

HG Energy, LLC

Harrison County, West Virginia

Hiram Lynch #139

Hiram Lynch #139

Wellbore #1

Survey: MWD

DDC Survey Report

13 December, 2013

Received

JAN 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection



02/28/2014



I **Larry Wright**, certify that I am employed by **The Appalachian Directional Drilling Company (ADC)**. That I did on the day(s) of **9/10/13** thru **9/14/13** conduct or supervise the taking of a **MWD Survey** from a depth of **800** feet to a depth of **3294** feet, that the data is true, correct, complete and within the limitations of the tool as set forth by **The Appalachian Directional Drilling Company (ADC)**.; that I am authorized and qualified to make this report; that this survey was conducted at the request of **HG Energy, LLC** for the **Hiram Lynch #139** API No. **47-033-05746** in **Harrison, County WV**; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by **The Appalachian Directional Drilling Company (ADC)**.

Larry Wright

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The Directional Drilling Company, ou=GM of Guidance Services, email=larryw@directionaldrillers.com, c=US
Date: 2013.12.17 09:57:14 -06'00'

Received

JAN 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

• 1200 Heavy Haul Road • Morgan Town, WV 26501 •
• PH 304-777-2310 • FAX 304-777-2317 •

02/28/2014

DDC
Survey Report



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Hiram Lynch #139
Project:	Harrison County, West Virginia	TVD Reference:	WELL @ 1315.0usft (Decker #6)
Site:	Hiram Lynch #139	MD Reference:	WELL @ 1315.0usft (Decker #6)
Well:	Hiram Lynch #139	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Harrison 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	Hiram Lynch #139				
Site Position:		Northing:	14,263,965.41 usft	Latitude:	39° 16' 38.300 N
From:	Lat/Long	Easting:	1,779,517.82 usft	Longitude:	80° 30' 30.400 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.31 °

Well	Hiram Lynch #139					
Well Position	+N/-S	0.0 usft	Northing:	14,263,965.41 usft	Latitude:	39° 16' 38.300 N
	+E/-W	0.0 usft	Easting:	1,779,517.82 usft	Longitude:	80° 30' 30.400 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,307.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/13/2013	-8.64	66.82	52,317

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	273.99	

Survey Program	Date	12/13/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
800.0	3,294.0	MWD (Wellbore #1)			

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
FIRST SURVEY @ 800' MD / 800' TVD									
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
805.0	1.59	105.23	805.0	0.0	0.1	-0.1	31.80	31.80	0.00
835.0	1.63	97.83	835.0	-0.2	0.9	-0.9	0.71	0.13	-24.67
865.0	1.48	94.73	865.0	-0.3	1.7	-1.7	0.57	-0.50	-10.33
895.0	1.01	76.30	895.0	-0.2	2.3	-2.4	2.04	-1.57	-61.43
925.0	1.33	17.99	925.0	0.1	2.7	-2.7	3.91	1.07	-194.37
955.0	2.41	4.77	954.9	1.1	2.9	-2.8	3.85	3.60	-44.07
985.0	3.49	357.91	984.9	2.6	2.9	-2.7	3.78	3.60	-22.87
1,015.0	5.50	350.74	1,014.8	5.0	2.6	-2.3	6.94	6.70	-23.90

