WR-35
Rev. 8/23/13

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

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

API 47 - 087 - 04745 County ROANE District SMITHFIELD
Quad LOONEYVILLE 7.5' Pad Name KINKEAD, S.B. Field/Pool Name CLOVER
Farm name MCCLAIN, JOHN R. & KEATON Well Number 103
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 4,285,475 M Easting 475,126 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing 4,285,549 M Easting 475,173 M

Elevation (ft) 1,114' 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 12/17/14 Date drilling commenced 12/18/14 Date drilling ceased 12/20/14
Date completion activities began 1/8/15 Date completion activities ceased 2/10/15
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 None Open mine(s) (Y/N) depths None
Salt water depth(s) ft 1700' 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) N

Reviewed by:

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47- 087 - 04745 Farm name MCCLAIN, JOHN R. & KEYTON Well number 103

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"	558'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2364.7'	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. 25 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	140	15.6	1.18	165.2	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	90/125	13.2/14.2	1.64/1.27	147.6/186	40'	8
Tubing							

Drillers TD (ft) 2380' Loggers TD (ft) 2384'
Deepest formation penetrated Big Injun 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 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

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47- 087 - 04745 Farm name MCCLAIN, JOHN R. & KEATON Well number 103

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/4/15	2234'	2242'	32	Big Injun

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	2/10/15	5	418	1459	421	2,500	140	

Please insert additional pages as applicable.

WR-35
Rev. 8/23/13

API 47- 087 - 04745 Farm name MCCLAIN, JOHN R. & KEATON Well number 103

PRODUCING FORMATION(S)	DEPTHS			
Big Injun	2178'- 2196'	TVD	2234'- 2242'	MD

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

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	1003	0	1008	
Sand	1003	1112	1008	1118	
Shale	1112	1200	1118	1211	
Sand	1200	1292	1211	1304	
Shale	1292	1700	1304	1730	
Sand	1700	1990	1730	2032	
Little Lime	1990	2012	2032	2054	
Pencil Cave	2012	2026	2054	2070	
Big Lime	2026	2152	2070	2200	
Keener	2152	2178	2200	2228	
Big Injun	2178	2196	2228	2246	Drilled directional N 33° E a distance of 369'
Shale	2196	2326	2246	2380	
TD	2326		2380		

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 Producers Service Corp.
Address 109 South Graham Street City Zanesville State OH Zip 43701

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature Roger Heldman Title Operations Manager Date 2/16/2015

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

HG Energy, LLC

Roane County, West Virginia
SB Kinkead #103
SB Kinkead #103
Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

12 January, 2015

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

ADC
The APPALACHIAN DIRECTIONAL COMPANY

DDC
HG Energy EOW Report

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well SB Kinkead #103
Project:	Roane County, West Virginia	TVD Reference:	well @ 1122.0usft (Decker #9)
Site:	SB Kinkead #103	MD Reference:	well @ 1122.0usft (Decker #9)
Well:	SB Kinkead #103	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

Project Roane County, West Virginia

Map System:	Universal Transverse Mercator	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site SB Kinkead #103

Site Position:		Northing:	14,059,892.56 usft	Latitude:	38° 43' 2.900 N
From:	Lat/Long	Easting:	1,558,764.60 usft	Longitude:	81° 17' 10.600 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.18 °

Well SB Kinkead #103

Well Position	+N/-S	0.0 usft	Northing:	14,059,892.56 usfl	Latitude:	38° 43' 2.900 N
	+E/-W	0.0 usft	Easting:	1,558,764.60 usfl	Longitude:	81° 17' 10.600 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usfl	Ground Level:	1,114.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/13/2014	-7.95	66.43	51,939

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	34.00

Survey Program Date 1/12/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
562.0	2,380.0	MWD (Wellbore #1)	MWD default	MWD - Standard

DDC
HG Energy EOW Report

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well SB Kinkead #103
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	SB Kinkead #103	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	SB Kinkead #103	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

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
562.0	1.60	187.90	561.9	-7.8	-1.1	-7.0	0.28	7.8	187.90
First MWD Survey @ 562' MD / 562' TVD									
592.0	1.60	184.50	591.9	-8.6	-1.2	-7.8	0.32	8.7	187.74
622.0	1.00	170.00	621.9	-9.3	-1.2	-8.3	2.27	9.4	187.10
652.0	0.80	109.90	651.9	-9.6	-0.9	-8.5	3.06	9.7	185.43
682.0	1.60	59.00	681.9	-9.5	-0.4	-8.0	4.20	9.5	182.17
712.0	2.70	43.40	711.9	-8.7	0.5	-7.0	4.12	8.7	176.81
742.0	4.00	37.10	741.8	-7.4	1.6	-5.2	4.50	7.6	167.75
772.0	5.50	32.60	771.7	-5.3	3.0	-2.7	5.15	6.1	150.60
802.0	6.70	29.30	801.6	-2.6	4.6	0.4	4.17	5.3	119.30
832.0	8.00	27.40	831.3	0.8	6.5	4.3	4.41	6.5	83.15
862.0	8.90	25.60	861.0	4.7	8.4	8.6	3.13	9.7	60.72
892.0	9.60	25.40	890.6	9.1	10.5	13.4	2.34	13.9	49.16
922.0	10.20	25.50	920.1	13.7	12.7	18.5	2.00	18.7	42.79
952.0	11.00	25.60	949.6	18.7	15.1	24.0	2.67	24.0	38.89
982.0	11.80	25.00	979.0	24.1	17.6	29.8	2.70	29.8	36.21
1,012.0	12.40	25.00	1,008.4	29.8	20.3	36.0	2.00	36.0	34.27
1,042.0	13.10	25.30	1,037.6	35.8	23.1	42.6	2.34	42.6	32.86
1,072.0	13.30	25.80	1,066.8	41.9	26.1	49.3	0.77	49.4	31.85
1,102.0	13.90	25.80	1,096.0	48.3	29.1	56.3	2.00	56.4	31.09
1,132.0	14.20	26.50	1,125.1	54.8	32.3	63.5	1.15	63.7	30.53
1,162.0	14.80	26.70	1,154.1	61.5	35.7	71.0	2.01	71.2	30.11
1,192.0	15.40	27.20	1,183.1	68.5	39.2	78.7	2.05	79.0	29.80
1,222.0	16.00	27.60	1,212.0	75.7	43.0	86.8	2.03	87.1	29.58
1,252.0	16.20	29.30	1,240.8	83.0	46.9	95.1	1.71	95.4	29.48
1,282.0	16.00	32.10	1,269.6	90.2	51.2	103.4	2.67	103.7	29.58

