04	Dip Angle (°) 66.34	Field Strength (nT) 51,950

Design Wellbore #1				
Audit Notes:				
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0		
Vertical Section:	Depth From (TVD) (usft) 0.0	+N/-S (usft) 0.0	+E/-W (usft) 0.0	Direction (°) 207.76

Survey Program	Date 5/7/2015			
From (usft) 550.0	To (usft) 2,630.0	Survey (Wellbore) MWD (Wellbore #1)	Tool Name MWD default	Description MWD - Standard

Environmental Protection
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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	0.40	176.34	618.0	-0.2	0.0	0.2	0.59	0.2	176.34	
648.0	0.49	162.72	648.0	-0.5	0.1	0.4	0.46	0.5	172.64	
678.0	0.49	158.14	678.0	-0.7	0.1	0.6	0.13	0.7	168.32	
708.0	0.88	169.03	708.0	-1.1	0.2	0.8	1.36	1.1	167.27	
738.0	1.50	177.53	738.0	-1.7	0.3	1.3	2.14	1.7	169.87	
798.0	2.78	186.96	797.9	-3.9	0.2	3.4	2.21	3.9	177.71	
828.0	3.00	190.36	827.9	-5.4	-0.1	4.8	0.93	5.4	180.78	
858.0	3.40	190.93	857.9	-7.0	-0.4	6.4	1.34	7.0	183.12	
888.0	4.02	189.43	887.8	-8.9	-0.7	8.3	2.09	9.0	184.63	
918.0	4.82	193.04	917.7	-11.2	-1.2	10.5	2.82	11.3	186.01	
948.0	5.61	193.75	947.6	-13.9	-1.8	13.1	2.64	14.0	187.45	
1,008.0	7.51	194.14	1,007.2	-20.5	-3.5	19.8	3.17	20.8	189.60	
1,038.0	8.22	194.23	1,036.9	-24.5	-4.5	23.8	2.37	24.9	190.35	
1,068.0	8.79	195.64	1,066.6	-28.8	-5.6	28.1	2.02	29.3	191.05	
1,098.0	9.81	197.54	1,096.2	-33.4	-7.0	32.8	3.55	34.2	191.84	
1,128.0	10.96	199.58	1,125.7	-38.6	-8.7	38.2	4.02	39.5	192.77	
1,158.0	12.28	200.05	1,155.1	-44.2	-10.8	44.2	4.41	45.5	193.70	
1,188.0	13.08	200.62	1,184.3	-50.4	-13.1	50.7	2.70	52.1	194.54	
1,218.0	14.18	201.86	1,213.5	-57.0	-15.6	57.7	3.79	59.1	195.34	
1,248.0	15.20	203.75	1,242.5	-64.0	-18.6	65.3	3.76	66.7	196.19	
1,278.0	16.31	204.24	1,271.4	-71.5	-21.9	73.4	3.73	74.7	197.04	
1,308.0	17.41	206.35	1,300.1	-79.3	-25.6	82.1	4.20	83.4	197.90	
1,338.0	18.69	205.95	1,328.6	-87.7	-29.7	91.4	4.29	92.6	198.73	
1,368.0	20.02	206.92	1,356.9	-96.6	-34.1	101.4	4.56	102.4	199.48	

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Design: Wellbore #1	Database: Compass

87.04774

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
1,398.0	21.39	206.04	1,385.0	-106.1	-38.9	112.0	4.68	113.0	200.13
1,428.0	22.80	206.84	1,412.8	-116.2	-43.9	123.2	4.81	124.2	200.70
1,458.0	23.91	207.06	1,440.3	-126.8	-49.3	135.1	3.71	136.0	201.25
1,488.0	25.19	206.92	1,467.6	-137.9	-54.9	147.6	4.27	148.4	201.73
1,518.0	26.38	207.76	1,494.6	-149.5	-60.9	160.6	4.15	161.4	202.18
1,548.0	27.88	209.44	1,521.3	-161.5	-67.5	174.3	5.61	175.0	202.69
1,578.0	28.59	207.63	1,547.8	-173.9	-74.3	188.5	3.71	189.1	203.12
1,608.0	29.92	210.14	1,573.9	-186.8	-81.4	203.2	6.03	203.7	203.54
1,638.0	31.02	208.55	1,599.8	-200.0	-88.8	218.4	4.55	218.9	203.94
1,668.0	32.08	209.13	1,625.4	-213.8	-96.4	234.1	3.68	234.5	204.27
1,698.0	32.21	208.83	1,650.8	-227.7	-104.1	250.0	0.69	250.4	204.57
1,728.0	32.21	206.13	1,676.1	-241.9	-111.5	266.0	4.80	266.4	204.74
1,758.0	33.01	205.03	1,701.4	-256.5	-118.5	282.2	3.32	282.5	204.79
1,788.0	34.60	206.22	1,726.3	-271.5	-125.7	298.8	5.74	299.2	204.84
1,818.0	36.50	206.92	1,750.7	-287.1	-133.5	316.3	6.48	316.7	204.93
1,848.0	39.20	208.55	1,774.4	-303.4	-142.1	334.7	9.60	335.0	205.09
1,878.0	41.98	208.64	1,797.2	-320.6	-151.4	354.2	9.27	354.5	205.28
1,908.0	44.01	208.82	1,819.1	-338.5	-161.2	374.7	6.78	374.9	205.47
1,938.0	45.21	207.06	1,840.5	-357.1	-171.1	395.7	5.74	396.0	205.60
1,968.0	46.31	208.42	1,861.4	-376.1	-181.1	417.2	4.90	417.5	205.71
1,998.0	47.28	208.64	1,882.0	-395.4	-191.6	439.1	3.28	439.3	205.85
2,028.0	48.52	207.76	1,902.1	-415.0	-202.1	461.3	4.67	461.6	205.96
2,058.0	49.58	207.85	1,921.7	-435.0	-212.6	484.0	3.54	484.2	206.05
2,118.0	51.08	208.42	1,960.1	-475.7	-234.4	530.2	2.60	530.4	206.23
2,148.0	51.48	207.63	1,978.8	-496.4	-245.4	553.6	2.45	553.8	206.31
2,178.0	51.88	209.52	1,997.4	-517.1	-256.7	577.1	5.12	577.3	206.40
2,208.0	51.88	209.92	2,015.9	-537.6	-268.4	600.7	1.05	600.8	206.53