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Survey Report



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Well:	Hiram Lynch #139	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,048.0	7.51	348.89	1,047.6	8.7	2.0	-1.3	6.12	6.09	-5.61
1,078.0	8.31	349.42	1,077.3	12.7	1.2	-0.3	2.68	2.67	1.77
1,108.0	9.71	345.81	1,106.9	17.3	0.2	1.0	5.03	4.67	-12.03
1,138.0	10.90	338.69	1,136.5	22.4	-1.5	3.0	5.80	3.97	-23.73
1,168.0	11.91	329.82	1,165.9	27.7	-4.1	6.0	6.74	3.37	-29.57
1,198.0	13.40	322.22	1,195.1	33.1	-7.8	10.1	7.44	4.97	-25.33
1,228.0	15.12	314.39	1,224.2	38.6	-12.7	15.3	8.60	5.73	-26.10
1,258.0	15.60	311.01	1,253.1	44.0	-18.5	21.5	3.39	1.60	-11.27
1,288.0	14.90	308.81	1,282.1	49.1	-24.6	27.9	3.03	-2.33	-7.33
1,318.0	14.81	306.00	1,311.1	53.7	-30.7	34.4	2.42	-0.30	-9.37
1,348.0	14.72	301.52	1,340.1	58.0	-37.0	41.0	3.82	-0.30	-14.93
1,378.0	13.89	296.42	1,369.2	61.6	-43.5	47.7	5.03	-2.77	-17.00
1,408.0	13.58	292.60	1,398.3	64.5	-50.0	54.4	3.19	-1.03	-12.73
1,438.0	14.19	289.52	1,427.4	67.1	-56.7	61.2	3.19	2.03	-10.27
1,468.0	14.81	286.53	1,456.5	69.4	-63.9	68.5	3.24	2.07	-9.97
1,498.0	15.29	282.40	1,485.5	71.4	-71.4	76.2	3.92	1.60	-13.77
1,528.0	15.82	277.13	1,514.4	72.7	-79.3	84.2	5.03	1.77	-17.57
1,558.0	16.30	271.41	1,543.2	73.3	-87.6	92.5	5.51	1.60	-19.07
1,588.0	17.18	266.23	1,571.9	73.2	-96.2	101.1	5.77	2.93	-17.27
1,618.0	16.39	261.00	1,600.6	72.2	-104.8	109.6	5.68	-2.63	-17.43
1,648.0	15.38	257.70	1,629.5	70.7	-112.9	117.5	4.52	-3.37	-11.00
1,678.0	15.21	258.23	1,658.4	69.0	-120.6	125.1	0.73	-0.57	1.77
1,708.0	15.29	260.43	1,687.4	67.6	-128.4	132.8	1.95	0.27	7.33
1,738.0	15.38	262.01	1,716.3	66.4	-136.2	140.5	1.42	0.30	5.27
1,768.0	15.60	262.80	1,745.2	65.3	-144.2	148.3	1.02	0.73	2.63
1,798.0	16.08	263.42	1,774.1	64.3	-152.3	156.4	1.70	1.60	2.07
1,828.0	16.61	261.79	1,802.9	63.2	-160.7	164.7	2.34	1.77	-5.43
1,858.0	17.89	258.71	1,831.5	61.7	-169.4	173.3	5.24	4.27	-10.27
1,888.0	19.29	257.92	1,860.0	59.8	-178.8	182.5	4.74	4.67	-2.63
1,918.0	19.20	258.89	1,888.3	57.8	-188.5	192.0	1.11	-0.30	3.23
1,948.0	18.81	258.71	1,916.6	55.9	-198.1	201.5	1.31	-1.30	-0.60
1,978.0	18.28	256.91	1,945.1	53.9	-207.4	210.6	2.60	-1.77	-6.00
2,008.0	18.59	256.12	1,973.5	51.7	-216.6	219.7	1.33	1.03	-2.63
2,038.0	18.81	258.41	2,002.0	49.6	-226.0	228.9	2.55	0.73	7.63
2,068.0	18.19	261.92	2,030.4	47.9	-235.4	238.1	4.25	-2.07	11.70
2,098.0	17.31	266.10	2,059.0	47.0	-244.4	247.1	5.16	-2.93	13.93
2,128.0	17.01	272.21	2,087.6	46.8	-253.3	255.9	6.09	-1.00	20.37
2,158.0	17.18	275.72	2,116.3	47.5	-262.1	264.7	3.49	0.57	11.70
2,188.0	17.58	276.20	2,145.0	48.4	-271.0	273.7	1.42	1.33	1.60
2,218.0	17.80	275.81	2,173.5	49.3	-280.1	282.8	0.83	0.73	-1.30
2,248.0	17.40	274.31	2,202.1	50.1	-289.1	291.9	2.02	-1.33	5.00
2,278.0	16.48	270.80	2,230.8	50.5	-297.8	300.6	4.58	-3.07	-1.70
2,308.0	16.30	269.00	2,259.6	50.5	-306.3	309.1	1.80	-0.60	-6.00
2,338.0	16.30	270.80	2,288.4	50.5	-314.7	317.5	1.68	0.00	6.00

