WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 033 - 05776 County HARRISON District TEN MILE
Quad WOLF SUMMIT 7.5' Pad Name W.F. WILLIAMS Field/Pool Name WOLF SUMMIT
Farm name HUFFMAN, BRIAN V. Well Number 234
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,347,052 M Easting 543,322 M
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 4,347,235M Easting 543,437 M

Elevation (ft) 1,168' GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type ■ Deviated □ Horizontal □ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework □ Stimulate

Well Type □ Brine Disposal □ CBM □ Gas ■ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine □Gas □ NGL ■ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air □ Mud ■ Fresh Water □ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 7/9/13 Date drilling commenced 11/19/14 Date drilling ceased 12/7/14
Date completion activities began 12/12/14 Date completion activities ceased 12/23/14
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 250' Open mine(s) (Y/N) depths N
Salt water depth(s) ft N Void(s) encountered (Y/N) depths N
Coal depth(s) ft 425'- 432' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

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CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	12 1/4"	11 5/8"	30'	Used	LS		Sand In
Surface	8 3/4"	7"	507'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	3069.7'	New	J-55		Y
Tubing							
Packer type and depth set							

Comment Details Circulated Est. 50 sks to surface on 7" surface cement job. Circulated Est. 27 sks to surface on 4 1/2" cement job.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	110	15.6	1.18	130	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	140/150	13.2/14.2	1.64/1.27	230/186	Surface	8
Tubing							

Drillers TD (ft) 3089' Loggers TD (ft) 3106'
Deepest formation penetrated Fifth Sand Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 650'

Check all wireline logs run ☒ caliper ☒ density ☒ deviated/directional ☒ induction
☒ neutron ☒ resistivity ☒ gamma ray ☒ temperature ☐ sonic

Well cored ☐ Yes ☒ No Conventional Sidewall Were cuttings collected ☒ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING
20 Centralizers every 88 from bottom on 4 1/2", Centralizer placed mid string on 7"

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ☒ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ☒ No DETAILS

WERE TRACERS USED ☐ Yes ☒ No TYPE OF TRACER(S) USED

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	12/12/14	2918'	2928'	40	Fifth Sand

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	12/23/14	10	1683	2382	1920	14,900	253	

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
Fifth Sand	2740'- 2752' TVD	2916'- 2928' MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0	425	0	425	
Pittsburgh Coal	425	432	425	432	
Sand/Shale	432	1782	432	1850	
Big Lime	1782	1854	1850	1930	
Big Injun	1854	1922	1930	2008	
Shale	1922	2336	2008	2474	
Fifty Foot	2336	2369	2474	2510	
Shale	2369	2430	2510	2578	
Sand	2430	2576	2578	2738	
Shale	2576	2740	2738	2916	
Fifth Sand	2740	2752	2916	2928	Drilled directional N 33° E a distance of 795'
Shale	2752	2905	2928	3089	
TD	2905		3089		

Please insert additional pages as applicable.

Drilling Contractor Decker Drilling
Address 11565 State Route 676 City Vincent State OH Zip 45784

Logging Company Weatherford International
Address 777 North River Avenue City Weston State WV Zip 26452

Cementing Company Universal Services
Address Hall Rd City Buckhannon State WV Zip 26201

Stimulating Company Universal Services
Address Hall Rd City Buckhannon State WV Zip 26201

Please insert additional pages as applicable.

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Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations Manager Date 1/20/15

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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

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Office of Oil & Gas
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ADC
The APPALACHIAN DIRECTIONAL COMPANY

33-05776

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well W.F. Williams #234
Project:	Harrison County, West Virginia	**TVD Reference:**	well @ 1174.0usft (Yost #2)
Site:	W.F. Williams #234	**MD Reference:**	well @ 1174.0usft (Yost #2)
Well:	W.F. Williams #234	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

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 W.F. Williams #234

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

Well W.F. Williams #234

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,261,918.46 usft	**Latitude:**	39° 16' 17.900 N
	+E/-W	0.0 usft	**Easting:**	1,782,492.72 usft	**Longitude:**	80° 29' 52.700 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,168.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	11/10/2014	-8.68	66.72	52,203

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	35.00

Survey Program **Date** 12/15/2014

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
650.0	3,079.0	MWD Survey (Wellbore #1)	MWD default	MWD - Standard

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	14,261,918.46	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
First Survey @ 650' MD / 650' TVD									
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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Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	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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Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	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 +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
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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JAN 26 2015

HG Energy, LLC

Harrison County, West Virginia
W.F. Williams #234
W.F. Williams #234
Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

15 December, 2014

ADC
The APPALACHIAN DIRECTIONAL COMPANY

Received
Office of Oil & Gas
JAN 26 2015

33-05776

HG Energy EOW Report

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.F. Williams #234
Project:	Harrison County, West Virginia	TVD Reference:	well @ 1174.0usft (Yost #2)
Site:	W.F. Williams #234	MD Reference:	well @ 1174.0usft (Yost #2)
Well:	W.F. Williams #234	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

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: W.F. Williams #234

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

Well: W.F. Williams #234

Well Position	+N/-S	0.0 usft	Northing:	14,261,918.46 usft	Latitude:	39° 16' 17.900 N
	+E/-W	0.0 usft	Easting:	1,782,492.72 usft	Longitude:	80° 29' 52.700 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,168.0 usft

Wellbore: Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/10/2014	-8.68	66.72	52,203

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	35.00

Survey Program: Date 12/15/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
650.0	3,079.0	MWD Survey (Wellbore #1)	MWD default	MWD - Standard

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JAN 26 2015

33-05776

HG Energy EOW Report

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.F. Williams #234
Project:	Harrison County, West Virginia	TVD Reference:	well @ 1174.0usft (Yost #2)
Site:	W.F. Williams #234	MD Reference:	well @ 1174.0usft (Yost #2)
Well:	W.F. Williams #234	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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	0.00	0.0	0.00
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.00	0.0	0.00
First Survey @ 650' MD / 650' TVD									
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

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JAN 26 2015

33.05776

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.F. Williams #234
Project:	Harrison County, West Virginia	TVD Reference:	well @ 1174.0usft (Yost #2)
Site:	W.F. Williams #234	MD Reference:	well @ 1174.0usft (Yost #2)
Well:	W.F. Williams #234	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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 (°)
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

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33-05776

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.F. Williams #234
Project:	Harrison County, West Virginia	TVD Reference:	well @ 1174.0usft (Yost #2)
Site:	W.F. Williams #234	MD Reference:	well @ 1174.0usft (Yost #2)
Well:	W.F. Williams #234	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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 (°)
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

33-05776

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well W.F. Williams #234
Project:	Harrison County, West Virginia	**TVD Reference:**	well @ 1174.0usft (Yost #2)
Site:	W.F. Williams #234	**MD Reference:**	well @ 1174.0usft (Yost #2)
Well:	W.F. Williams #234	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	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 (°)
3,079.0	16.70	21.50	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 +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
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: _____

Received
Office of Oil & Gas
JAN 26 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
Q141219 & AM-141190
Design #1