DDC

HG Energy EOW Report

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well SB Kinkead #103
Project:	Roane County, West Virginia	TVD Reference:	well @ 1122.0usft (Decker #9)
Site:	SB Kinkead #103	MD Reference:	well @ 1122.0usft (Decker #9)
Well:	SB Kinkead #103	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
1,312.0	16.00	32.70	1,298.5	97.2	55.6	111.7	0.55	112.0	29.78
1,342.0	15.80	31.90	1,327.3	104.1	60.0	119.9	0.99	120.2	29.96
1,372.0	15.60	31.50	1,356.2	111.0	64.3	128.0	0.76	128.3	30.07
1,402.0	15.80	32.60	1,385.1	117.9	68.6	136.1	1.20	136.4	30.19
1,432.0	15.90	34.70	1,413.9	124.7	73.1	144.3	1.94	144.6	30.38
1,462.0	15.90	35.40	1,442.8	131.5	77.8	152.5	0.64	152.8	30.63
1,492.0	15.80	35.40	1,471.7	138.1	82.6	160.7	0.33	160.9	30.88
1,522.0	15.80	35.20	1,500.5	144.8	87.3	168.9	0.18	169.1	31.09
1,552.0	15.80	35.20	1,529.4	151.5	92.0	177.0	0.00	177.2	31.28
1,582.0	15.70	34.90	1,558.3	158.1	96.7	185.2	0.43	185.4	31.44
1,612.0	15.70	34.30	1,587.1	164.8	101.3	193.3	0.54	193.5	31.58
1,642.0	15.50	33.80	1,616.0	171.5	105.8	201.4	0.80	201.5	31.68
1,672.0	14.80	32.60	1,645.0	178.1	110.1	209.2	2.56	209.4	31.73
1,702.0	15.00	33.20	1,674.0	184.5	114.3	216.9	0.84	217.1	31.77
1,732.0	15.80	35.70	1,702.9	191.1	118.8	224.9	3.46	225.0	31.87
1,762.0	16.10	37.10	1,731.8	197.7	123.7	233.1	1.63	233.2	32.03
1,792.0	16.30	37.10	1,760.6	204.4	128.8	241.5	0.67	241.6	32.21
1,822.0	16.40	37.10	1,789.4	211.2	133.8	249.9	0.33	250.0	32.37
1,852.0	16.40	37.10	1,818.1	217.9	139.0	258.4	0.00	258.4	32.53
1,882.0	16.40	37.10	1,846.9	224.7	144.1	266.8	0.00	266.9	32.67
1,912.0	16.80	37.50	1,875.7	231.5	149.3	275.4	1.39	275.4	32.81
1,942.0	16.70	37.30	1,904.4	238.3	154.5	284.0	0.38	284.0	32.95
1,972.0	16.70	37.10	1,933.1	245.2	159.7	292.6	0.19	292.6	33.08
2,002.0	17.20	36.40	1,961.8	252.2	165.0	301.3	1.80	301.4	33.19
2,032.0	17.10	36.50	1,990.5	259.3	170.2	310.2	0.35	310.2	33.28
2,062.0	16.20	35.20	2,019.2	266.3	175.2	318.8	3.25	318.8	33.35
2,092.0	15.90	34.50	2,048.1	273.1	180.0	327.1	1.19	327.1	33.39

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well SB Kinkead #103
Project:	Roane County, West Virginia	TVD Reference:	well @ 1122.0usft (Decker #9)
Site:	SB Kinkead #103	MD Reference:	well @ 1122.0usft (Decker #9)
Well:	SB Kinkead #103	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,122.0	16.10	33.90	2,076.9	279.9	184.6	335.3	0.87	335.4	33.41
2,152.0	16.00	33.80	2,105.7	286.8	189.3	343.6	0.35	343.6	33.42
2,182.0	16.20	33.70	2,134.6	293.8	193.9	351.9	0.67	352.0	33.42
2,212.0	16.31	33.70	2,163.4	300.7	198.5	360.3	0.37	360.4	33.43
2,242.0	16.30	33.60	2,192.1	307.8	203.2	368.8	0.10	368.8	33.44
2,272.0	14.90	33.40	2,221.0	314.5	207.7	376.8	4.67	376.9	33.44
2,302.0	13.70	32.60	2,250.1	320.7	211.7	384.2	4.05	384.3	33.43
2,380.0	13.70	32.60	2,325.9	336.3	221.6	402.7	0.00	402.7	33.39

TD @ 2380' MD / 2326' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
562.0	561.9	-7.8	-1.1	First MWD Survey @ 562' MD / 562' TVD
2,380.0	2,325.9	336.3	221.6	TD @ 2380' MD / 2326' TVD

Checked By: _____ Approved By: _____ Date: _____

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

HG Energy, LLC

Roane County, West Virginia
SB Kinkead #103
SB Kinkead #103

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

12 January, 2015

The APPALACHIAN DIRECTIONAL COMPANY

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

DDC

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well SB Kinkead #103
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	SB Kinkead #103	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	SB Kinkead #103	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Project Roane County, West Virginia

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site SB Kinkead #103

Site Position:		**Northing:**	14,059,892.56 usft	**Latitude:**	38° 43' 2.900 N
From:	Lat/Long	**Easting:**	1,558,764.61 usft	**Longitude:**	81° 17' 10.600 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.18 °

Well SB Kinkead #103

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,059,892.56 usft	**Latitude:**	38° 43' 2.900 N
	+E/-W	0.0 usft	**Easting:**	1,558,764.61 usft	**Longitude:**	81° 17' 10.600 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,114.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	12/13/2014	-7.95	66.43	51,939

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	34.00

Survey Program Date 1/12/2015

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
562.0	2,380.0	MWD (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	14,059,892.56	1,558,764.61	38° 43' 2.900 N	81° 17' 10.600 W
562.0	1.60	187.90	561.9	-7.8	-1.1	14,059,884.79	1,558,763.53	38° 43' 2.823 N	81° 17' 10.613 W
First MWD Survey @ 562' MD / 562' TVD									
592.0	1.60	184.50	591.9	-8.6	-1.2	14,059,883.96	1,558,763.44	38° 43' 2.815 N	81° 17' 10.614 W
622.0	1.00	170.00	621.9	-9.3	-1.2	14,059,883.28	1,558,763.45	38° 43' 2.808 N	81° 17' 10.614 W
652.0	0.80	109.90	651.9	-9.6	-0.9	14,059,882.95	1,558,763.69	38° 43' 2.805 N	81° 17' 10.611 W
682.0	1.60	59.00	681.9	-9.5	-0.4	14,059,883.10	1,558,764.25	38° 43' 2.806 N	81° 17' 10.604 W
712.0	2.70	43.40	711.9	-8.7	0.5	14,059,883.83	1,558,765.09	38° 43' 2.814 N	81° 17' 10.594 W
742.0	4.00	37.10	741.8	-7.4	1.6	14,059,885.17	1,558,766.21	38° 43' 2.827 N	81° 17' 10.579 W
772.0	5.50	32.60	771.7	-5.3	3.0	14,059,887.22	1,558,767.62	38° 43' 2.847 N	81° 17' 10.562 W
802.0	6.70	29.30	801.6	-2.6	4.6	14,059,889.96	1,558,769.25	38° 43' 2.874 N	81° 17' 10.541 W
832.0	8.00	27.40	831.3	0.8	6.5	14,059,893.34	1,558,771.07	38° 43' 2.908 N	81° 17' 10.519 W