Received

DDC
Survey Report



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Site:	Hiram Lynch #139	MD Reference:	WELL @ 1315.0usft (Decker #6)
Well:	Hiram Lynch #139	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,368.0	16.61	274.01	2,317.2	50.9	-323.2	325.9	3.20	1.03	10.70
2,398.0	16.79	277.61	2,345.9	51.7	-331.8	334.6	3.50	0.60	12.00
2,428.0	17.18	279.02	2,374.6	53.0	-340.4	343.3	1.89	1.30	4.70
2,458.0	17.58	277.92	2,403.2	54.3	-349.3	352.2	1.73	1.33	-3.67
2,488.0	17.71	275.90	2,431.8	55.4	-358.3	361.3	2.09	0.43	-6.73
2,518.0	17.09	272.60	2,460.5	56.1	-367.3	370.3	3.88	-2.07	-11.00
2,548.0	16.22	270.80	2,489.2	56.3	-375.9	378.9	3.37	-2.90	-6.00
2,578.0	16.00	271.90	2,518.0	56.5	-384.2	387.2	1.25	-0.73	3.67
2,608.0	15.82	275.11	2,546.9	57.0	-392.4	395.4	2.99	-0.60	10.70
2,638.0	15.29	277.83	2,575.8	57.9	-400.4	403.4	3.00	-1.77	9.07
2,668.0	15.29	279.72	2,604.7	59.2	-408.2	411.3	1.66	0.00	6.30
2,698.0	15.82	279.72	2,633.6	60.5	-416.1	419.3	1.77	1.77	0.00
2,728.0	15.91	277.92	2,662.5	61.8	-424.2	427.5	1.67	0.30	-6.00
2,758.0	16.08	276.91	2,691.3	62.8	-432.4	435.7	1.09	0.57	-3.37
2,788.0	17.09	276.60	2,720.1	63.8	-440.9	444.3	3.38	3.37	-1.03
2,818.0	17.49	274.23	2,748.7	64.7	-449.8	453.2	2.70	1.33	-7.90
2,848.0	17.80	272.82	2,777.3	65.2	-458.9	462.3	1.76	1.03	-4.70
2,878.0	18.19	270.71	2,805.8	65.5	-468.1	471.6	2.53	1.30	-7.03
2,908.0	18.28	268.29	2,834.3	65.4	-477.5	480.9	2.54	0.30	-8.07
2,938.0	17.40	266.93	2,862.9	65.1	-486.7	490.1	3.25	-2.93	-4.53
2,968.0	16.00	263.72	2,891.6	64.4	-495.3	498.6	5.59	-4.67	-10.70
2,998.0	14.81	260.30	2,920.5	63.3	-503.2	506.4	4.99	-3.97	-11.40
3,028.0	14.02	256.91	2,949.6	61.8	-510.5	513.6	3.85	-2.63	-11.30
3,058.0	13.18	252.12	2,978.7	59.9	-517.3	520.2	4.68	-2.80	-15.97
3,088.0	12.61	248.52	3,008.0	57.7	-523.6	526.3	3.28	-1.90	-12.00
3,108.0	12.21	246.30	3,027.5	56.0	-527.6	530.2	3.11	-2.00	-11.10
3,118.0	12.00	245.22	3,037.3	55.2	-529.5	532.0	3.09	-2.10	-10.80
3,148.0	11.60	243.29	3,066.7	52.5	-535.0	537.4	1.87	-1.33	-6.43
3,178.0	11.21	241.62	3,096.1	49.8	-540.3	542.4	1.70	-1.30	-5.57
3,208.0	10.59	239.73	3,125.5	47.0	-545.2	547.2	2.39	-2.07	-6.30
3,238.0	10.11	237.62	3,155.0	44.2	-549.8	551.6	2.04	-1.60	-7.03
TD @ 3294' MD / 3210' TVD									
3,294.0	10.11	237.62	3,210.2	38.9	-558.1	559.5	0.00	0.00	0.00

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
800.0	800.0	0.0	0.0	FIRST SURVEY @ 800' MD / 800' TVD
3,294.0	3,210.2	38.9	-558.1	TD @ 3294' MD / 3210' TVD