HG Energy

33-05776

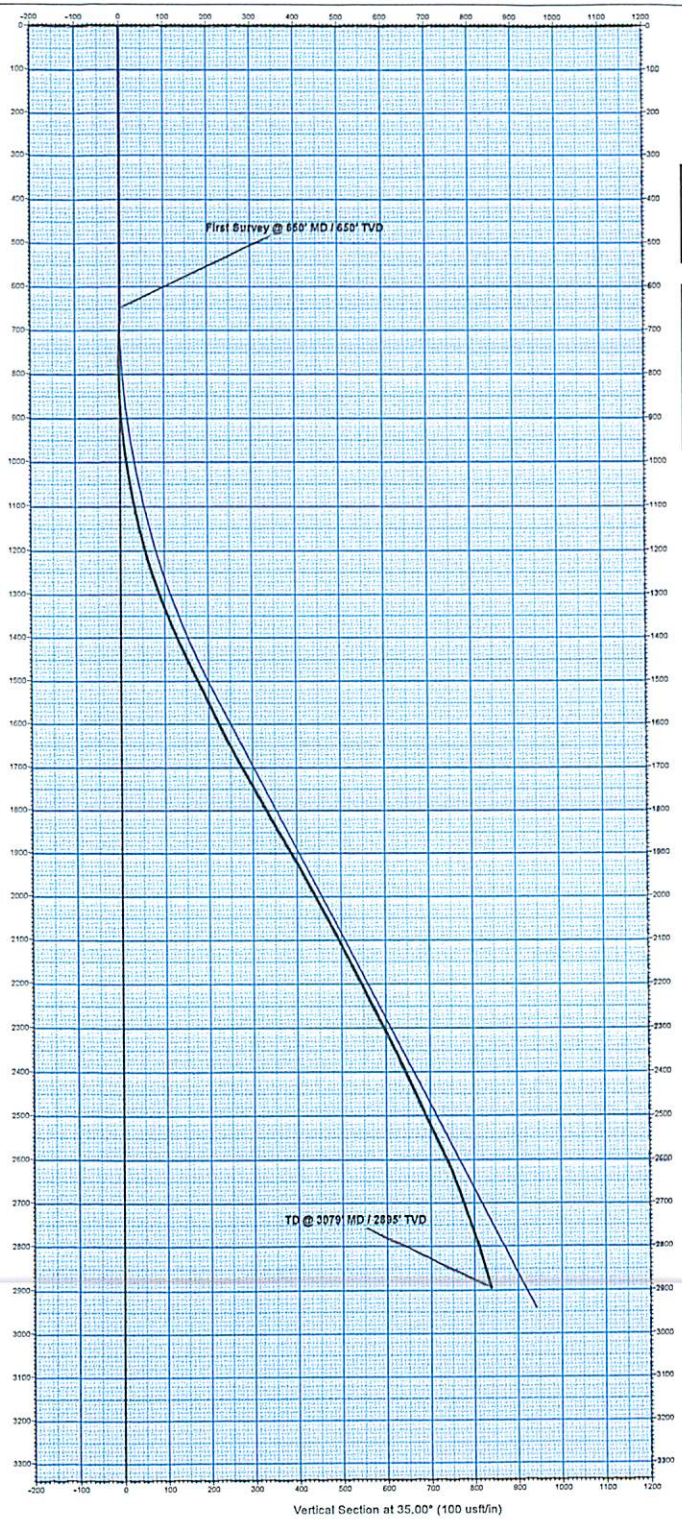
DESIGN TARGET DETAILS

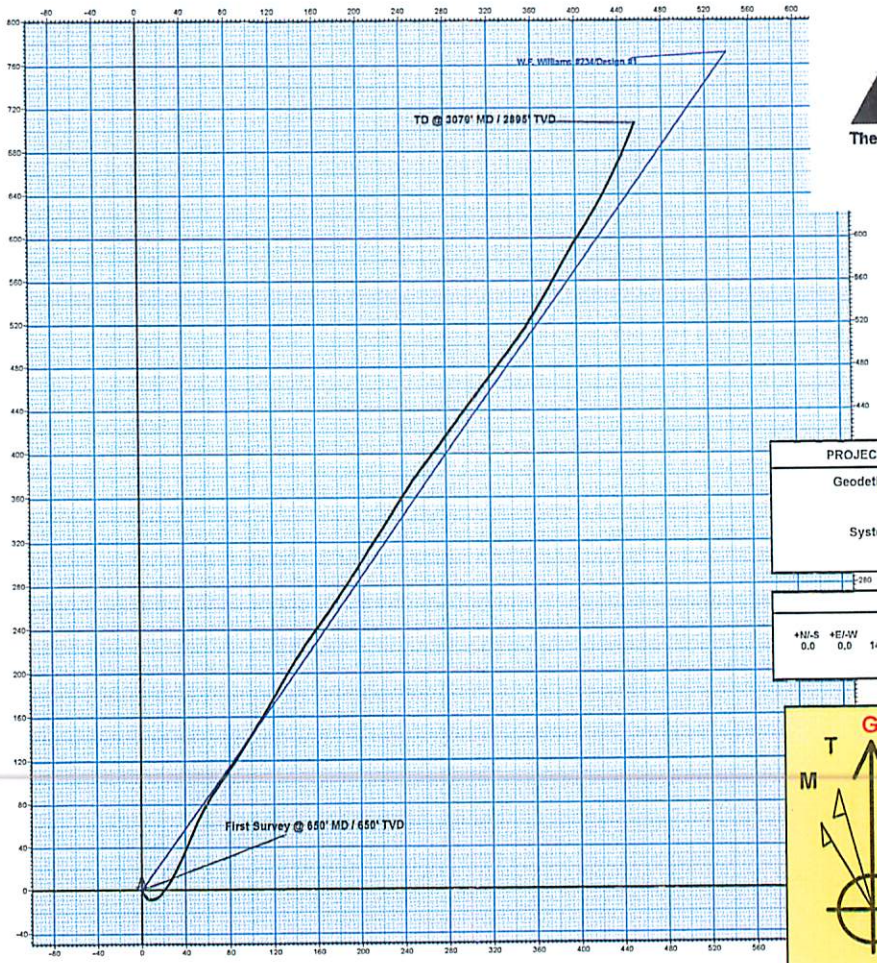
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL W.F. Williams #234 D#1 - plan hits target center	2762.0	696.3	497.514	262614.74	1782980.26	39° 16' 24.757 N	80° 29' 46.449 W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
650.0	0.00	0.00	650.0	0.0	0.0	0.0	0.0	First Survey @ 650' MD / 650' TVD
3079.0	16.70	21.50	2895.7	705.1	454.7	838.4	858.4	TD @ 3079' MD / 2895' TVD

Received
Office of Oil & Gas
JAN 26 2015





ADC
The APPALACHIAN DIRECTIONAL COMPANY

PROJECT DETAILS: Harrison 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

WELL DETAILS: W.F. Williams #234

Ground Level: 1168.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14261918.46	1782492.72	39° 16' 17.900 N	80° 29' 52.700 W

Azimuths to Grid North

Corection: -9.00°

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

33.05776

UNIVERSAL WELL SERVICES, INC.

Field Ticket - (This is not an invoice)

Start Date - 12/23/2014		End Date - 12/23/2014	
Customer: HG Energy LLC	Customer No.: 5069	Project No.	
5260 DUPONT RD	AFE / PO No.	Task No.	
		Formation: Upper Devonian	
PARKERSBURG, WV 26101	Job Type: Frac	Job Type Description: 1 Stage Crosslink Frac	Operator Name: Donald Tiziani
District: Buckhannon	Casing	New/Used: used	Size: 4.5
Bid Number:	Tubing		
Well Name and No.: W.F. Williams 234	Open Hole		
Well Type: Gas	County: Harrison	Perforations	
	Township:	Perforations	
State: WV	API #: 047-033-05776	Perforations	
		Depth	

From	To	Weight
1	2990	

Arrived on Location	8:15	Left Location	
Time	Date	Time	Date
		No. of Shots	
		No. of Shots	
		No. of Shots	
Drilling Contractor		Max PSI Allowed	4000

Product Code	Description	Unit of Measure	Quantity	List Price/Unit	Gross Amount	Item Discount	Net Amount
800000	Unit Mileage Charge Trucks and Vans (Except Bulk Units), Per Unit Mile	Mi	210.000				
800010	Crew & Light Duty Vehicle Mileage Charge, Per Unit Mile	Mi	70.000				
800051	Transport Delivery Charge (4 Hr Minimum), Per Hr	Hrs	4.000				
800070	Proppant and Bulk Delivery Charges, Per Ton Mile	TM	521.500				
802306	Minimum Pump Charge, <1500 HP, 1st 4 Hrs	Ea	1.000				
803401	0 - 10 BPM Computerized Blender, 1st 4 Hrs	Ea	1.000				
810010	Treatment Van, (WINFRAC Data Monitoring or Similar)	Job	1.000				
820035	Unihib G	Gal	0.250				
820505	LEB 10X - Lquid Enzyme Breaker	Qts	4.000				
820955	Cla-Chek G	Gal	6.000				
821125	Unilink 8.5 Crosslinker (Borate)	Gal	11.000				
822235	Unigel 19 XL	Lb	200.000				
822565	Iron Control - A (EC6673A)	Gal	5.000				
822936	NE-90G	Gal	2.000				
823805	Supersurf, Surfactant (Non-Ionic)	Gal	8.000				
825030	15% HCl Acid, Area 1	Gal	250.000				
833000	20-40 mesh White Sand, Area 1	CWT	149.000				
837000	Proppant Pumping Charge, 20/40 mesh or smaller	CWT	149.000				

	Mileage Calculation Section	Unit of Measure	Quantity
800000	Unit Mileage Charge Trucks and Vans (Except Bulk Units), Per Unit Mile	Mi	
		UNITS	
800070	Proppant and Bulk Delivery Charges, Per Ton Mile	TM	
		Loaded Total Miles	
860050	Cement Delivery Charge	TM	
		Loaded Total Miles	

Comments:

X

CUSTOMER AUTHORIZED AGENT SIGNATURE

Customer Representative:

UWS Authorized Agent:

Date:

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Office of Oil & Gas
JAN 26 2015

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47- 033 - 05801 County HARRISON District TEN MILE
Quad SALEM 7.5' Pad Name S.E. ADAMS Field/Pool Name WOLF SUMMIT
Farm name HILLARY HEIGHTS LTD Well Number 146
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,347,043 M Easting 542,228 M
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 434,7236 M Easting 542,159 M

Elevation (ft) 1,267' GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type ■ Deviated □ Horizontal □ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework □ Stimulate

Well Type □ Brine Disposal □ CBM □ Gas □ Oil ■ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion ■ Single □ Multiple Fluids Produced □ Brine □Gas □ NGL ■ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air □ Mud ■ Fresh Water □ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 9/17/13 (Rev 4/30/14) Date drilling commenced 11/6/14 Date drilling ceased 11/17/14
Date completion activities began 12/12/14 Date completion activities ceased 12/23/14
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft N Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2200' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 643'- 651' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by: _____