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

ADC Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well SB Kinkead #103
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	SB Kinkead #103	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	SB Kinkead #103	**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
862.0	8.90	25.60	861.0	4.7	8.4	14,059,897.28	1,558,773.03	38° 43' 2.947 N	81° 17' 10.494 W
892.0	9.60	25.40	890.6	9.1	10.5	14,059,901.64	1,558,775.10	38° 43' 2.990 N	81° 17' 10.468 W
922.0	10.20	25.50	920.1	13.7	12.7	14,059,906.29	1,558,777.32	38° 43' 3.036 N	81° 17' 10.440 W
952.0	11.00	25.60	949.6	18.7	15.1	14,059,911.27	1,558,779.70	38° 43' 3.085 N	81° 17' 10.410 W
982.0	11.80	25.00	979.0	24.1	17.6	14,059,916.63	1,558,782.23	38° 43' 3.139 N	81° 17' 10.378 W
1,012.0	12.40	25.00	1,008.4	29.8	20.3	14,059,922.33	1,558,784.89	38° 43' 3.195 N	81° 17' 10.345 W
1,042.0	13.10	25.30	1,037.6	35.8	23.1	14,059,928.33	1,558,787.71	38° 43' 3.254 N	81° 17' 10.310 W
1,072.0	13.30	25.80	1,066.8	41.9	26.1	14,059,934.51	1,558,790.66	38° 43' 3.316 N	81° 17' 10.273 W
1,102.0	13.90	25.80	1,096.0	48.3	29.1	14,059,940.86	1,558,793.73	38° 43' 3.378 N	81° 17' 10.234 W
1,132.0	14.20	26.50	1,125.1	54.8	32.3	14,059,947.39	1,558,796.94	38° 43' 3.443 N	81° 17' 10.194 W
1,162.0	14.80	26.70	1,154.1	61.5	35.7	14,059,954.11	1,558,800.30	38° 43' 3.510 N	81° 17' 10.152 W
1,192.0	15.40	27.20	1,183.1	68.5	39.2	14,059,961.08	1,558,803.85	38° 43' 3.579 N	81° 17' 10.107 W
1,222.0	16.00	27.60	1,212.0	75.7	43.0	14,059,968.28	1,558,807.58	38° 43' 3.650 N	81° 17' 10.061 W
1,252.0	16.20	29.30	1,240.8	83.0	46.9	14,059,975.60	1,558,811.55	38° 43' 3.723 N	81° 17' 10.011 W
1,282.0	16.00	32.10	1,269.6	90.2	51.2	14,059,982.75	1,558,815.79	38° 43' 3.793 N	81° 17' 9.958 W
1,312.0	16.00	32.70	1,298.5	97.2	55.6	14,059,989.73	1,558,820.22	38° 43' 3.863 N	81° 17' 9.902 W
1,342.0	15.80	31.90	1,327.3	104.1	60.0	14,059,996.68	1,558,824.61	38° 43' 3.931 N	81° 17' 9.847 W
1,372.0	15.60	31.50	1,356.2	111.0	64.3	14,060,003.58	1,558,828.88	38° 43' 4.000 N	81° 17' 9.793 W
1,402.0	15.80	32.60	1,385.1	117.9	68.6	14,060,010.46	1,558,833.19	38° 43' 4.068 N	81° 17' 9.739 W
1,432.0	15.90	34.70	1,413.9	124.7	73.1	14,060,017.28	1,558,837.73	38° 43' 4.136 N	81° 17' 9.682 W
1,462.0	15.90	35.40	1,442.8	131.5	77.8	14,060,024.01	1,558,842.45	38° 43' 4.202 N	81° 17' 9.623 W
1,492.0	15.80	35.40	1,471.7	138.1	82.6	14,060,030.69	1,558,847.20	38° 43' 4.268 N	81° 17' 9.563 W
1,522.0	15.80	35.20	1,500.5	144.8	87.3	14,060,037.36	1,558,851.92	38° 43' 4.334 N	81° 17' 9.504 W
1,552.0	15.80	35.20	1,529.4	151.5	92.0	14,060,044.03	1,558,856.62	38° 43' 4.401 N	81° 17' 9.445 W
1,582.0	15.70	34.90	1,558.3	158.1	96.7	14,060,050.70	1,558,861.30	38° 43' 4.467 N	81° 17' 9.386 W
1,612.0	15.70	34.30	1,587.1	164.8	101.3	14,060,057.38	1,558,865.91	38° 43' 4.533 N	81° 17' 9.328 W
1,642.0	15.50	33.80	1,616.0	171.5	105.8	14,060,064.06	1,558,870.43	38° 43' 4.599 N	81° 17' 9.271 W
1,672.0	14.80	32.60	1,645.0	178.1	110.1	14,060,070.62	1,558,874.72	38° 43' 4.664 N	81° 17' 9.217 W
1,702.0	15.00	33.20	1,674.0	184.5	114.3	14,060,077.10	1,558,878.91	38° 43' 4.728 N	81° 17' 9.165 W
1,732.0	15.80	35.70	1,702.9	191.1	118.8	14,060,083.67	1,558,883.42	38° 43' 4.793 N	81° 17' 9.108 W
1,762.0	16.10	37.10	1,731.8	197.7	123.7	14,060,090.30	1,558,888.31	38° 43' 4.859 N	81° 17' 9.046 W
1,792.0	16.30	37.10	1,760.6	204.4	128.8	14,060,096.98	1,558,893.36	38° 43' 4.925 N	81° 17' 8.983 W
1,822.0	16.40	37.10	1,789.4	211.2	133.8	14,060,103.71	1,558,898.46	38° 43' 4.992 N	81° 17' 8.919 W
1,852.0	16.40	37.10	1,818.1	217.9	139.0	14,060,110.47	1,558,903.57	38° 43' 5.059 N	81° 17' 8.855 W
1,882.0	16.40	37.10	1,846.9	224.7	144.1	14,060,117.22	1,558,908.68	38° 43' 5.126 N	81° 17' 8.790 W
1,912.0	16.80	37.50	1,875.7	231.5	149.3	14,060,124.04	1,558,913.87	38° 43' 5.194 N	81° 17' 8.725 W
1,942.0	16.70	37.30	1,904.4	238.3	154.5	14,060,130.91	1,558,919.12	38° 43' 5.262 N	81° 17' 8.659 W
1,972.0	16.70	37.10	1,933.1	245.2	159.7	14,060,137.78	1,558,924.33	38° 43' 5.330 N	81° 17' 8.594 W
2,002.0	17.20	36.40	1,961.8	252.2	165.0	14,060,144.78	1,558,929.56	38° 43' 5.399 N	81° 17' 8.528 W
2,032.0	17.10	36.50	1,990.5	259.3	170.2	14,060,151.90	1,558,934.82	38° 43' 5.470 N	81° 17' 8.462 W
2,062.0	16.20	35.20	2,019.2	266.3	175.2	14,060,158.87	1,558,939.86	38° 43' 5.539 N	81° 17' 8.399 W
2,092.0	15.90	34.50	2,048.1	273.1	180.0	14,060,165.67	1,558,944.60	38° 43' 5.606 N	81° 17' 8.339 W
2,122.0	16.10	33.90	2,076.9	279.9	184.6	14,060,172.51	1,558,949.24	38° 43' 5.674 N	81° 17' 8.281 W
2,152.0	16.00	33.80	2,105.7	286.8	189.3	14,060,179.40	1,558,953.86	38° 43' 5.742 N	81° 17' 8.223 W
2,182.0	16.20	33.70	2,134.6	293.8	193.9	14,060,186.32	1,558,958.49	38° 43' 5.811 N	81° 17' 8.164 W
2,212.0	16.31	33.70	2,163.4	300.7	198.5	14,060,193.30	1,558,963.15	38° 43' 5.880 N	81° 17' 8.106 W
2,242.0	16.30	33.60	2,192.1	307.8	203.2	14,060,200.31	1,558,967.81	38° 43' 5.949 N	81° 17' 8.047 W
2,272.0	14.90	33.40	2,221.0	314.5	207.7	14,060,207.04	1,558,972.27	38° 43' 6.016 N	81° 17' 7.991 W
2,302.0	13.70	32.60	2,250.1	320.7	211.7	14,060,213.25	1,558,976.30	38° 43' 6.078 N	81° 17' 7.941 W
2,380.0	13.70	32.60	2,325.9	336.3	221.6	14,060,228.82	1,558,986.26	38° 43' 6.232 N	81° 17' 7.816 W

TD @ 2380' MD / 2326' TVD

DDC

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well SB Kinkead #103
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	SB Kinkead #103	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	SB Kinkead #103	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
562.0	561.9	-7.8	-1.1	First MWD Survey @ 562' MD / 562' TVD
2,380.0	2,325.9	336.3	221.6	TD @ 2380' MD / 2326' TVD

Checked By: _____ Approved By: _____ Date: _____

RECEIVED
Office of Oil and Gas

FEB 1 5 2015

WV Department of
Environmental Protection

Company Name: HG Energy, LLC
SB Kinkead #103
Roane County, West Virginia
Rig: Decker #9
Created By: Shane Robbins
Date: 1/12/2015

SB Kinkead #103
Roane County, West Virginia
Q141366 & AM-141311
Design #1

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

ADC
The APPALACHIAN DIRECTIONAL COMPANY

HG Energy

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL SB Kinkead #130 - plan hits target center	2150.0	290.2	195.7	14060182.72	1558960.32	38° 43' 5.776 N	81° 17' 8.141 W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
662.0	1.60	187.90	661.9	-7.0	-1.1	-7.0	7.0	First MWD Survey @ 662' MD / 662' TVD
2380.0	13.70	32.60	2325.9	336.3	221.6	402.7	422.4	TD @ 2380' MD / 2326' TVD