Received

Checked By: _____ Approved By: _____ Date: _____

HG Energy, LLC

Harrison County, West Virginia

Hiram Lynch #139

Hiram Lynch #139

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

07 January, 2014



Office of Oil and Gas
WV Dept. of Environmental Protection

02/28/2014

DDC
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Hiram Lynch #139
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Well:	Hiram Lynch #139	North Reference:	Grid
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Geo Datum:	NAD83 West Virginia - HARN		
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From:	Lat/Long	Easting:	1,779,517.82 usft	Longitude:	80° 30' 30.400 W
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Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,307.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/13/2013	-8.64	66.82	52,317

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	273.99	

Survey Program	Date	12/13/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
800.0	3,294.0	MWD (Wellbore #1)			

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
800.0	0.00	0.00	800.0	0.0	0.0	14,263,965.41	1,779,517.82	39° 16' 38.300 N	80° 30' 30.400 W	
FIRST SURVEY @ 800' MD / 800' TVD										
805.0	1.59	105.23	805.0	0.0	0.1	14,263,965.39	1,779,517.89	39° 16' 38.300 N	80° 30' 30.399 W	
835.0	1.63	97.83	835.0	-0.2	0.9	14,263,965.22	1,779,518.71	39° 16' 38.298 N	80° 30' 30.389 W	
865.0	1.48	94.73	865.0	-0.3	1.7	14,263,965.13	1,779,519.52	39° 16' 38.297 N	80° 30' 30.378 W	
895.0	1.01	76.30	895.0	-0.2	2.3	14,263,965.17	1,779,520.16	39° 16' 38.297 N	80° 30' 30.370 W	
925.0	1.33	17.99	925.0	0.1	2.7	14,263,965.56	1,779,520.53	39° 16' 38.301 N	80° 30' 30.366 W	
955.0	2.41	4.77	954.9	1.1	2.9	14,263,966.52	1,779,520.69	39° 16' 38.311 N	80° 30' 30.363 W	
985.0	3.49	357.91	984.9	2.6	2.9	14,263,968.06	1,779,520.71	39° 16' 38.326 N	80° 30' 30.363 W	
1,015.0	5.50	350.74	1,014.8	5.0	2.6	14,263,970.39	1,779,520.44	39° 16' 38.349 N	80° 30' 30.366 W	
1,048.0	7.51	348.89	1,047.6	8.7	2.0	14,263,974.07	1,779,519.77	39° 16' 38.386 N	80° 30' 30.375 W	
1,078.0	8.31	349.42	1,077.3	12.7	1.2	14,263,978.12	1,779,518.99	39° 16' 38.426 N	80° 30' 30.384 W	