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API 47- 033 - 05801 Farm name HILLARY HEIGHTS LTD Well number 146

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	12 1/4"	11 5/8"	30'	Used	LS		Sand In
Surface	8 3/4"	7"	718'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	3235.55'	New	J-55		Y
Tubing							
Packer type and depth set							

Comment Details Circulated Est. 50 sks to surface on 7" surface cement job. Circulated Est. 10 sks to surface on 4 1/2" cement job.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	185	15.6	1.18	218	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	145/150	13.2/14.2	1.64/1.27	240/186	40'	8
Tubing							

Drillers TD (ft) 3297' Loggers TD (ft) 3228'
Deepest formation penetrated Fifth Sand Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 750'

Check all wireline logs run ☒ caliper ☒ density ☒ deviated/directional ☒ induction
☒ neutron ☒ resistivity ☒ gamma ray ☒ temperature ☐ sonic

Well cored ☐ Yes ☒ No Conventional Sidewall Were cuttings collected ☒ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING
20 Centralizers every 68 from bottom on 4 1/2", Centralizer placed mid string on 7"

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ☒ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ☒ No DETAILS

WERE TRACERS USED ☐ Yes ☒ No TYPE OF TRACER(S) USED

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API 47- 033 - 05801 Farm name HILLARY HEIGHTS LTD Well number 146

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	12/12/14	3124'	3136'	48	Fifth Sand

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	12/23/14	10	1609	2755	1870	13,900	246	

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Fifth Sand	2975'- 2990'	TVD	3122'- 3136'	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0	643	0	643	
Pittsburgh Coal	643	651	643	651	
Sand/Shale	651	2010	651	2082	
Big Lime	2010	2084	2082	2170	
Big Injun	2084	2146	2170	2240	
Shale	2146	2562	2240	2700	
Fifty Foot	2562	2589	2700	2728	
Shale	2589	2650	2728	2790	
Sand	2650	2804	2790	2950	
Shale	2804	2975	2950	3122	
Fifth Sand	2975	2990	3122	3136	Drilled directional N 14° W a distance of 716'
Shale	2990	3149	3136	3297	
TD	3149		3297		

Please insert additional pages as applicable.

Drilling Contractor Decker Drilling
Address 11565 State Route 676 City Vincent State OH Zip 45784

Logging Company Weatherford International
Address 777 North River Avenue City Weston State WV Zip 26452

Cementing Company Universal Services
Address Hall Rd City Buckhannon State WV Zip 26201

Stimulating Company Universal Services
Address Hall Rd City Buckhannon State WV Zip 26201

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations Manager Date 1/20/15

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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33.05801

HG Energy, LLC

Harrison County, West Virginia
S.E. Adams #146
S.E. Adam #146

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

26 November, 2014

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JAN 26 2015

ADC
The APPALACHIAN DIRECTIONAL COMPANY

33-05801

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well S.E. Adam #146
Project:	Harrison County, West Virginia	**TVD Reference:**	well @ 1275.0usft (Yost #2)
Site:	S.E. Adams #146	**MD Reference:**	well @ 1275.0usft (Yost #2)
Well:	S.E. Adam #146	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

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 S.E. Adams #146

Site Position:		**Northing:**	14,261,888.71 usft	**Latitude:**	39° 16' 17.800 N
From:	Lat/Long	**Easting:**	1,778,908.04 usft	**Longitude:**	80° 30' 38.300 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.31 °

Well S.E. Adam #146

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,261,888.71 usft	**Latitude:**	39° 16' 17.800 N
	+E/-W	0.0 usft	**Easting:**	1,778,908.04 usft	**Longitude:**	80° 30' 38.300 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,267.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	11/4/2014	-8.67	66.72	52,205

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	352.73

Survey Program **Date** 11/26/2014

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
800.0	3,292.0	MWD Survey #1 (Wellbore #1)	MWD default	MWD - Standard

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	14,261,888.71	1,778,908.04	39° 16' 17.800 N	80° 30' 38.300 W
800.0	0.00	0.00	800.0	0.0	0.0	14,261,888.71	1,778,908.04	39° 16' 17.800 N	80° 30' 38.300 W
FIRST SURVEY @ 800' MD / 800' TVD									
804.0	1.00	86.70	804.0	0.0	0.0	14,261,888.71	1,778,908.07	39° 16' 17.800 N	80° 30' 38.300 W
834.0	0.80	81.00	834.0	0.0	0.5	14,261,888.76	1,778,908.54	39° 16' 17.800 N	80° 30' 38.294 W
864.0	1.20	28.50	864.0	0.4	0.9	14,261,889.07	1,778,908.90	39° 16' 17.803 N	80° 30' 38.289 W
894.0	2.00	6.30	894.0	1.2	1.1	14,261,889.87	1,778,909.11	39° 16' 17.811 N	80° 30' 38.286 W
924.0	3.00	3.70	924.0	2.5	1.2	14,261,891.17	1,778,909.21	39° 16' 17.824 N	80° 30' 38.285 W
954.0	4.20	356.30	953.9	4.3	1.2	14,261,893.05	1,778,909.19	39° 16' 17.843 N	80° 30' 38.285 W
984.0	5.20	357.20	983.8	6.8	1.0	14,261,895.51	1,778,909.06	39° 16' 17.867 N	80° 30' 38.287 W
1,014.0	6.60	352.70	1,013.6	9.9	0.7	14,261,898.57	1,778,908.77	39° 16' 17.897 N	80° 30' 38.290 W
1,044.0	7.60	350.40	1,043.4	13.5	0.2	14,261,902.24	1,778,908.22	39° 16' 17.934 N	80° 30' 38.297 W