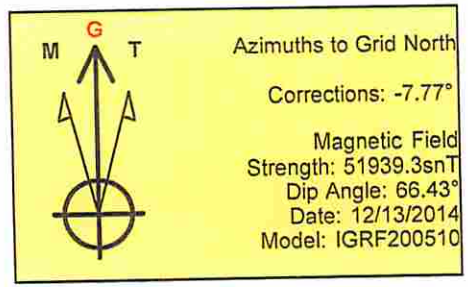
PROJECT DETAILS: Roane County, West Virginia

Geodetic System:	Universal Transverse Mercator
Datum:	NAD83 West Virginia - HARN
Ellipsoid:	GRS 1980
Zone:	Zone 17N (84 W to 78 W)
System Datum:	Mean Sea Level

WELL DETAILS: SB Kinkead #103

Ground Level: 1114.0

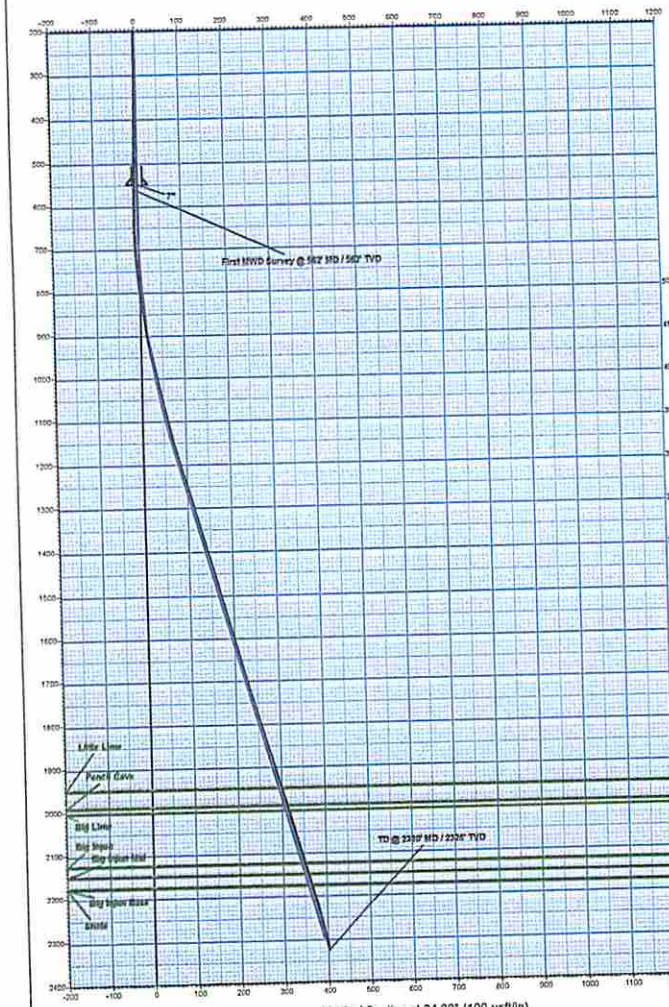
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14059892.55	1558764.60	38° 43' 2.900 N	81° 17' 10.309 W



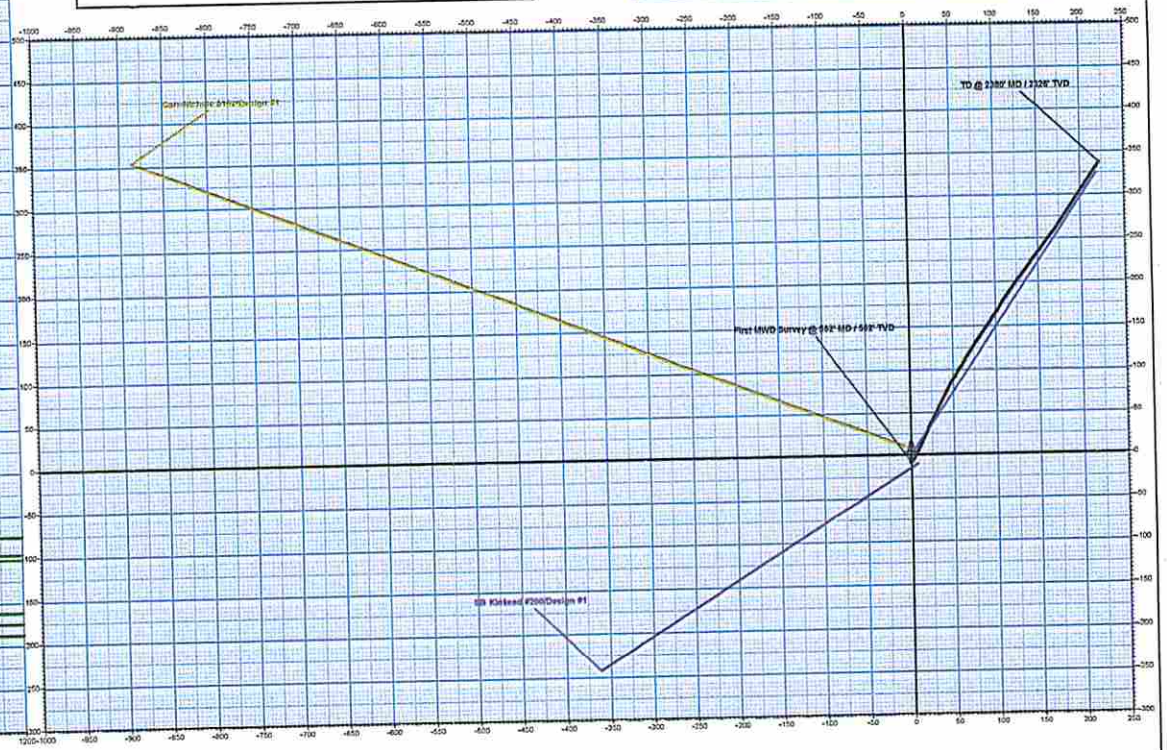
Azimuths to Grid North

Corrections: -7.77°

Magnetic Field
Strength: 51939.3snT
Dip Angle: 66.43°
Date: 12/13/2014
Model: IGRF200510



Vertical Section at 34.00° (100 usft/in)



Prepared for:

H G Energy

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Jason Stanbery

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #:	18121
WELL NAME:	S B Kinkead #103
STATE & COUNTY:	WV/Roane
TOWNSHIP/FIELD:	Clover
DATE of SERVICE:	2/10/2015
CUSTOMER PO#	

Description	Notes	Amount	Units	Unit Cost	Total Cost
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE 4 HRS		1	EA		
BLENDER CHARGE 0-10 BPM		1	EA		
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @ 150 Miles	0	MI		
IC ACID 15%		250	GAL		
PRO HIB II		0.5	GAL		
ACID DELIVERY		2	HR		
PRO CLA LOK (KCL SUBSTITUTE)		15	GAL		
PRO NE-21		5	GAL		
PRO GEL 4		150	LB		
BUFFER I		50	LB		
BUFFER II		50	LB		
PRO CLA LOK (KCL SUBSTITUTE)		15	GAL		
AP BREAKER		15	LB		
BXL-A		10	GAL		
BXL-10C		10	GAL		
SAND 20/40 OTTAWA		25	CWT		
SAND DELIVERY / TON MILES		100	TMILE		
BIO CLEAR 750		2	LB		
DATA VAN		1	STAGE		

RECEIVED
Office of Oil and Gas
WV Department of
Environmental Protection

RECEIVED
Office of Oil and Gas
WV Department of
Environmental Protection

Customer Approval: _____

WR-35
Rev. 8/23/13

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

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

API 47 - 087 - 04747 County ROANE District SMITHFIELD
Quad LOONEYVILLE 7.5' Pad Name CARR-NICHOLS Field/Pool Name CLOVER
Farm name MCCLAIN, JOHN R. & KEATON Well Number 102
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 4,285,478 M Easting 475,123 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing 4,285,555 M Easting 474,860 M

Elevation (ft) 1,114' 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 11/17/14 Date drilling commenced 12/23/14 Date drilling ceased 12/31/14
Date completion activities began 2/4/15 Date completion activities ceased 2/10/15
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 None Open mine(s) (Y/N) depths None
Salt water depth(s) ft 1775' 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) N

Reviewed by:
JK

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47- 087 - 04747 Farm name MCCLAIN, JOHN R. & KEATON Well number 162

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"	562'	New	LS	64'	N
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2576.4'	New	J-55		Y
Tubing							
Packer type and depth set							

Comment Details Grouted w/ Est. 25 sks to surface on 7" surface cement job. Circulated Est. 35 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	140	15.6	1.18	165	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	110/125	13.2/14.2	1.64/1.27	180/186	40'	8
Tubing							

Drillers TD (ft) 2631' Loggers TD (ft) 2631'
Deepest formation penetrated Big Injun Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 550'

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

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47- 087 - 04747 Farm name MCCLAIN, JOHN R & KEATON, WILLIAM Well # 102

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/4/15	2524'	2532'	32	Big Injun

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	2/10/15	5	494	1035	312	2,500	150	

Please insert additional pages as applicable.