DDC
Survey Report - Geographic



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Well:	Hiram Lynch #139	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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	
1,108.0	9.71	345.81	1,106.9	17.3	0.2	14,263,982.71	1,779,517.98	39° 16' 38.471 N	80° 30' 30.397 W	
1,138.0	10.90	338.69	1,136.5	22.4	-1.5	14,263,987.80	1,779,516.33	39° 16' 38.521 N	80° 30' 30.417 W	
1,168.0	11.91	329.82	1,165.9	27.7	-4.1	14,263,993.12	1,779,513.74	39° 16' 38.574 N	80° 30' 30.450 W	
1,198.0	13.40	322.22	1,195.1	33.1	-7.8	14,263,998.55	1,779,510.05	39° 16' 38.628 N	80° 30' 30.497 W	
1,228.0	15.12	314.39	1,224.2	38.6	-12.7	14,264,004.03	1,779,505.13	39° 16' 38.683 N	80° 30' 30.559 W	
1,258.0	15.60	311.01	1,253.1	44.0	-18.5	14,264,009.42	1,779,499.29	39° 16' 38.736 N	80° 30' 30.633 W	
1,288.0	14.90	308.81	1,282.1	49.1	-24.6	14,264,014.48	1,779,493.24	39° 16' 38.786 N	80° 30' 30.709 W	
1,318.0	14.81	306.00	1,311.1	53.7	-30.7	14,264,019.15	1,779,487.13	39° 16' 38.833 N	80° 30' 30.787 W	
1,348.0	14.72	301.52	1,340.1	58.0	-37.0	14,264,023.40	1,779,480.78	39° 16' 38.875 N	80° 30' 30.867 W	
1,378.0	13.89	296.42	1,369.2	61.6	-43.5	14,264,026.99	1,779,474.30	39° 16' 38.911 N	80° 30' 30.949 W	
1,408.0	13.58	292.60	1,398.3	64.5	-50.0	14,264,029.95	1,779,467.83	39° 16' 38.941 N	80° 30' 31.032 W	
1,438.0	14.19	289.52	1,427.4	67.1	-56.7	14,264,032.53	1,779,461.11	39° 16' 38.967 N	80° 30' 31.117 W	
1,468.0	14.81	286.53	1,456.5	69.4	-63.9	14,264,034.85	1,779,453.97	39° 16' 38.990 N	80° 30' 31.207 W	
1,498.0	15.29	282.40	1,485.5	71.4	-71.4	14,264,036.79	1,779,446.43	39° 16' 39.010 N	80° 30' 31.303 W	
1,528.0	15.82	277.13	1,514.4	72.7	-79.3	14,264,038.15	1,779,438.51	39° 16' 39.023 N	80° 30' 31.404 W	
1,558.0	16.30	271.41	1,543.2	73.3	-87.6	14,264,038.76	1,779,430.24	39° 16' 39.030 N	80° 30' 31.509 W	
1,588.0	17.18	266.23	1,571.9	73.2	-96.2	14,264,038.57	1,779,421.61	39° 16' 39.029 N	80° 30' 31.619 W	
1,618.0	16.39	261.00	1,600.6	72.2	-104.8	14,264,037.62	1,779,413.01	39° 16' 39.020 N	80° 30' 31.728 W	
1,648.0	15.38	257.70	1,629.5	70.7	-112.9	14,264,036.11	1,779,404.94	39° 16' 39.005 N	80° 30' 31.831 W	
1,678.0	15.21	258.23	1,658.4	69.0	-120.6	14,264,034.46	1,779,397.20	39° 16' 38.989 N	80° 30' 31.930 W	
1,708.0	15.29	260.43	1,687.4	67.6	-128.4	14,264,033.00	1,779,389.45	39° 16' 38.975 N	80° 30' 32.028 W	
1,738.0	15.38	262.01	1,716.3	66.4	-136.2	14,264,031.79	1,779,381.61	39° 16' 38.964 N	80° 30' 32.128 W	
1,768.0	15.60	262.80	1,745.2	65.3	-144.2	14,264,030.73	1,779,373.66	39° 16' 38.954 N	80° 30' 32.229 W	
1,798.0	16.08	263.42	1,774.1	64.3	-152.3	14,264,029.75	1,779,365.53	39° 16' 38.944 N	80° 30' 32.333 W	
1,828.0	16.61	261.79	1,802.9	63.2	-160.7	14,264,028.66	1,779,357.16	39° 16' 38.934 N	80° 30' 32.439 W	
1,858.0	17.89	258.71	1,831.5	61.7	-169.4	14,264,027.14	1,779,348.40	39° 16' 38.919 N	80° 30' 32.551 W	
1,888.0	19.29	257.92	1,860.0	59.8	-178.8	14,264,025.21	1,779,339.04	39° 16' 38.901 N	80° 30' 32.670 W	