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33-05801

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well S.E. Adam #146
Project:	Harrison County, West Virginia	**TVD Reference:**	well @ 1275.0usft (Yost #2)
Site:	S.E. Adams #146	**MD Reference:**	well @ 1275.0usft (Yost #2)
Well:	S.E. Adam #146	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	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
1,074.0	8.40	351.10	1,073.1	17.6	-0.5	14,261,906.36	1,778,907.55	39° 16' 17.975 N	80° 30' 38.305 W
1,104.0	9.00	349.80	1,102.8	22.1	-1.2	14,261,910.83	1,778,906.80	39° 16' 18.019 N	80° 30' 38.314 W
1,134.0	9.80	349.50	1,132.4	26.9	-2.1	14,261,915.65	1,778,905.92	39° 16' 18.066 N	80° 30' 38.325 W
1,164.0	10.90	348.30	1,161.9	32.2	-3.2	14,261,920.94	1,778,904.87	39° 16' 18.119 N	80° 30' 38.338 W
1,194.0	11.90	348.70	1,191.3	38.0	-4.3	14,261,926.75	1,778,903.69	39° 16' 18.176 N	80° 30' 38.353 W
1,224.0	13.10	348.40	1,220.6	44.4	-5.6	14,261,933.12	1,778,902.40	39° 16' 18.239 N	80° 30' 38.369 W
1,254.0	14.20	347.40	1,249.7	51.3	-7.1	14,261,940.04	1,778,900.92	39° 16' 18.308 N	80° 30' 38.387 W
1,284.0	15.50	348.20	1,278.7	58.8	-8.7	14,261,947.55	1,778,899.30	39° 16' 18.382 N	80° 30' 38.407 W
1,314.0	16.80	349.00	1,307.5	67.0	-10.4	14,261,955.73	1,778,897.65	39° 16' 18.463 N	80° 30' 38.428 W
1,344.0	17.90	349.60	1,336.2	75.8	-12.0	14,261,964.52	1,778,895.99	39° 16' 18.550 N	80° 30' 38.448 W
1,374.0	19.20	349.50	1,364.6	85.2	-13.8	14,261,973.91	1,778,894.26	39° 16' 18.643 N	80° 30' 38.469 W
1,404.0	20.30	349.40	1,392.8	95.2	-15.6	14,261,983.88	1,778,892.40	39° 16' 18.742 N	80° 30' 38.492 W
1,434.0	22.10	349.20	1,420.8	105.8	-17.7	14,261,994.54	1,778,890.39	39° 16' 18.847 N	80° 30' 38.517 W
1,464.0	23.10	350.20	1,448.5	117.2	-19.7	14,262,005.88	1,778,888.33	39° 16' 18.959 N	80° 30' 38.543 W
1,494.0	24.00	351.20	1,476.0	129.0	-21.6	14,262,017.71	1,778,886.39	39° 16' 19.077 N	80° 30' 38.566 W
1,524.0	25.00	351.40	1,503.3	141.3	-23.5	14,262,030.00	1,778,884.51	39° 16' 19.198 N	80° 30' 38.590 W
1,554.0	25.30	351.90	1,530.5	153.9	-25.4	14,262,042.62	1,778,882.66	39° 16' 19.323 N	80° 30' 38.612 W
1,584.0	24.50	352.00	1,557.7	166.4	-27.1	14,262,055.13	1,778,880.89	39° 16' 19.447 N	80° 30' 38.634 W
1,614.0	24.50	352.50	1,585.0	178.7	-28.8	14,262,067.45	1,778,879.21	39° 16' 19.569 N	80° 30' 38.654 W
1,644.0	24.40	351.60	1,612.3	191.0	-30.5	14,262,079.75	1,778,877.50	39° 16' 19.690 N	80° 30' 38.675 W
1,674.0	23.90	350.80	1,639.7	203.2	-32.4	14,262,091.88	1,778,875.62	39° 16' 19.810 N	80° 30' 38.698 W
1,704.0	24.10	352.00	1,667.1	215.2	-34.2	14,262,103.94	1,778,873.79	39° 16' 19.930 N	80° 30' 38.721 W
1,734.0	24.70	353.20	1,694.4	227.5	-35.8	14,262,116.23	1,778,872.20	39° 16' 20.051 N	80° 30' 38.740 W
1,764.0	24.80	354.40	1,721.6	240.0	-37.2	14,262,128.72	1,778,870.84	39° 16' 20.175 N	80° 30' 38.757 W
1,794.0	24.20	353.60	1,748.9	252.4	-38.5	14,262,141.09	1,778,869.54	39° 16' 20.297 N	80° 30' 38.772 W
1,824.0	23.70	352.60	1,776.3	264.5	-40.0	14,262,153.18	1,778,868.08	39° 16' 20.417 N	80° 30' 38.790 W
1,854.0	24.00	352.90	1,803.8	276.5	-41.5	14,262,165.21	1,778,866.55	39° 16' 20.536 N	80° 30' 38.809 W
1,884.0	25.00	353.70	1,831.1	288.9	-42.9	14,262,177.57	1,778,865.10	39° 16' 20.658 N	80° 30' 38.826 W
1,914.0	26.20	354.30	1,858.1	301.7	-44.3	14,262,190.46	1,778,863.75	39° 16' 20.786 N	80° 30' 38.843 W
1,944.0	26.90	354.60	1,885.0	315.1	-45.6	14,262,203.81	1,778,862.45	39° 16' 20.918 N	80° 30' 38.858 W
1,974.0	28.10	354.70	1,911.6	328.9	-46.9	14,262,217.60	1,778,861.16	39° 16' 21.054 N	80° 30' 38.874 W
2,004.0	28.80	355.00	1,938.0	343.1	-48.2	14,262,231.83	1,778,859.88	39° 16' 21.195 N	80° 30' 38.889 W
2,034.0	29.30	355.30	1,964.2	357.6	-49.4	14,262,246.35	1,778,858.65	39° 16' 21.339 N	80° 30' 38.904 W
2,064.0	29.30	354.60	1,990.3	372.3	-50.7	14,262,260.97	1,778,857.35	39° 16' 21.483 N	80° 30' 38.919 W
2,094.0	28.60	354.00	2,016.6	386.7	-52.1	14,262,275.42	1,778,855.91	39° 16' 21.626 N	80° 30' 38.936 W
2,124.0	28.80	353.50	2,042.9	401.0	-53.7	14,262,289.74	1,778,854.34	39° 16' 21.768 N	80° 30' 38.955 W
2,154.0	29.00	353.10	2,069.2	415.4	-55.4	14,262,304.14	1,778,852.65	39° 16' 21.910 N	80° 30' 38.976 W
2,184.0	29.40	352.10	2,095.4	429.9	-57.3	14,262,318.66	1,778,850.77	39° 16' 22.054 N	80° 30' 38.999 W
2,214.0	29.00	352.40	2,121.6	444.4	-59.2	14,262,333.16	1,778,848.79	39° 16' 22.197 N	80° 30' 39.023 W
2,244.0	28.60	352.30	2,147.8	458.8	-61.2	14,262,347.48	1,778,846.87	39° 16' 22.339 N	80° 30' 39.047 W
2,274.0	26.30	350.50	2,174.5	472.4	-63.2	14,262,361.15	1,778,844.81	39° 16' 22.474 N	80° 30' 39.072 W
2,304.0	24.40	349.60	2,201.6	485.1	-65.4	14,262,373.81	1,778,842.59	39° 16' 22.600 N	80° 30' 39.099 W
2,334.0	23.50	348.70	2,229.0	497.1	-67.7	14,262,385.77	1,778,840.30	39° 16' 22.718 N	80° 30' 39.127 W
2,364.0	23.60	348.00	2,256.5	508.8	-70.2	14,262,397.50	1,778,837.88	39° 16' 22.834 N	80° 30' 39.157 W
2,394.0	24.50	348.40	2,283.9	520.8	-72.7	14,262,409.47	1,778,835.38	39° 16' 22.953 N	80° 30' 39.188 W
2,424.0	24.50	348.70	2,311.2	533.0	-75.1	14,262,421.67	1,778,832.91	39° 16' 23.073 N	80° 30' 39.219 W
2,454.0	24.20	347.50	2,338.5	545.1	-77.7	14,262,433.77	1,778,830.36	39° 16' 23.193 N	80° 30' 39.251 W
2,484.0	24.80	347.10	2,365.8	557.2	-80.4	14,262,445.90	1,778,827.63	39° 16' 23.313 N	80° 30' 39.285 W
2,514.0	25.10	347.10	2,393.0	569.5	-83.2	14,262,458.24	1,778,824.80	39° 16' 23.435 N	80° 30' 39.320 W
2,544.0	25.50	346.40	2,420.1	582.0	-86.2	14,262,470.72	1,778,821.86	39° 16' 23.559 N	80° 30' 39.356 W
2,574.0	25.40	346.70	2,447.2	594.5	-89.2	14,262,483.26	1,778,818.87	39° 16' 23.683 N	80° 30' 39.393 W
2,600.0	25.20	347.40	2,470.7	605.4	-91.7	14,262,494.09	1,778,816.38	39° 16' 23.790 N	80° 30' 39.424 W
2,630.0	24.20	344.20	2,498.0	617.5	-94.7	14,262,506.24	1,778,813.31	39° 16' 23.911 N	80° 30' 39.463 W
2,660.0	22.80	339.60	2,525.5	628.9	-98.4	14,262,517.60	1,778,809.61	39° 16' 24.023 N	80° 30' 39.509 W
2,690.0	21.50	335.00	2,553.3	639.3	-102.8	14,262,528.03	1,778,805.26	39° 16' 24.127 N	80° 30' 39.563 W

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Office of Oil & Gas
JAN 26 2015

33-05801

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well S.E. Adam #146
Project:	Harrison County, West Virginia	**TVD Reference:**	well @ 1275.0usft (Yost #2)
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Well:	S.E. Adam #146	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	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
2,720.0	20.10	331.40	2,581.3	648.8	-107.6	14,262,537.54	1,778,800.47	39° 16' 24.221 N	80° 30' 39.624 W
2,750.0	17.20	325.70	2,609.8	657.0	-112.5	14,262,545.74	1,778,795.50	39° 16' 24.302 N	80° 30' 39.686 W
2,780.0	15.20	321.30	2,638.6	663.8	-117.5	14,262,552.47	1,778,790.54	39° 16' 24.369 N	80° 30' 39.749 W
2,810.0	14.00	318.40	2,667.6	669.5	-122.4	14,262,558.25	1,778,785.67	39° 16' 24.426 N	80° 30' 39.811 W
2,840.0	13.00	312.20	2,696.8	674.5	-127.3	14,262,563.23	1,778,780.76	39° 16' 24.476 N	80° 30' 39.873 W
2,870.0	12.50	310.50	2,726.0	678.9	-132.2	14,262,567.61	1,778,775.79	39° 16' 24.519 N	80° 30' 39.936 W
2,900.0	11.80	309.00	2,755.4	682.9	-137.1	14,262,571.65	1,778,770.94	39° 16' 24.560 N	80° 30' 39.997 W
2,930.0	11.50	308.20	2,784.7	686.7	-141.8	14,262,575.43	1,778,766.21	39° 16' 24.597 N	80° 30' 40.057 W
2,960.0	10.90	305.00	2,814.2	690.2	-146.5	14,262,578.90	1,778,761.53	39° 16' 24.632 N	80° 30' 40.116 W
2,990.0	9.80	296.00	2,843.7	692.9	-151.1	14,262,581.65	1,778,756.91	39° 16' 24.659 N	80° 30' 40.175 W
3,020.0	9.00	287.70	2,873.3	694.8	-155.7	14,262,583.48	1,778,752.38	39° 16' 24.678 N	80° 30' 40.232 W
3,050.0	8.00	279.70	2,903.0	695.8	-159.9	14,262,584.55	1,778,748.09	39° 16' 24.688 N	80° 30' 40.287 W
3,080.0	7.00	269.60	2,932.7	696.2	-163.8	14,262,584.89	1,778,744.20	39° 16' 24.692 N	80° 30' 40.336 W
3,110.0	6.30	259.70	2,962.5	695.9	-167.3	14,262,584.58	1,778,740.76	39° 16' 24.689 N	80° 30' 40.380 W
3,140.0	5.90	251.30	2,992.3	695.1	-170.4	14,262,583.79	1,778,737.68	39° 16' 24.681 N	80° 30' 40.419 W
3,170.0	5.00	242.00	3,022.2	694.0	-173.0	14,262,582.68	1,778,735.06	39° 16' 24.671 N	80° 30' 40.453 W
3,200.0	4.50	231.30	3,052.1	692.6	-175.1	14,262,581.33	1,778,732.99	39° 16' 24.657 N	80° 30' 40.479 W
3,230.0	4.30	218.60	3,082.0	691.0	-176.7	14,262,579.72	1,778,731.37	39° 16' 24.642 N	80° 30' 40.500 W
3,260.0	4.50	211.60	3,111.9	689.1	-178.0	14,262,577.84	1,778,730.05	39° 16' 24.623 N	80° 30' 40.517 W
3,292.0	4.50	211.60	3,143.8	687.0	-179.3	14,262,575.70	1,778,728.73	39° 16' 24.602 N	80° 30' 40.534 W