WR-35
Rev. 8/23/13

API 47- 087 - 04747 Farm name MCCLAIN, JOHN R. & KEATON Well number 102

PRODUCING FORMATION(S)	DEPTHS	
Big Injun	2182'- 2198' TVD	2507'- 2538' MD

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

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 QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0	998	0	1004	
Sand	998	1112	1004	1119	
Shale	1112	1200	1119	1211	
Sand	1200	1288	1211	1309	
Shale	1288	1716	1309	1768	
Sand	1716	1992	1768	2182	
Little Lime	1992	2018	2182	2232	
Pencil Cave	2018	2026	2232	2246	
Big Lime	2026	2155	2246	2463	
Keener	2155	2182	2463	2507	
Big Injun	2182	2198	2507	2538	Drilled directional S 69° E a distance of 877'
Shale	2198	2268	2538	2631	
TD	2268		2631		

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 Producers Service Corp.
Address 109 South Graham Street City Zanesville State OH Zip 43701

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature [signature] Title Operations Manager Date 2/18/15

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

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

HG Energy, LLC

Roane County, West Virginia
Carr-Nichols #102
Carr-Nichols #102

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

07 January, 2015

The APPALACHIAN DIRECTIONAL COMPANY

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well Carr-Nichols #102
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	Carr-Nichols #102	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	Carr-Nichols #102	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Project Roane County, West Virginia

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Carr-Nichols #102

Site Position:		**Northing:**	14,059,902.70 usft	**Latitude:**	38° 43' 3.000 N
From:	Lat/Long	**Easting:**	1,558,756.72 usft	**Longitude:**	81° 17' 10.700 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.18 °

Well Carr-Nichols #102

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,059,902.70 usft	**Latitude:**	38° 43' 3.000 N
	+E/-W	0.0 usft	**Easting:**	1,558,756.72 usft	**Longitude:**	81° 17' 10.700 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,114.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	12/13/2014	-7.95	66.43	51,939

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	291.33

Survey Program **Date** 1/7/2015

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
650.0	2,634.0	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	14,059,902.70	1,558,756.72	38° 43' 3.000 N	81° 17' 10.700 W
650.0	0.00	0.00	650.0	0.0	0.0	14,059,902.70	1,558,756.72	38° 43' 3.000 N	81° 17' 10.700 W
FIRST SURVEY @ 650' MD / 650' TVD									
682.0	1.30	240.80	682.0	-0.2	-0.3	14,059,902.52	1,558,756.40	38° 43' 2.998 N	81° 17' 10.704 W
712.0	2.60	277.90	712.0	-0.2	-1.3	14,059,902.45	1,558,755.43	38° 43' 2.997 N	81° 17' 10.716 W
742.0	4.10	283.50	741.9	0.1	-3.0	14,059,902.79	1,558,753.71	38° 43' 3.001 N	81° 17' 10.738 W
772.0	5.60	284.60	771.8	0.7	-5.5	14,059,903.41	1,558,751.25	38° 43' 3.007 N	81° 17' 10.769 W
802.0	7.10	287.80	801.6	1.6	-8.6	14,059,904.35	1,558,748.07	38° 43' 3.016 N	81° 17' 10.809 W
832.0	8.40	290.20	831.4	3.0	-12.5	14,059,905.67	1,558,744.25	38° 43' 3.029 N	81° 17' 10.857 W
862.0	9.50	292.80	861.0	4.7	-16.8	14,059,907.39	1,558,739.91	38° 43' 3.046 N	81° 17' 10.912 W
892.0	10.10	293.50	890.6	6.7	-21.5	14,059,909.40	1,558,735.21	38° 43' 3.066 N	81° 17' 10.972 W
922.0	10.70	294.40	920.1	8.9	-26.5	14,059,911.60	1,558,730.27	38° 43' 3.087 N	81° 17' 11.034 W