1,918.0	19.20	258.89	1,888.3	57.8	-188.5	14,264,023.22	1,779,329.35	39° 16' 38.882 N	80° 30' 32.794 W	
1,948.0	18.81	258.71	1,916.6	55.9	-198.1	14,264,021.32	1,779,319.77	39° 16' 38.863 N	80° 30' 32.916 W	
1,978.0	18.28	256.91	1,945.1	53.9	-207.4	14,264,019.31	1,779,310.44	39° 16' 38.844 N	80° 30' 33.034 W	
2,008.0	18.59	256.12	1,973.5	51.7	-216.6	14,264,017.09	1,779,301.22	39° 16' 38.823 N	80° 30' 33.152 W	
2,038.0	18.81	258.41	2,002.0	49.6	-226.0	14,264,014.98	1,779,291.84	39° 16' 38.802 N	80° 30' 33.271 W	
2,068.0	18.19	261.92	2,030.4	47.9	-235.4	14,264,013.35	1,779,282.46	39° 16' 38.787 N	80° 30' 33.391 W	
2,098.0	17.31	266.10	2,059.0	47.0	-244.4	14,264,012.38	1,779,273.37	39° 16' 38.778 N	80° 30' 33.506 W	
2,128.0	17.01	272.21	2,087.6	46.8	-253.3	14,264,012.25	1,779,264.53	39° 16' 38.777 N	80° 30' 33.619 W	
2,158.0	17.18	275.72	2,116.3	47.5	-262.1	14,264,012.86	1,779,255.74	39° 16' 38.783 N	80° 30' 33.731 W	
2,188.0	17.58	276.20	2,145.0	48.4	-271.0	14,264,013.79	1,779,246.83	39° 16' 38.793 N	80° 30' 33.844 W	
2,218.0	17.80	275.81	2,173.5	49.3	-280.1	14,264,014.75	1,779,237.76	39° 16' 38.803 N	80° 30' 33.959 W	
2,248.0	17.40	274.31	2,202.1	50.1	-289.1	14,264,015.55	1,779,228.73	39° 16' 38.811 N	80° 30' 34.074 W	
2,278.0	16.48	270.80	2,230.8	50.5	-297.8	14,264,015.94	1,779,220.00	39° 16' 38.816 N	80° 30' 34.185 W	
2,308.0	16.30	269.00	2,259.6	50.5	-306.3	14,264,015.93	1,779,211.53	39° 16' 38.816 N	80° 30' 34.293 W	
2,338.0	16.30	270.80	2,288.4	50.5	-314.7	14,264,015.91	1,779,203.11	39° 16' 38.816 N	80° 30' 34.400 W	
2,368.0	16.61	274.01	2,317.2	50.9	-323.2	14,264,016.27	1,779,194.63	39° 16' 38.820 N	80° 30' 34.508 W	
2,398.0	16.79	277.61	2,345.9	51.7	-331.8	14,264,017.15	1,779,186.06	39° 16' 38.829 N	80° 30' 34.617 W	
2,428.0	17.18	279.02	2,374.6	53.0	-340.4	14,264,018.42	1,779,177.38	39° 16' 38.842 N	80° 30' 34.727 W	
2,458.0	17.58	277.92	2,403.2	54.3	-349.3	14,264,019.73	1,779,168.52	39° 16' 38.856 N	80° 30' 34.840 W	
2,488.0	17.71	275.90	2,431.8	55.4	-358.3	14,264,020.83	1,779,159.49	39° 16' 38.867 N	80° 30' 34.954 W	
2,518.0	17.09	272.60	2,460.5	56.1	-367.3	14,264,021.50	1,779,150.55	39° 16' 38.874 N	80° 30' 35.068 W	
2,548.0	16.22	270.80	2,489.2	56.3	-375.9	14,264,021.75	1,779,141.96	39° 16' 38.877 N	80° 30' 35.178 W	
2,578.0	16.00	271.90	2,518.0	56.5	-384.2	14,264,021.95	1,779,133.64	39° 16' 38.880 N	80° 30' 35.283 W	
2,608.0	15.82	275.11	2,546.9	57.0	-392.4	14,264,022.45	1,779,125.43	39° 16' 38.885 N	80° 30' 35.388 W	
2,638.0	15.29	277.83	2,575.8	57.9	-400.4	14,264,023.35	1,779,117.44	39° 16' 38.894 N	80° 30' 35.489 W	
2,668.0	15.29	279.72	2,604.7	59.2	-408.2	14,264,024.56	1,779,109.62	39° 16' 38.907 N	80° 30' 35.589 W	
2,698.0	15.82	279.72	2,633.6	60.5	-416.1	14,264,025.92	1,779,101.69	39° 16' 38.921 N	80° 30' 35.689 W	
2,728.0	15.91	277.92	2,662.5	61.8	-424.2	14,264,027.18	1,779,093.59	39° 16' 38.933 N	80° 30' 35.792 W	