TD @ 3292' MD / 3144' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
800.0	800.0	0.0	0.0	FIRST SURVEY @ 800' MD / 800' TVD
3,292.0	3,143.8	687.0	-179.3	TD @ 3292' MD / 3144' TVD

Checked By: _____ Approved By: _____ Date: _____

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33-05801

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JAN 26 2015

HG Energy, LLC

Harrison County, West Virginia
S.E. Adams #146
S.E. Adam #146
Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

26 November, 2014

ADC
The APPALACHIAN DIRECTIONAL COMPANY

Received
Office of Oil & Gas
JAN 26 2015

HG Energy EOW Report

33.05801

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well S.E. Adam #146
Project:	Harrison County, West Virginia	TVD Reference:	well @ 1275.0usft (Yost #2)
Site:	S.E. Adams #146	MD Reference:	well @ 1275.0usft (Yost #2)
Well:	S.E. Adam #146	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM Compass

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 S.E. Adams #146

Site Position:		Northing:	14,261,888.71 usft	Latitude:	39° 16' 17.800 N
From:	Lat/Long	Easting:	1,778,908.04 usft	Longitude:	80° 30' 38.300 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.31 °

Well S.E. Adam #146

Well Position	+N/-S	0.0 usft	Northing:	14,261,888.71 usft	Latitude:	39° 16' 17.800 N
	+E/-W	0.0 usft	Easting:	1,778,908.04 usft	Longitude:	80° 30' 38.300 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,267.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/4/2014	-8.67	66.72	52,205

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	352.73

Survey Program Date 11/26/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
800.0	3,292.0	MWD Survey #1 (Wellbore #1)	MWD default	MWD - Standard

Received
Office of Oil & Gas
JAN 26 2015

33-05801

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well S.E. Adam #146
Project:	Harrison County, West Virginia	**TVD Reference:**	well @ 1275.0usft (Yost #2)
Site:	S.E. Adams #146	**MD Reference:**	well @ 1275.0usft (Yost #2)
Well:	S.E. Adam #146	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	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	0.00	0.0	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.0	0.00
FIRST SURVEY @ 800' MD / 800' TVD									
804.0	1.00	86.70	804.0	0.0	0.0	0.0	25.00	0.0	86.70
834.0	0.80	81.00	834.0	0.0	0.5	0.0	0.73	0.5	84.34
864.0	1.20	28.50	864.0	0.4	0.9	0.2	3.18	0.9	67.36
894.0	2.00	6.30	894.0	1.2	1.1	1.0	3.33	1.6	42.73
924.0	3.00	3.70	924.0	2.5	1.2	2.3	3.35	2.7	25.55
954.0	4.20	356.30	953.9	4.3	1.2	4.2	4.28	4.5	14.91
984.0	5.20	357.20	983.8	6.8	1.0	6.6	3.34	6.9	8.52
1,014.0	6.60	352.70	1,013.6	9.9	0.7	9.7	4.91	9.9	4.25
1,044.0	7.60	350.40	1,043.4	13.5	0.2	13.4	3.46	13.5	0.77
1,074.0	8.40	351.10	1,073.1	17.6	-0.5	17.6	2.69	17.7	358.42
1,104.0	9.00	349.80	1,102.8	22.1	-1.2	22.1	2.10	22.2	356.79
1,134.0	9.80	349.50	1,132.4	26.9	-2.1	27.0	2.67	27.0	355.49
1,164.0	10.90	348.30	1,161.9	32.2	-3.2	32.4	3.74	32.4	354.39
1,194.0	11.90	348.70	1,191.3	38.0	-4.3	38.3	3.34	38.3	353.48
1,224.0	13.10	348.40	1,220.6	44.4	-5.6	44.8	4.01	44.8	352.77
1,254.0	14.20	347.40	1,249.7	51.3	-7.1	51.8	3.75	51.8	352.10
1,284.0	15.50	348.20	1,278.7	58.8	-8.7	59.5	4.39	59.5	351.55
1,314.0	16.80	349.00	1,307.5	67.0	-10.4	67.8	4.40	67.8	351.19
1,344.0	17.90	349.60	1,336.2	75.8	-12.0	76.7	3.71	76.8	350.97
1,374.0	19.20	349.50	1,364.6	85.2	-13.8	86.3	4.33	86.3	350.81
1,404.0	20.30	349.40	1,392.8	95.2	-15.6	96.4	3.67	96.4	350.67
1,434.0	22.10	349.20	1,420.8	105.8	-17.7	107.2	6.00	107.3	350.53
1,464.0	23.10	350.20	1,448.5	117.2	-19.7	118.7	3.57	118.8	350.45
1,494.0	24.00	351.20	1,476.0	129.0	-21.6	130.7	3.28	130.8	350.47

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JAN 26 2015

33-05801

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well S.E. Adam #146
Project:	Harrison County, West Virginia	TVD Reference:	well @ 1275.0usft (Yost #2)
Site:	S.E. Adams #146	MD Reference:	well @ 1275.0usft (Yost #2)
Well:	S.E. Adam #146	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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 (°)
1,524.0	25.00	351.40	1,503.3	141.3	-23.5	143.1	3.34	143.2	350.55
1,554.0	25.30	351.90	1,530.5	153.9	-25.4	155.9	1.23	156.0	350.64
1,584.0	24.50	352.00	1,557.7	166.4	-27.1	168.5	2.67	168.6	350.73
1,614.0	24.50	352.50	1,585.0	178.7	-28.8	181.0	0.69	181.0	350.84
1,644.0	24.40	351.60	1,612.3	191.0	-30.5	193.4	1.29	193.5	350.92
1,674.0	23.90	350.80	1,639.7	203.2	-32.4	205.6	1.99	205.7	350.93
1,704.0	24.10	352.00	1,667.1	215.2	-34.2	217.8	1.76	217.9	350.96
1,734.0	24.70	353.20	1,694.4	227.5	-35.8	230.2	2.59	230.3	351.05
1,764.0	24.80	354.40	1,721.6	240.0	-37.2	242.8	1.71	242.9	351.19
1,794.0	24.20	353.60	1,748.9	252.4	-38.5	255.2	2.29	255.3	351.33
1,824.0	23.70	352.60	1,776.3	264.5	-40.0	267.4	2.15	267.5	351.41
1,854.0	24.00	352.90	1,803.8	276.5	-41.5	279.5	1.08	279.6	351.47
1,884.0	25.00	353.70	1,831.1	288.9	-42.9	292.0	3.51	292.0	351.55
1,914.0	26.20	354.30	1,858.1	301.7	-44.3	304.9	4.09	305.0	351.65
1,944.0	26.90	354.60	1,885.0	315.1	-45.6	318.3	2.38	318.4	351.77
1,974.0	28.10	354.70	1,911.6	328.9	-46.9	332.2	4.00	332.2	351.89
2,004.0	28.80	355.00	1,938.0	343.1	-48.2	346.5	2.38	346.5	352.01
2,034.0	29.30	355.30	1,964.2	357.6	-49.4	361.0	1.74	361.0	352.14
2,064.0	29.30	354.60	1,990.3	372.3	-50.7	375.7	1.14	375.7	352.25
2,094.0	28.60	354.00	2,016.6	386.7	-52.1	390.2	2.53	390.2	352.32
2,124.0	28.80	353.50	2,042.9	401.0	-53.7	404.6	1.04	404.6	352.37
2,154.0	29.00	353.10	2,069.2	415.4	-55.4	419.1	0.93	419.1	352.41
2,184.0	29.40	352.10	2,095.4	429.9	-57.3	433.7	2.10	433.7	352.41
2,214.0	29.00	352.40	2,121.6	444.4	-59.2	448.4	1.42	448.4	352.41
2,244.0	28.60	352.30	2,147.8	458.8	-61.2	462.8	1.34	462.8	352.41
2,274.0	26.30	350.50	2,174.5	472.4	-63.2	476.6	8.15	476.7	352.38
2,304.0	24.40	349.60	2,201.6	485.1	-65.4	489.5	6.46	489.5	352.32

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Office of Oil & Gas
JAN 26 2015