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HP
HG Energy EOW Report



Company: HG Energy, LLC
Project: Roane County, West Virginia
Site: E. Smith #213
Well: E. Smith #213
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well E. Smith #213
TVD Reference: well @ 1170.0usft (Decker #9)
MD Reference: well @ 1170.0usft (Decker #9)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass

87.04774

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,238.0	50.29	206.84	2,034.8	-558.1	-279.5	624.0	9.59	624.2	206.60
2,268.0	50.20	208.25	2,054.0	-578.5	-290.1	647.1	3.63	647.2	206.63
2,298.0	50.29	208.03	2,073.2	-598.9	-301.0	670.2	0.64	670.3	206.69
2,328.0	50.60	208.64	2,092.3	-619.2	-312.0	693.3	1.88	693.4	206.74
2,358.0	50.99	208.33	2,111.2	-639.7	-323.1	716.5	1.53	716.6	206.80
2,388.0	51.08	207.94	2,130.1	-660.2	-334.1	739.9	1.05	740.0	206.84
2,418.0	51.22	207.54	2,148.9	-680.9	-345.0	763.2	1.14	763.3	206.87
2,448.0	51.08	206.75	2,167.7	-701.7	-355.6	786.6	2.10	786.7	206.88
2,478.0	52.01	206.53	2,186.4	-722.7	-366.2	810.1	3.15	810.2	206.87
2,508.0	52.50	207.76	2,204.7	-743.8	-377.0	833.8	3.63	833.9	206.88
2,538.0	51.61	206.92	2,223.2	-764.8	-387.8	857.4	3.70	857.5	206.89
2,568.0	50.11	204.63	2,242.1	-785.8	-398.0	880.7	7.75	880.8	206.86
2,630.0	50.11	204.63	2,281.9	-829.0	-417.8	928.2	0.00	928.3	206.75

TD @ 2630' MD / 2282' 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
2,630.0	2,281.9	-829.0	-417.8	TD @ 2630' MD / 2282' TVD

Checked By: _____ Approved By: _____ Date: _____

Environmental Protection
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 SEP 18 2015

Company Name: HG Energy, LLC
 E. Smith #213
 Roane County, West Virginia
 Rig: Decker 9
 Created By: Shane Robbins
 Date: 5/7/2015

E. Smith #213
 Roane County, West Virginia
 Q150376 & AM-150323
 Design #1



87-04774

DESIGN TARGET DETAILS							
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PBH: E. Smith Target + plan hits target center	2189.0	-466.4	-390.7	14056785.04	1559586.89	38° 42' 32.200 N	81° 17' 5.100 W

PROJECT DETAILS:		Roane 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	

ANNOTATIONS								
MD	Inc	Azi	TVD	+N-S	+E-W	VSect	Departure	Annotation
2635.0	50.11	38.62	2261.0	-423.0	-417.8	939.2	939.2	TD @ 2635 MD / 550' TVD