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well Carr-Nichols #102
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	Carr-Nichols #102	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	Carr-Nichols #102	**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
952.0	11.40	295.20	949.5	11.3	-31.7	14,059,914.01	1,558,725.05	38° 43' 3.111 N	81° 17' 11.100 W
982.0	12.40	295.00	978.9	13.9	-37.3	14,059,916.63	1,558,719.44	38° 43' 3.137 N	81° 17' 11.171 W
1,012.0	13.30	295.90	1,008.1	16.8	-43.3	14,059,919.50	1,558,713.42	38° 43' 3.165 N	81° 17' 11.247 W
1,042.0	14.20	296.70	1,037.3	20.0	-49.7	14,059,922.66	1,558,707.03	38° 43' 3.196 N	81° 17' 11.328 W
1,072.0	15.10	297.80	1,066.3	23.4	-56.4	14,059,926.14	1,558,700.29	38° 43' 3.230 N	81° 17' 11.413 W
1,102.0	15.60	298.40	1,095.2	27.2	-63.4	14,059,929.88	1,558,693.28	38° 43' 3.267 N	81° 17' 11.502 W
1,132.0	15.50	297.80	1,124.1	31.0	-70.5	14,059,933.67	1,558,686.19	38° 43' 3.304 N	81° 17' 11.591 W
1,162.0	15.40	295.60	1,153.0	34.6	-77.7	14,059,937.26	1,558,679.05	38° 43' 3.339 N	81° 17' 11.682 W
1,192.0	16.10	292.60	1,181.9	37.9	-85.1	14,059,940.58	1,558,671.62	38° 43' 3.372 N	81° 17' 11.776 W
1,222.0	16.80	290.60	1,210.7	41.0	-93.0	14,059,943.70	1,558,663.72	38° 43' 3.403 N	81° 17' 11.875 W
1,252.0	17.50	290.40	1,239.3	44.1	-101.3	14,059,946.80	1,558,655.43	38° 43' 3.433 N	81° 17' 11.980 W
1,282.0	18.20	290.10	1,267.9	47.3	-109.9	14,059,949.98	1,558,646.80	38° 43' 3.464 N	81° 17' 12.089 W
1,312.0	19.00	291.50	1,296.3	50.7	-118.9	14,059,953.38	1,558,637.86	38° 43' 3.497 N	81° 17' 12.202 W
1,342.0	19.60	291.90	1,324.6	54.3	-128.1	14,059,957.05	1,558,628.65	38° 43' 3.533 N	81° 17' 12.319 W
1,372.0	20.20	291.20	1,352.8	58.1	-137.6	14,059,960.80	1,558,619.15	38° 43' 3.570 N	81° 17' 12.439 W
1,402.0	21.30	291.10	1,380.9	61.9	-147.5	14,059,964.63	1,558,609.24	38° 43' 3.608 N	81° 17' 12.564 W
1,432.0	22.10	290.40	1,408.8	65.9	-157.9	14,059,968.56	1,558,598.86	38° 43' 3.646 N	81° 17' 12.695 W
1,462.0	22.80	289.70	1,436.5	69.8	-168.6	14,059,972.49	1,558,588.10	38° 43' 3.685 N	81° 17' 12.831 W
1,492.0	23.70	289.50	1,464.1	73.8	-179.8	14,059,976.46	1,558,576.95	38° 43' 3.724 N	81° 17' 12.972 W
1,522.0	24.70	289.60	1,491.4	77.9	-191.4	14,059,980.57	1,558,565.36	38° 43' 3.764 N	81° 17' 13.118 W
1,552.0	25.60	290.00	1,518.6	82.2	-203.4	14,059,984.89	1,558,553.36	38° 43' 3.806 N	81° 17' 13.270 W
1,582.0	26.20	290.40	1,545.6	86.7	-215.7	14,059,989.42	1,558,541.06	38° 43' 3.851 N	81° 17' 13.425 W
1,612.0	27.00	290.00	1,572.4	91.4	-228.3	14,059,994.06	1,558,528.46	38° 43' 3.896 N	81° 17' 13.585 W
1,642.0	27.60	289.60	1,599.1	96.0	-241.2	14,059,998.72	1,558,515.51	38° 43' 3.942 N	81° 17' 13.748 W
1,672.0	28.10	289.00	1,625.6	100.7	-254.4	14,060,003.35	1,558,502.28	38° 43' 3.987 N	81° 17' 13.915 W
1,702.0	28.40	288.30	1,652.0	105.2	-267.9	14,060,007.89	1,558,488.83	38° 43' 4.032 N	81° 17' 14.085 W
1,732.0	29.50	287.90	1,678.3	109.7	-281.7	14,060,012.40	1,558,475.03	38° 43' 4.076 N	81° 17' 14.260 W
1,762.0	30.70	287.90	1,704.2	114.3	-296.0	14,060,017.02	1,558,460.71	38° 43' 4.121 N	81° 17' 14.441 W
1,792.0	33.30	288.50	1,729.6	119.3	-311.1	14,060,021.99	1,558,445.61	38° 43' 4.170 N	81° 17' 14.631 W
1,822.0	36.40	289.60	1,754.3	124.9	-327.3	14,060,027.59	1,558,429.41	38° 43' 4.225 N	81° 17' 14.836 W
1,852.0	39.80	291.10	1,777.9	131.3	-344.7	14,060,034.04	1,558,412.06	38° 43' 4.288 N	81° 17' 15.055 W
1,882.0	43.30	292.40	1,800.3	138.7	-363.1	14,060,041.42	1,558,393.59	38° 43' 4.360 N	81° 17' 15.289 W
1,912.0	45.30	293.00	1,821.8	146.8	-382.5	14,060,049.50	1,558,374.26	38° 43' 4.440 N	81° 17' 15.533 W
1,942.0	46.00	292.30	1,842.8	155.1	-402.3	14,060,057.76	1,558,354.46	38° 43' 4.521 N	81° 17' 15.783 W
1,972.0	46.80	292.30	1,863.4	163.3	-422.4	14,060,066.01	1,558,334.36	38° 43' 4.602 N	81° 17' 16.037 W
2,002.0	47.50	292.10	1,883.8	171.6	-442.7	14,060,074.32	1,558,314.00	38° 43' 4.683 N	81° 17' 16.295 W
2,032.0	48.70	291.90	1,903.9	180.0	-463.4	14,060,082.68	1,558,293.29	38° 43' 4.765 N	81° 17' 16.556 W
2,062.0	49.90	291.10	1,923.4	188.3	-484.6	14,060,091.02	1,558,272.13	38° 43' 4.847 N	81° 17' 16.824 W
2,092.0	51.00	291.10	1,942.5	196.6	-506.2	14,060,099.34	1,558,250.55	38° 43' 4.929 N	81° 17' 17.096 W
2,122.0	52.10	291.50	1,961.2	205.2	-528.1	14,060,107.88	1,558,228.66	38° 43' 5.013 N	81° 17' 17.373 W
2,152.0	53.10	291.70	1,979.4	214.0	-550.2	14,060,116.65	1,558,206.51	38° 43' 5.099 N	81° 17' 17.653 W
2,182.0	53.30	291.60	1,997.4	222.8	-572.5	14,060,125.51	1,558,184.18	38° 43' 5.186 N	81° 17' 17.935 W
2,212.0	52.90	290.90	2,015.4	231.5	-594.9	14,060,134.21	1,558,161.82	38° 43' 5.271 N	81° 17' 18.218 W
2,242.0	52.20	290.40	2,033.7	239.9	-617.2	14,060,142.61	1,558,139.53	38° 43' 5.353 N	81° 17' 18.499 W
2,272.0	52.10	290.40	2,052.1	248.2	-639.4	14,060,150.87	1,558,117.33	38° 43' 5.434 N	81° 17' 18.780 W
2,302.0	52.10	290.40	2,070.5	256.4	-661.6	14,060,159.12	1,558,095.14	38° 43' 5.515 N	81° 17' 19.060 W
2,332.0	52.10	290.40	2,088.9	264.7	-683.8	14,060,167.37	1,558,072.95	38° 43' 5.596 N	81° 17' 19.341 W
2,362.0	52.00	290.00	2,107.4	272.8	-706.0	14,060,175.54	1,558,050.75	38° 43' 5.676 N	81° 17' 19.621 W
2,392.0	52.10	290.10	2,125.8	280.9	-728.2	14,060,183.65	1,558,028.53	38° 43' 5.756 N	81° 17' 19.902 W
2,422.0	52.90	290.60	2,144.1	289.2	-750.5	14,060,191.92	1,558,006.22	38° 43' 5.837 N	81° 17' 20.184 W
2,452.0	53.60	290.90	2,162.0	297.7	-773.0	14,060,200.44	1,557,983.74	38° 43' 5.920 N	81° 17' 20.468 W
2,482.0	54.70	291.90	2,179.6	306.6	-795.6	14,060,209.31	1,557,961.10	38° 43' 6.007 N	81° 17' 20.754 W
2,512.0	55.20	292.00	2,196.8	315.8	-818.4	14,060,218.50	1,557,938.32	38° 43' 6.097 N	81° 17' 21.042 W
2,542.0	53.60	290.90	2,214.3	324.7	-841.1	14,060,227.42	1,557,915.62	38° 43' 6.185 N	81° 17' 21.329 W
2,572.0	51.40	289.60	2,232.6	333.0	-863.4	14,060,235.66	1,557,893.29	38° 43' 6.266 N	81° 17' 21.611 W

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well Carr-Nichols #102
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	Carr-Nichols #102	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	Carr-Nichols #102	**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
2,634.0	51.40	289.60	2,271.2	349.2	-909.1	14,060,251.91	1,557,847.65	38° 43' 6.425 N	81° 17' 22.188 W
TD @ 2634' MD / 2271' 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
2,634.0	2,271.2	349.2	-909.1	TD @ 2634' MD / 2271' TVD

Checked By: _____ Approved By: _____ Date: _____

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

HG Energy, LLC

Roane County, West Virginia
Carr-Nichols #102
Carr-Nichols #102
Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

07 January, 2015

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

ADC
The APPALACHIAN DIRECTIONAL COMPANY

HG Energy EOW Report

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well Carr-Nichols #102
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	Carr-Nichols #102	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	Carr-Nichols #102	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Project Roane County, West Virginia

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Carr-Nichols #102

Site Position:		**Northing:**	14,059,902.69 usft	**Latitude:**	38° 43' 3.000 N
From:	Lat/Long	**Easting:**	1,558,756.71 usft	**Longitude:**	81° 17' 10.700 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.18 °

Well Carr-Nichols #102

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,059,902.69 usft	**Latitude:**	38° 43' 3.000 N
	+E/-W	0.0 usft	**Easting:**	1,558,756.71 usft	**Longitude:**	81° 17' 10.700 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,114.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	12/13/2014	-7.95	66.43	51,939

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	291.33

Survey Program **Date** 1/7/2015

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
650.0	2,634.0	MWD Survey (Wellbore #1)	MWD default	MWD - Standard