33.05801

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well S.E. Adam #146
Project:	Harrison County, West Virginia	TVD Reference:	well @ 1275.0usft (Yost #2)
Site:	S.E. Adams #146	MD Reference:	well @ 1275.0usft (Yost #2)
Well:	S.E. Adam #146	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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 (°)
2,334.0	23.50	348.70	2,229.0	497.1	-67.7	501.6	3.24	501.6	352.24
2,364.0	23.60	348.00	2,256.5	508.8	-70.2	513.6	0.99	513.6	352.15
2,394.0	24.50	348.40	2,283.9	520.8	-72.7	525.8	3.05	525.8	352.06
2,424.0	24.50	348.70	2,311.2	533.0	-75.1	538.2	0.41	538.2	351.98
2,454.0	24.20	347.50	2,338.5	545.1	-77.7	550.5	1.93	550.6	351.89
2,484.0	24.80	347.10	2,365.8	557.2	-80.4	562.9	2.08	563.0	351.79
2,514.0	25.10	347.10	2,393.0	569.5	-83.2	575.5	1.00	575.6	351.69
2,544.0	25.50	346.40	2,420.1	582.0	-86.2	588.2	1.66	588.4	351.58
2,574.0	25.40	346.70	2,447.2	594.5	-89.2	601.0	0.54	601.2	351.47
2,600.0	25.20	347.40	2,470.7	605.4	-91.7	612.1	1.38	612.3	351.39
2,630.0	24.20	344.20	2,498.0	617.5	-94.7	624.5	5.56	624.7	351.28
2,660.0	22.80	339.60	2,525.5	628.9	-98.4	636.3	7.69	636.5	351.10
2,690.0	21.50	335.00	2,553.3	639.3	-102.8	647.2	7.22	647.5	350.87
2,720.0	20.10	331.40	2,581.3	648.8	-107.6	657.2	6.32	657.7	350.59
2,750.0	17.20	325.70	2,609.8	657.0	-112.5	666.0	11.41	666.6	350.28
2,780.0	15.20	321.30	2,638.6	663.8	-117.5	673.3	7.82	674.1	349.96
2,810.0	14.00	318.40	2,667.6	669.5	-122.4	679.6	4.68	680.6	349.64
2,840.0	13.00	312.20	2,696.8	674.5	-127.3	685.2	5.86	686.4	349.31
2,870.0	12.50	310.50	2,726.0	678.9	-132.2	690.2	2.08	691.7	348.98
2,900.0	11.80	309.00	2,755.4	682.9	-137.1	694.8	2.56	696.6	348.65
2,930.0	11.50	308.20	2,784.7	686.7	-141.8	699.1	1.14	701.2	348.33
2,960.0	10.90	305.00	2,814.2	690.2	-146.5	703.2	2.88	705.6	348.02
2,990.0	9.80	296.00	2,843.7	692.9	-151.1	706.5	6.51	709.2	347.70
3,020.0	9.00	287.70	2,873.3	694.8	-155.7	708.9	5.24	712.0	347.37
3,050.0	8.00	279.70	2,903.0	695.8	-159.9	710.5	5.15	714.0	347.05
3,080.0	7.00	269.60	2,932.7	696.2	-163.8	711.3	5.50	715.2	346.76
3,110.0	6.30	259.70	2,962.5	695.9	-167.3	711.4	4.47	715.7	346.48

33-05801

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well S.E. Adam #146
Project:	Harrison County, West Virginia	**TVD Reference:**	well @ 1275.0usft (Yost #2)
Site:	S.E. Adams #146	**MD Reference:**	well @ 1275.0usft (Yost #2)
Well:	S.E. Adam #146	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	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 (°)
3,140.0	5.90	251.30	2,992.3	695.1	-170.4	711.1	3.26	715.7	346.23
3,170.0	5.00	242.00	3,022.2	694.0	-173.0	710.3	4.19	715.2	346.00
3,200.0	4.50	231.30	3,052.1	692.6	-175.1	709.2	3.38	714.4	345.82
3,230.0	4.30	218.60	3,082.0	691.0	-176.7	707.8	3.31	713.2	345.66
3,260.0	4.50	211.60	3,111.9	689.1	-178.0	706.1	1.91	711.7	345.52
3,292.0	4.50	211.60	3,143.8	687.0	-179.3	704.2	0.00	710.0	345.37

TD @ 3292' MD / 3144' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
800.0	800.0	0.0	0.0	FIRST SURVEY @ 800' MD / 800' TVD
3,292.0	3,143.8	687.0	-179.3	TD @ 3292' MD / 3144' TVD

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
JAN 26 2015

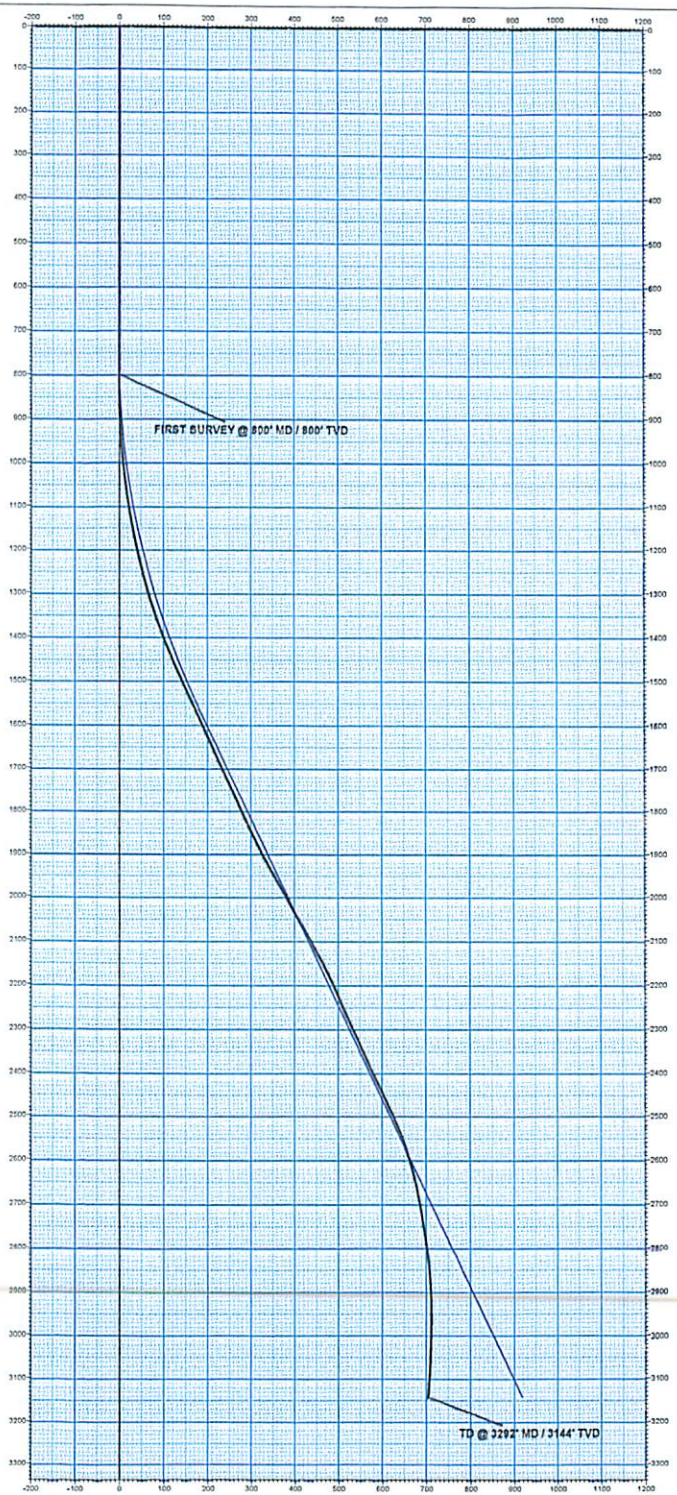
Company Name: HG Energy, LLC
S.E. Adam #146
Harrison County, West Virginia
Rig: Yost #2
Created By: Jerry Arsenault
Date: 11/26/2014

S.E. Adam #146
Harrison County, West Virginia
Q141183 & AM-141143
Design #1

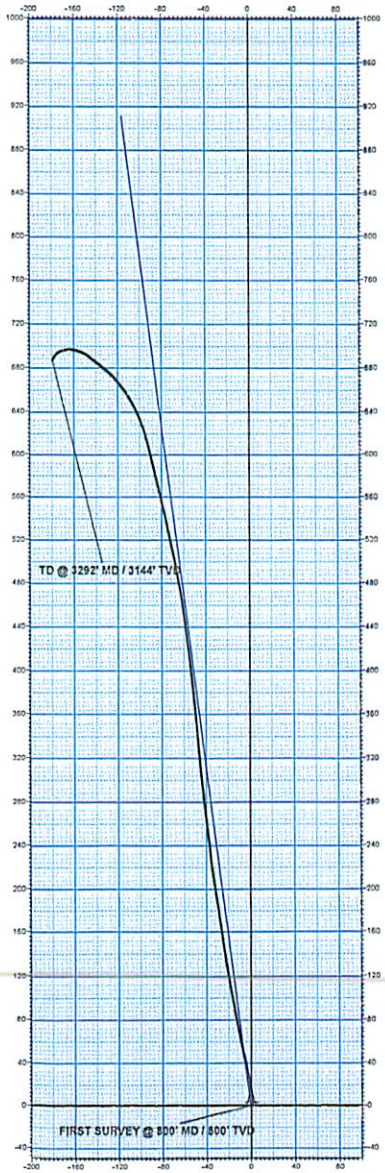
HG Energy

ADC
The APPALACHIAN DIRECTIONAL COMPANY

33-05801



Vertical Section at 352.73° (100 usft/in)