DDC
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Hiram Lynch #139
Project:	Harrison County, West Virginia	TVD Reference:	WELL @ 1315.0usft (Decker #6)
Site:	Hiram Lynch #139	MD Reference:	WELL @ 1315.0usft (Decker #6)
Well:	Hiram Lynch #139	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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
2,758.0	16.08	276.91	2,691.3	62.8	-432.4	14,264,028.24	1,779,085.39	39° 16' 38.944 N	80° 30' 35.897 W
2,788.0	17.09	276.60	2,720.1	63.8	-440.9	14,264,029.25	1,779,076.89	39° 16' 38.955 N	80° 30' 36.005 W
2,818.0	17.49	274.23	2,748.7	64.7	-449.8	14,264,030.09	1,779,068.01	39° 16' 38.964 N	80° 30' 36.118 W
2,848.0	17.80	272.82	2,777.3	65.2	-458.9	14,264,030.65	1,779,058.94	39° 16' 38.970 N	80° 30' 36.233 W
2,878.0	18.19	270.71	2,805.8	65.5	-468.1	14,264,030.93	1,779,049.68	39° 16' 38.973 N	80° 30' 36.351 W
2,908.0	18.28	268.29	2,834.3	65.4	-477.5	14,264,030.85	1,779,040.29	39° 16' 38.973 N	80° 30' 36.470 W
2,938.0	17.40	266.93	2,862.9	65.1	-486.7	14,264,030.47	1,779,031.11	39° 16' 38.969 N	80° 30' 36.587 W
2,968.0	16.00	263.72	2,891.6	64.4	-495.3	14,264,029.78	1,779,022.52	39° 16' 38.963 N	80° 30' 36.696 W
2,998.0	14.81	260.30	2,920.5	63.3	-503.2	14,264,028.68	1,779,014.63	39° 16' 38.952 N	80° 30' 36.797 W
3,028.0	14.02	256.91	2,949.6	61.8	-510.5	14,264,027.21	1,779,007.31	39° 16' 38.938 N	80° 30' 36.890 W
3,058.0	13.18	252.12	2,978.7	59.9	-517.3	14,264,025.33	1,779,000.52	39° 16' 38.920 N	80° 30' 36.977 W
3,088.0	12.61	248.52	3,008.0	57.7	-523.6	14,264,023.09	1,778,994.21	39° 16' 38.898 N	80° 30' 37.057 W
3,108.0	12.21	246.30	3,027.5	56.0	-527.6	14,264,021.44	1,778,990.25	39° 16' 38.882 N	80° 30' 37.108 W
3,118.0	12.00	245.22	3,037.3	55.2	-529.5	14,264,020.57	1,778,988.33	39° 16' 38.874 N	80° 30' 37.132 W
3,148.0	11.60	243.29	3,066.7	52.5	-535.0	14,264,017.91	1,778,982.81	39° 16' 38.848 N	80° 30' 37.202 W
3,178.0	11.21	241.62	3,096.1	49.8	-540.3	14,264,015.17	1,778,977.55	39° 16' 38.821 N	80° 30' 37.269 W
3,208.0	10.59	239.73	3,125.5	47.0	-545.2	14,264,012.39	1,778,972.60	39° 16' 38.794 N	80° 30' 37.333 W
3,238.0	10.11	237.62	3,155.0	44.2	-549.8	14,264,009.59	1,778,968.00	39° 16' 38.766 N	80° 30' 37.391 W
3,294.0	10.11	237.62	3,210.2	38.9	-558.1	14,264,004.33	1,778,959.69	39° 16' 38.715 N	80° 30' 37.497 W