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Carr-Nichols #102
Project:	Roane County, West Virginia	TVD Reference:	well @ 1122.0usft (Decker #9)
Site:	Carr-Nichols #102	MD Reference:	well @ 1122.0usft (Decker #9)
Well:	Carr-Nichols #102	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									
682.0	1.30	240.80	682.0	-0.2	-0.3	0.2	4.06	0.4	240.80
712.0	2.60	277.90	712.0	-0.2	-1.3	1.1	5.83	1.3	259.03
742.0	4.10	283.50	741.9	0.1	-3.0	2.8	5.11	3.0	271.80
772.0	5.60	284.60	771.8	0.7	-5.5	5.3	5.01	5.5	277.44
802.0	7.10	287.80	801.6	1.6	-8.6	8.7	5.14	8.8	280.80
832.0	8.40	290.20	831.4	3.0	-12.5	12.7	4.46	12.8	283.41
862.0	9.50	292.80	861.0	4.7	-16.8	17.4	3.91	17.4	285.59
892.0	10.10	293.50	890.6	6.7	-21.5	22.5	2.04	22.5	287.30
922.0	10.70	294.40	920.1	8.9	-26.5	27.9	2.07	27.9	288.59
952.0	11.40	295.20	949.5	11.3	-31.7	33.6	2.39	33.6	289.65
982.0	12.40	295.00	978.9	13.9	-37.3	39.8	3.34	39.8	290.50
1,012.0	13.30	295.90	1,008.1	16.8	-43.3	46.4	3.07	46.4	291.21
1,042.0	14.20	296.70	1,037.3	20.0	-49.7	53.5	3.07	53.5	291.89
1,072.0	15.10	297.80	1,066.3	23.4	-56.4	61.1	3.14	61.1	292.56
1,102.0	15.60	298.40	1,095.2	27.2	-63.4	69.0	1.75	69.0	293.19
1,132.0	15.50	297.80	1,124.1	31.0	-70.5	77.0	0.63	77.0	293.70
1,162.0	15.40	295.60	1,153.0	34.6	-77.7	84.9	1.98	85.0	293.99
1,192.0	16.10	292.60	1,181.9	37.9	-85.1	93.0	3.58	93.1	293.99
1,222.0	16.80	290.60	1,210.7	41.0	-93.0	101.5	3.00	101.6	293.79
1,252.0	17.50	290.40	1,239.3	44.1	-101.3	110.4	2.34	110.5	293.53
1,282.0	18.20	290.10	1,267.9	47.3	-109.9	119.6	2.35	119.7	293.28
1,312.0	19.00	291.50	1,296.3	50.7	-118.9	129.2	3.05	129.2	293.09
1,342.0	19.60	291.90	1,324.6	54.3	-128.1	139.1	2.05	139.1	292.99
1,372.0	20.20	291.20	1,352.8	58.1	-137.6	149.3	2.15	149.3	292.90

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well Carr-Nichols #102
Project:	Roane County, West Virginia	TVD Reference:	well @ 1122.0usft (Decker #9)
Site:	Carr-Nichols #102	MD Reference:	well @ 1122.0usft (Decker #9)
Well:	Carr-Nichols #102	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 (°)
1,402.0	21.30	291.10	1,380.9	61.9	-147.5	159.9	3.67	160.0	292.78
1,432.0	22.10	290.40	1,408.8	65.9	-157.9	171.0	2.80	171.0	292.65
1,462.0	22.80	289.70	1,436.5	69.8	-168.6	182.4	2.50	182.5	292.48
1,492.0	23.70	289.50	1,464.1	73.8	-179.8	194.3	3.01	194.3	292.31
1,522.0	24.70	289.60	1,491.4	77.9	-191.4	206.6	3.34	206.6	292.14
1,552.0	25.60	290.00	1,518.6	82.2	-203.4	219.3	3.05	219.3	292.01
1,582.0	26.20	290.40	1,545.6	86.7	-215.7	232.4	2.08	232.4	291.91
1,612.0	27.00	290.00	1,572.4	91.4	-228.3	245.9	2.73	245.9	291.81
1,642.0	27.60	289.60	1,599.1	96.0	-241.2	259.6	2.09	259.6	291.71
1,672.0	28.10	289.00	1,625.6	100.7	-254.4	273.6	1.91	273.6	291.58
1,702.0	28.40	288.30	1,652.0	105.2	-267.9	287.8	1.49	287.8	291.44
1,732.0	29.50	287.90	1,678.3	109.7	-281.7	302.3	3.72	302.3	291.28
1,762.0	30.70	287.90	1,704.2	114.3	-296.0	317.3	4.00	317.3	291.12
1,792.0	33.30	288.50	1,729.6	119.3	-311.1	333.2	8.73	333.2	290.98
1,822.0	36.40	289.60	1,754.3	124.9	-327.3	350.3	10.54	350.3	290.89
1,852.0	39.80	291.10	1,777.9	131.3	-344.7	368.8	11.75	368.8	290.86
1,882.0	43.30	292.40	1,800.3	138.7	-363.1	388.7	12.01	388.7	290.91
1,912.0	45.30	293.00	1,821.8	146.8	-382.5	409.7	6.81	409.7	291.00
1,942.0	46.00	292.30	1,842.8	155.1	-402.3	431.1	2.87	431.1	291.08
1,972.0	46.80	292.30	1,863.4	163.3	-422.4	452.8	2.67	452.8	291.14
2,002.0	47.50	292.10	1,883.8	171.6	-442.7	474.8	2.38	474.8	291.19
2,032.0	48.70	291.90	1,903.9	180.0	-463.4	497.1	4.03	497.1	291.23
2,062.0	49.90	291.10	1,923.4	188.3	-484.6	519.9	4.48	519.9	291.24
2,092.0	51.00	291.10	1,942.5	196.6	-506.2	543.0	3.67	543.0	291.23
2,122.0	52.10	291.50	1,961.2	205.2	-528.1	566.5	3.81	566.5	291.23
2,152.0	53.10	291.70	1,979.4	214.0	-550.2	590.3	3.38	590.3	291.25
2,182.0	53.30	291.60	1,997.4	222.8	-572.5	614.4	0.72	614.4	291.26

RECEIVED
Office of Oil and Gas
FEB 25 2015
WV Department of
Environmental Protection

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well Carr-Nichols #102
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1122.0usft (Decker #9)
Site:	Carr-Nichols #102	**MD Reference:**	well @ 1122.0usft (Decker #9)
Well:	Carr-Nichols #102	**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 (°)
2,212.0	52.90	290.90	2,015.4	231.5	-594.9	638.4	2.29	638.4	291.26
2,242.0	52.20	290.40	2,033.7	239.9	-617.2	662.2	2.68	662.2	291.24
2,272.0	52.10	290.40	2,052.1	248.2	-639.4	685.9	0.33	685.9	291.21
2,302.0	52.10	290.40	2,070.5	256.4	-661.6	709.5	0.00	709.5	291.19
2,332.0	52.10	290.40	2,088.9	264.7	-683.8	733.2	0.00	733.2	291.16
2,362.0	52.00	290.00	2,107.4	272.8	-706.0	756.8	1.10	756.9	291.13
2,392.0	52.10	290.10	2,125.8	280.9	-728.2	780.5	0.42	780.5	291.10
2,422.0	52.90	290.60	2,144.1	289.2	-750.5	804.3	2.98	804.3	291.08
2,452.0	53.60	290.90	2,162.0	297.7	-773.0	828.3	2.47	828.3	291.07
2,482.0	54.70	291.90	2,179.6	306.6	-795.6	852.6	4.55	852.7	291.08
2,512.0	55.20	292.00	2,196.8	315.8	-818.4	877.2	1.69	877.2	291.10
2,542.0	53.60	290.90	2,214.3	324.7	-841.1	901.6	6.11	901.6	291.11
2,572.0	51.40	289.60	2,232.6	333.0	-863.4	925.4	8.10	925.4	291.09
2,634.0	51.40	289.60	2,271.2	349.2	-909.1	973.8	0.00	973.8	291.01