PROJECT DETAILS:	Harrison 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

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
S.E. Adams #146 - plan hits target center	2960.0	827.3	-105.5	14262716.01	1778802.60	39° 16' 25.985 N	80° 30' 39.586 W

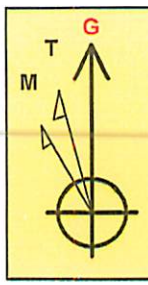
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.0	FIRST SURVEY @ 800' MD / 800' TVD
3292.0	4.50	211.60	3143.8	687.0	-179.3	704.2	755.4	TD @ 3292' MD / 3144' TVD

WELL DETAILS: S.E. Adam #146

Ground Level: 1267.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14261888.71	1778906.04	39° 16' 17.800 N	80° 30' 36.300 W



Azimuths to Grid North

Correction: -8.98°

Magnetic Field
Strength: 52205.2snT
Dip Angle: 66.72°
Date: 11/4/2014
Model: IGRF2010

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UNIVERSAL WELL SERVICES, INC.

Field Ticket - (This is not an invoice)

Start Date -	12/23/2014	End Date -	12/23/2014
Customer	HG Energy LLC	Customer No.	5069
Project No.		Task No.	
5260 DUPONT RD		AFE / PO No.	
Formation	Upper Devonian		
PARKERSBURG, WV 26101		Job Type	Frac
Job Type Description	1 Stage Crosslink Frac	Operator Name	Donald Tiziani
District	Buckhannon	Casing	
New/Used	used	Size	4.5
From	1	To	2990
Weight		Bid Number:	
Tubing		Well Name and No.	SE Adams 146
Arrived on Location	8:15	Left Location	
Open Hole		Time	
Date		Time	
Date		Well Type	Gas
County: Harrison		Perforations	
No. of Shots		Township:	
Perforations		No. of Shots	
State	WV	API #	047-033-05801
Perforations		No. of Shots	
Depth		Drilling Contractor	
Max PSI Allowed	4000		

Product Code	Description	Unit of Measure	Quantity	List Price/Unit	Gross Amount	Item Discount	Net Amount
800000	Unit Mileage Charge Trucks and Vans (Except Bulk Units), Per Unit Mile	Mi	210.000				
800010	Crew & Light Duty Vehicle Mileage Charge, Per Unit Mile	Mi	70.000				
800051	Transport Delivery Charge (4 Hr Minimum), Per Hr	Hrs	4.000				
800070	Proppant and Bulk Delivery Charges, Per Ton Mile	TM	486.500				
802306	Minimum Pump Charge, <1500 HP, 1st 4 Hrs	Ea	1.000				
803401	0 - 10 BPM Computerized Blender, 1st 4 Hrs	Ea	1.000				
810010	Treatment Van, (WINFRAC Data Monitoring or Similar)	Job	1.000				
820035	Unihib G	Gal	0.250				
820505	LEB 10X - Lquid Enzyme Breaker	Qts	4.000				
820955	Cla-Chek G	Gal	8.000				
821125	Unilink 8.5 Crosslinker (Borate)	Gal	11.000				
822235	Unigel 19 XL	Lb	200.000				
822565	Iron Control - A (EC6673A)	Gal	5.000				
822936	NE-90G	Gal	2.000				
823805	Supersurf, Surfactant (Non-Ionic)	Gal	11.000				
825030	15% HCl Acid, Area 1	Gal	250.000				
833000	20-40 mesh White Sand, Area 1	CWT	139.000				
837000	Proppant Pumping Charge, 20/40 mesh or smaller	CWT	139.000				

Mileage Calculation Section		Unit of Measure	Quantity
800000	Unit Mileage Charge Trucks and Vans (Except Bulk Units), Per Unit Mile	Mi	
		UNITS	
800070	Proppant and Bulk Delivery Charges, Per Ton Mile	TM	
		Loaded Total Miles	
860050	Cement Delivery Charge	TM	
		Loaded Total Miles	

Comments:

x

CUSTOMER AUTHORIZED AGENT SIGNATURE

Customer Representative:

UWS Authorized Agent:

Date:

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Version: 12-01-2014

JK

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 041 - 00181 County Lewis District Freeman's Creek
Quad Big Issac Pad Name _____ Field/Pool Name Fink Storage
Farm name J. A. Riffee Well Number AW9438
Operator (as registered with the OOG) Dominion Transmission Inc.
Address 445 W Main St. City Clarksburg State WV Zip 26301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 43331278.81 Easting 535912.74
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 1191.6 GL Type of Well ☐New ■ Existing Type of Report ☐Interim ■Final

Permit Type ☐ Deviated ☐ Horizontal ☐ Horizontal 6A ■ Vertical Depth Type ☐ Deep ■ Shallow

Type of Operation ☐ Convert ☐ Deepen ☐ Drill ☐ Plug Back ☐ Redrilling ■ Rework ☐ Stimulate

Well Type ☐ Brine Disposal ☐ CBM ☐ Gas ☐ Oil ☐ Secondary Recovery ☐ Solution Mining ■ Storage ☐ Other _____

Type of Completion ■ Single ☐ Multiple Fluids Produced ☐ Brine ■Gas ☐ NGL ☐ Oil ☐ Other _____
Drilled with ■ Cable ☐ Rotary

Drilling Media Surface hole ☐ Air ☐ Mud ☐Fresh Water Intermediate hole ☐ Air ☐ Mud ☐ Fresh Water ☐ Brine
Production hole ☐ Air ☐ Mud ☐ Fresh Water ■ Brine
Mud Type(s) and Additive(s)
Brine

Date permit issued 08/12/14 (Rework) Date drilling commenced 4/21/1950 (9/15/14) Date drilling ceased 9/25/1950
Date completion activities began NA Date completion activities ceased 12/10/2014
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 145', 206' Open mine(s) (Y/N) depths NO
Salt water depth(s) ft NA Void(s) encountered (Y/N) depths NO
Coal depth(s) ft 200'-206' Cavern(s) encountered (Y/N) depths NO
Is coal being mined in area (Y/N) NO

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API 47- 041 - 00181 Farm name J. A. Riffee Well number AW9438

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor		~20"	16'	existing	wood		
Surface	15"	11-3/4"	262'	New	H40, 42#		Y
Coal							
Intermediate 1	9-7/8"	8-5/8"	1990'	existing	J55, 24#		Y
Intermediate 2	7-7/8"	7" stub	1850'-2300'	existing	J55, 20#		stub cemented 2300'-1850'
Intermediate 3							
Production	6.25"	4-1/2"	2280'	NEW	K55, 11.6#		Y
Tubing							
Packer type and depth set	Halliburton 4-1/2" formation packer shoe set at						

Comment Details 8-5/8" and 11-3/4" csg were squeeze cemented together with a total of 611 sacks from 1650' to surface. Old 7" casing was cut and pulled from 1850'. Remaining 7" casing is cemented from 1850'-2300'. 4-1/2" casing was cemented to surface with good returns.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Class A	96	15.6	1.18	113	surface	
Coal							
Intermediate 1	Class A	570	15.6	1.21	689	surface	
Intermediate 2	Class A	25	15.6	1.18	29.5	1850' (csg cut top)	
Intermediate 3							
Production	Class A	465	15.6	1.18	548.7	surface	72
Tubing							

Drillers TD (ft) 2383 Loggers TD (ft) 2383
Deepest formation penetrated Gantz Plug back to (ft) _____
Plug back procedure _____

Kick off depth (ft) _____

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction
■ neutron ☐ resistivity ■ gamma ray ■ temperature ☐ sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ☐ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING
4-1/2" casing has centralizers on joints 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 51

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? ■ Yes ☐ No DETAILS _____

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED _____

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API 47- 041 - 00181 Farm name J. A. Riffee Well number AW9438

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

Please insert additional pages as applicable.

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API 47- 041 - 00181 Farm name J. A. Riffee Well number AW9438

PRODUCING FORMATION(S)	DEPTHS	
Gantz	2328-2351' TVD	2328'-2351' MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		fresh water at 145
Native Coal	200	206			fresh water at 206
Dunkard	950	996			
Gas Sand	1078	1112			
1st Salt Sand	1260	1299			
2nd Salt	1332	1487			show of oil at 1338
3rd Salt	1525	1667			
Little Lime	1941	1957			
Big Lime	1981	2041			
Injun Sand	2041	2160			
Squaw Sand	2162	2224			
Gantz Sand	2328	2351			

Please insert additional pages as applicable.