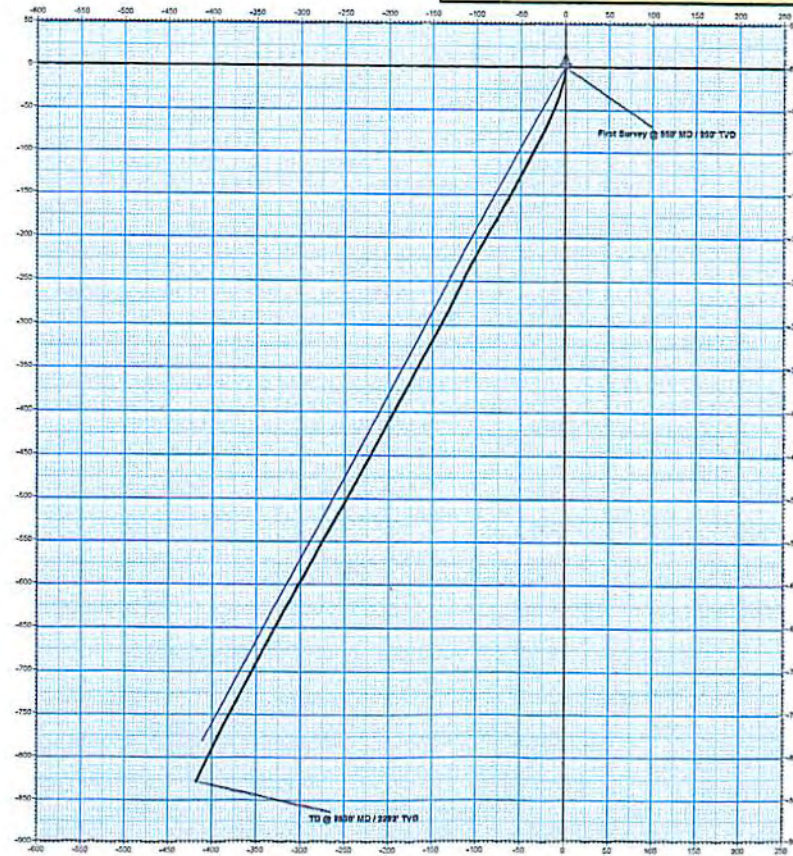
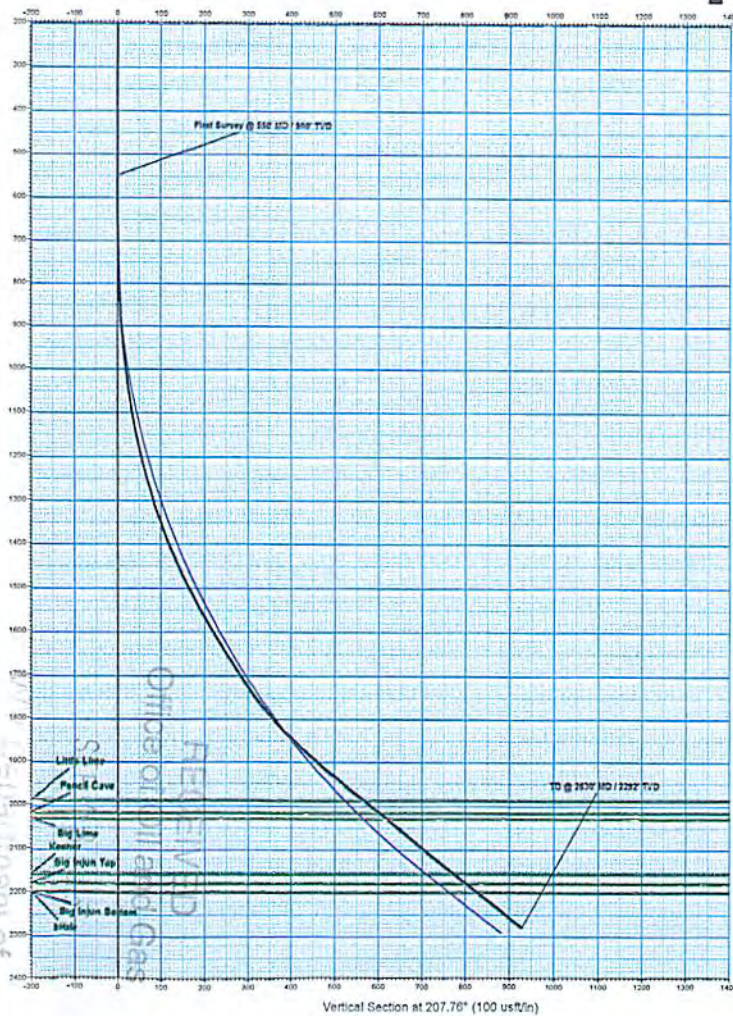
WELL DETAILS:						E. Smith #213
Ground Level:			1162.0			
+N-S	+E-W	Northing	Easting	Latitude	Longitude	
0.0	0.0	14057451.71	155937.08	38° 42' 38.800 N	81° 16' 56.700 W	

HG Energy

Azimuths to Grid North

Correction: -7.86°

Magnetic Field
 Strength: 51949.6snT
 Dip Angle: 66.34°
 Date: 4/14/2015
 Model: IGRF2010



Environmental Protection