TD @ 2634' MD / 2271' 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
2,634.0	2,271.2	349.2	-909.1	TD @ 2634' MD / 2271' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: HG Energy, LLC
Carr-Nichols #102
Roane County, West Virginia
Rig: Decker #9
Created By: Jerry Arsenault
Date: 1/7/2015

Carr-Nichols #102
Roane County, West Virginia
Q141365 & AM-141339
Design #1

HG Energy

The APPALACHIAN DIRECTIONAL COMPANY

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL Carr-Nichols #102 - plan hits target center	2150.0	298.3	-763.8	14060200.96	1557992.09	38° 43' 5.926 N	81° 17' 20.353 W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
650.0	650.0	0.00	0.00	0.0	0.0	0.0	0.0	FIRST SURVEY @ 650' MD / 650' TVD
2271.2	2634.0	51.49	289.60	349.2	-909.1	973.8	974.7	TD @ 2634' MD / 2271' TVD

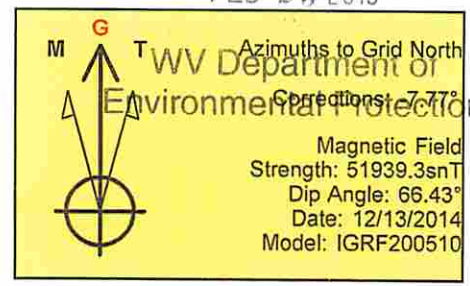
PROJECT DETAILS: Roane County, West Virginia

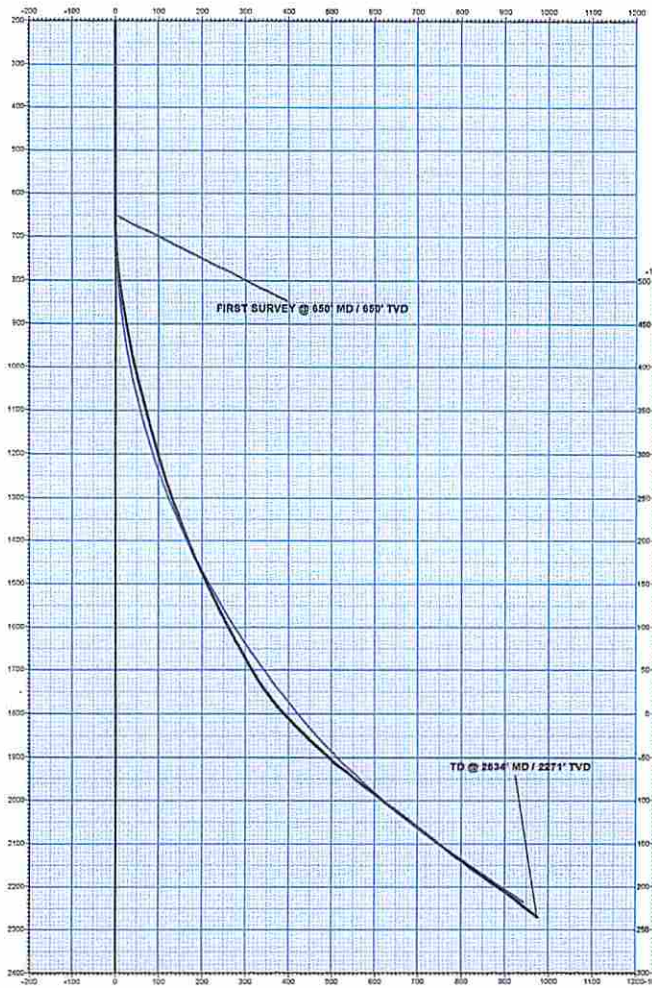
Geodetic System:	Universal Transverse Mercator
Datum:	NAD83 West Virginia - HARN
Ellipsoid:	GRS 1980
Zone:	Zone 17N (84 W to 78 W)
System Datum:	Mean Sea Level

WELL DETAILS: Carr-Nichols #102

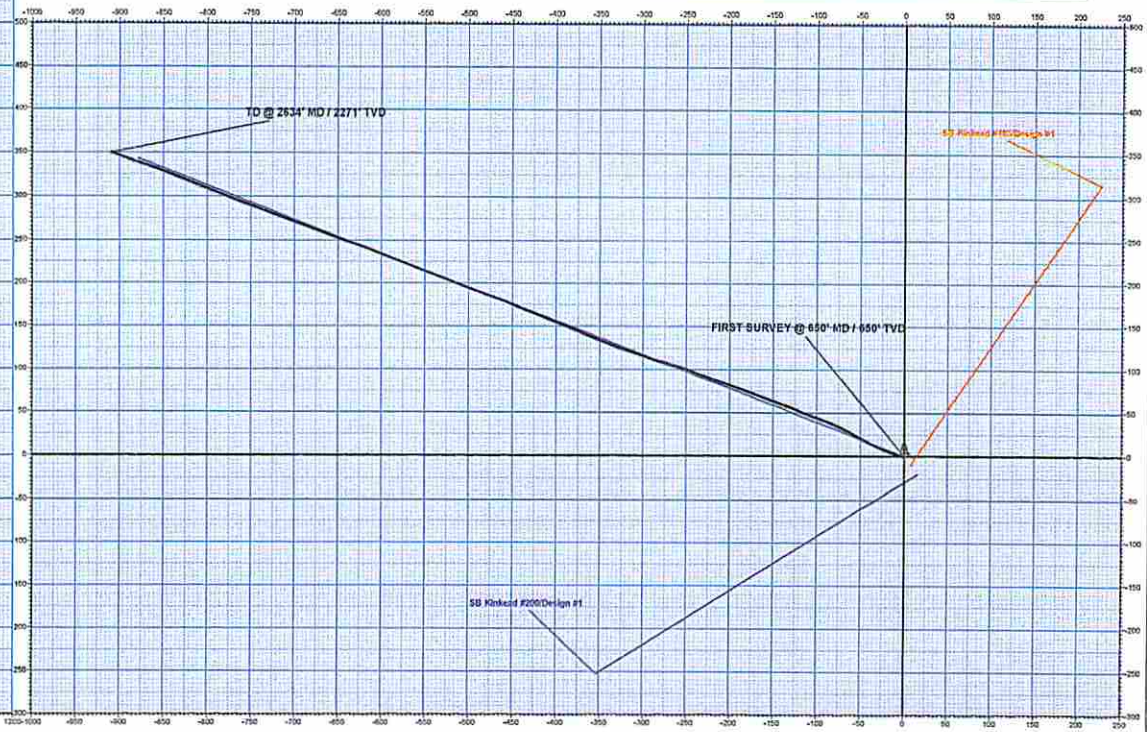
Ground Level: 1114.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14059902.63	1558756.71	38° 43' 3.000 N	81° 17' 10.700 W





Vertical Section at 291.33° (100 usft/in)



Prepared for:

H G Energy

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Jason Stanbery

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #: 18120

WELL NAME: Carrr-Nichols#102

STATE & COUNTY: WV/Roane

TOWNSHIP/FIELD: Clover

DATE of SERVICE: 2/10/2015

CUSTOMER PO#

Description	Notes	Amount	Units	Unit Cost	Total Cost
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE 4 HRS		1			
BLENDER CHARGE 0-10 BPM		1			
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @ 150 Miles	300			
IC ACID 15%		250			
PRO HIB II		0.5			
ACID DELIVERY		2			
PRO CLA LOK (KCL SUBSTITUTE)		15			
PRO NE-21		5			
PRO GEL 4		150			
BUFFER I		50			
BUFFER II		50			
PRO CLA LOK (KCL SUBSTITUTE)		15			
AP BREAKER		15			
BXL-A		10			
BXL-10C		10			
SAND 20/40 OTTAWA		25			
SAND DELIVERY / TON MILES		100	T		
BIO CLEAR 750		2			
DATA VAN		1	S		

RECEIVED
Office of Oil and Gas

FEB 25 2015

WV Department of
Environmental Protection

Customer Approval: _____