Drilling Contractor Key Energy
Address _____ City Buckhannon State WV Zip _____

Logging Company Baker Atlas
Address _____ City Buckhannon State WV Zip _____

Cementing Company Halliburton/Baker Hughes
Address _____ City Homer City/Clarksburg State PA/WV Zip _____

Stimulating Company NA
Address _____ City _____ State _____ Zip _____
Please insert additional pages as applicable.

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Completed by Matthew Goralczyk Telephone 304-627-3354
Signature Matt E Goralczyk Title Engineer III Date 12/29/2014

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

WR-35
Rev (9-11)

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas
Well Operator's Report of Well Work

Date: 12/5/2012
API: 47-051-01546

Farm Name: Sand Hill Land _____ Operator Well No: SHL-6D-HS-A

LOCATION: Elevation: 831.29 Quadrangle: MAJORSVILLE

District: County: MARSHALL
Latitude: _____ Feet South of Deg. Min. Sec. 39.956133
Longitude: Feet South of Deg. Min. Sec. -80.575608

Company: CNX Gas Company	Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. Ft.
Address: 200 Evergreene Drive Waynesburg, PA 15370	20	113.0	113.0	Cemented in
Agent: Steven Greene	13 3/8	637.8	637.8	585 sxs (133 bbls) cement to surface
Inspector: Derek Haught	9 5/8	2,667.0	2,667.0	950 sxs (216 bbls) cement to surface
Date Permit Issued: 1/3/2011	5 ½	9,051.0	9,051.0	1535 sxs (347 bbls) cement
Date Well Work Commenced: 7/2/2012				
Date Well Work Completed: 11/3/2012				
Verbal Plugging:				
Date Permission granted on: 7/2/2012				
Rotary Cable Rig X				
Total Vertical Depth (ft): Original Hole – 6214.51'				
Total Measured Depth (ft): 9,111'				
Fresh Water Depth (ft): 200'				
Salt Water Depth (ft): None				
Is coal being mined in the area (N/Y)? Y				
~~Coal Depths (ft.): 314' – 320'; Pittsburgh seam~~				
Void(s) encountered (N/Y) Depth(s)				

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WV Department of
Environmental Protection

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation MARCELLUS Pay zone depth (ft) 6,208.51'
Gas: Initial open flow 840 MCF/d Oil: Initial open flow 9 Bbl/d
Final open flow 867 MCF/d Final open flow 9 Bbl/d
Time of open flow between initial and final tests 24 Hours
Static rock Pressure 817 psig (surface pressure) after 24 Hours

Second producing formation _____ Pay zone depth (ft)_____
Gas: Initial open flow_____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow_____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after Hours

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

_____ _____

Signature Date

JK

Were core samples taken? Yes__ No _x__ Were cuttings caught during drilling? Yes_x_ No___

Were Electrical, Mechanical or Geophyisical logs recorded on this well? If yes, please list: Gamma Ray Logs

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing or Stimulating:

Top Depth (ftKB)	Bottom Depth (ftKB)
6,467.00	8,931.00

Plug Back Details including Plug Type and Depth(s):

Surface:

Formations Encountered:

Formation Name	Drilling Top MD (ftKB)	Drilling Bottom MD (ftKB)
Rhinestreet	5,414.6	5,856.3
Cashaqua	5,856.3	5,972.6
Middlesex	5,972.6	6,023.2
West River	6,023.2	6,100.7
Burkett	6,100.7	6,137.6
Tully	6,137.6	6,187.7
Hamilton	6,187.7	6,411.3
Marcellus	6,411.3	

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Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 590 - 2246 County MINGO District MAGNOLIA
Quad MAJESTIC Pad Name _____ Field/Pool Name _____
Farm name LOGAN COAL AND TIMBER CORPORATION Well Number 2353
Operator (as registered with the OOG) QUALITY NATURAL GAS, LLC
Address P.O. BOX 480 City ALLEN State KY Zip 41601

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing _____ Easting _____
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 740.8 GL Type of Well ■New □ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal □ Horizontal 6A ■ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework □ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced □ Brine ■Gas □ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air □ Mud □ Fresh Water □ Brine
Production hole ■ Air □ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 9/23/2014 Date drilling commenced 10/28/2014 Date drilling ceased 11/03/2014
Date completion activities began 11/25/2014 Date completion activities ceased 12/15/2014
Verbal plugging (Y/N) N/A Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft NONE Open mine(s) (Y/N) depths NONE
Salt water depth(s) ft NONE Void(s) encountered (Y/N) depths NONE
Coal depth(s) ft NONE Cavern(s) encountered (Y/N) depths NONE
Is coal being mined in area (Y/N) NO

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Reviewed by:
_____

API 47- 590 - 2246 Farm name LOGAN COAL AND TIMBER CORPORATION Well number 2353

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	17 1/2"	13 3/8"	42'	New	LS		
Surface	12 1/4"	9 5/8"	309'	New	LS	44', 265'	YES
Coal							
Intermediate 1	8 7/8"	7"	2035'	New	LS		YES
Intermediate 2							
Intermediate 3							
Production	6 3/8"	4 1/2"	4217'	New	L-65		500' up in 7"
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A						
Surface	Class A	110	15.5	1.18	129.8	Surface	8
Coal							
Intermediate 1	Class A	100, 160	15.6, 12.3	1.18, 1.84	118, 294.4	Surface	8
Intermediate 2							
Intermediate 3							
Production	Class A	180	13.6	1.90	342	500' up in 7"	8
Tubing							

Drillers TD (ft) 4,230' Loggers TD (ft) 4,255'

Deepest formation penetrated HARRELL SHALE Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) N/A

Check all wireline logs run ■ caliper ■ density □ deviated/directional □ induction □ neutron □ resistivity ■ gamma ray ■ temperature ■ sonic

Well cored □ Yes ■ No □ Conventional □ Sidewall Were cuttings collected □ Yes □ No
For drilling purposes only.

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 4 1/2" CASING - 4317', 4040.2', 3863.4', 3686.6' 3509.8', 3333', 3156.2', 2979.4', 2802.6' and 2625.80'

WAS WELL COMPLETED AS SHOT HOLE □ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS

WERE TRACERS USED □ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 590 - 2246 Farm name LOGAN COAL AND TIMBER CORPORATION Well number 2353

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	11/25/2014	4025	4127	35	SHALE
2	11/25/2014	2965	2978	20	BEREA
3	12/15/2014	2228	2275	26	LIME

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	11/25/14	94,636cfm	3,101	3,722	1,216	NONE	NONE	901,395
2	11/25/14	99,677cfm	3,331	3,450	1,268	NONE	NONE	901,320
3	12/15/14	4,863cfm	1,323	2,120		NONE	NONE	NONE

Please insert additional pages as applicable.

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Office of Oil & Gas
JAN 22 2015

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Rev. 8/23/13

API 47- 590 - 2246 Farm name LOGAN COAL AND TIMBER CORPORATION Well number 2353

PRODUCING FORMATION(S)	DEPTHS	
BIG LIME	2140-2290' TVD	MD
BEREA	2960-2980'	
DEVONIAN/BROWN SHALE	4020-4130'	

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface 720 psi Bottom Hole _____ psi DURATION OF TEST 30 hrs

OPEN FLOW Gas 730 mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
SEE ATTACHED					

Please insert additional pages as applicable.

Drilling Contractor MOUNTAIN RIDGE
Address 72 OLD 25 E City BARBOURVILLE State KY Zip 40906

Logging Company WEATHERFORD
Address _____ City LONDON State KY Zip 40741

Cementing Company NABORS COMPLETION & PRODUCTION SERVICES
Address 580 HAWTHORN DR City NORTON State VA Zip 24273

Stimulating Company UNIVERSAL WELL SERVICES INC
Address PO BOX 686 City ALLEN State KY Zip 41601

Please insert additional pages as applicable.

Completed by Darrell Fluharty Telephone 606-874-8041
Signature _____ Title Field Supervisor Date 1-16-2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

WELL # 2353 API#47-5902109

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H2S, ETC)
SAND/SHALE	0	735			
SAND	735	1095			
SAND/SHALE	1095	1320			
SAND	1320	1470			
SAND/SLATE	1470	1530			
RED ROCK	1530	1560			
RED ROCK/SAND/LIME	1560	1590			
RED ROCK/SAND	1590	1620			
RED ROCK/SLATE/LIME	1620	1650			
SAND/SLATE	1650	1710			
SAND	1710	1830			
SAND/SHALE	1830	1975			
LITTLE LIME	1975	2020			
BIG LIME	2020	2278			
INJUN	2278	2490			
WEIR	2490	2870			
COFFEE SHALE	2870	2920			
BEREA	2920	3020			
BROWN SHALE	3020	3690			
GRAY SHALE	3690	3835			
BROWN SHALE	3835	4115			
HARRELL SHALE	4115	4230			

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