TD @ 3294' MD / 3210' TVD

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,294.0	3,210.2	38.9	-558.1	TD @ 3294' MD / 3210' TVD

Checked By: _____ Approved By: _____ Date: _____

Received

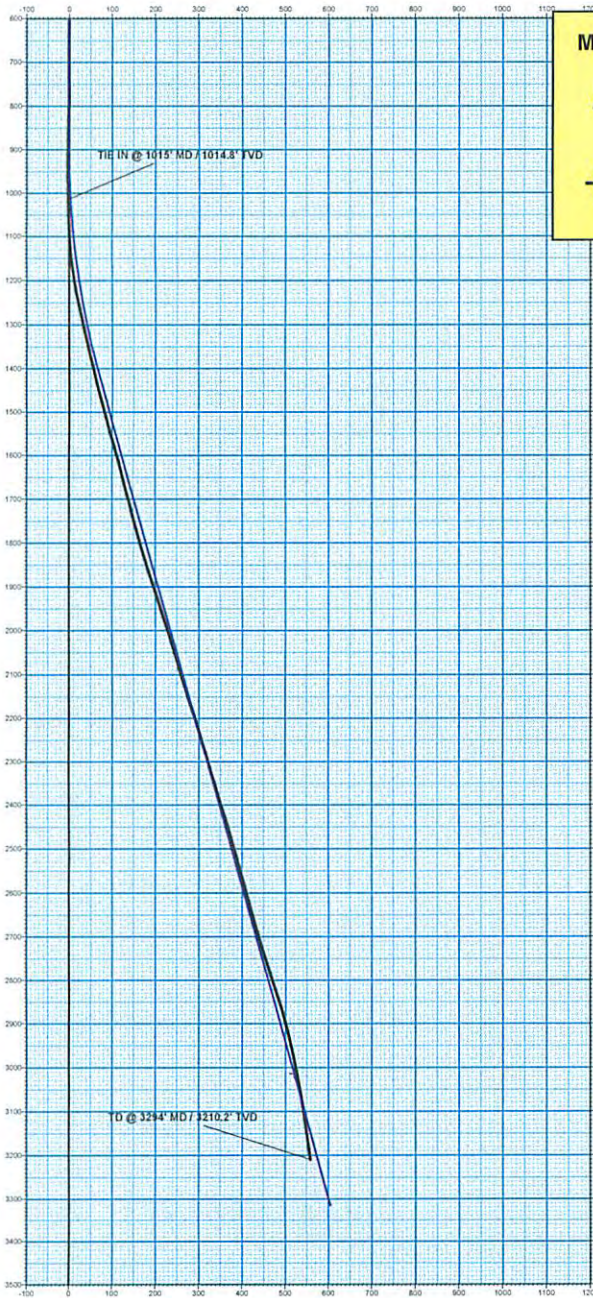
JAN 21 2014

02/28/2014

Well #1
 Harrison County, West Virginia
 Q130710 & AM-13711
 Design #1

Company Name: HG Energy, LLC
 Well #1
 Harrison County, West Virginia
 Rig: Original Well Elev
 Created By: TIFFANI MIZELL
 Date: 09/17/2013

HG Energy



M G T Azimuths to Grid North

Correction: -7.99°

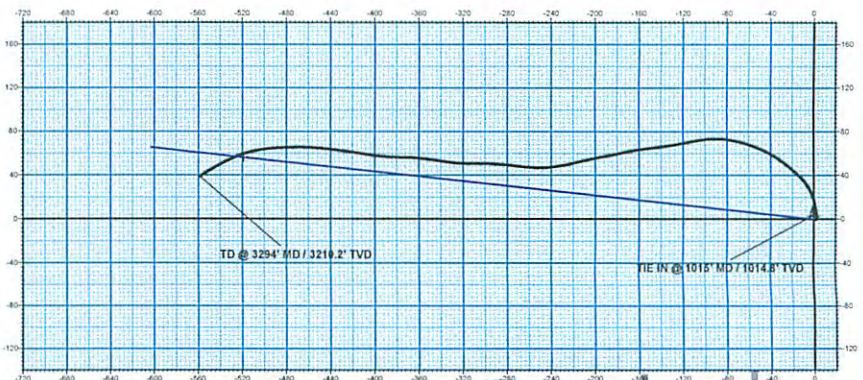
Magnetic Field
 Strength: 52357.2snT
 Dip Angle: 66.85°
 Date: 8/14/2013
 Model: IGRF2010

PROJECT DETAILS:		Harrison County, West Virginia	
Geodetic System:	US State Plane 1927 (Exact solution)		
Datum:	NAD 1927 (NADCON CONUS)		
Ellipsoid:	Clarke 1866		
Zone:	West Virginia North 4701		
System Datum:	Mean Sea Level		

WELL DETAILS:		Well #1	
Ground Level:	1307.0		
+N/-S	+E/-W	Northing	Easting
0.0	0.0	284712.66	1714525.63
		39° 16' 38.300 N	80° 30' 30.400 W

ANNOTATIONS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
1015.0	5.50	350.74	1014.8	6.0	2.6	-2.3	7.9	TIE IN @ 1015' MD / 1014.8' TVD
3294.0	10.11	237.62	3210.2	38.8	-568.1	698.5	610.1	TD @ 3294' MD / 3210.2' TVD

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Target - Hiram Lynch #139 D#1	3014.5	66.4	-518.4	284769.07	1714007.23	39° 16' 38.900 N	80° 30' 37.000 W
- plan hits target center							



Received

JAN 2 2014