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 - 05747 County HARRISON District TEN MILE
Quad SALEM 7.5' Pad Name W.B. CARPENTER Field/Pool Name WOLF SUMMIT
Farm name JUNKINS, EARL AND BELVA Well Number 140
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 4,347,675 M Easting 542,419 M
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 4,347,454 M Easting 542,401 M

Elevation (ft) 1,307' 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 5/31/13 Date drilling commenced 8/27/13 Date drilling ceased 8/31/13
Date completion activities began 9/26/13 Date completion activities ceased 10/7/13
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 N
Salt water depth(s) ft 1300' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 696'-703' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Received
JAN 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

Reviewed by: _____

02/28/2014

API 47- 033 - 05747 Farm name JUNKINS, EARL AND BELVA Well number 140

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"	805'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/2"	4 1/2"	3222.15'	New	J-55		N
Tubing							
Packer type and depth set							

Comment Details Circulated Est. 10 bbls to surface on 7" surface cement job. Circulated gel spacer to surface on 4 1/2".

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	200	15.6	1.18	236	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix/ Econo	200/70	14.2/11.8	1.27/2.93	254/205	520'	8
Tubing							

Drillers TD (ft) 3271' Loggers TD (ft) 3254'

Deepest formation penetrated Fifth Sand Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 830'

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

15 Centralizers every 64' 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

API 47- 033 - 05747 Farm name JUNKINS, EARL AND BELVA Well number 140

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	10/1/13	3118'	3122'	16	Fifth Sand
1	10/1/13	3123'	3127'	16	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	10/7/13	10	1813	2839	1633	10,000	260	

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Fifth Sand	2998'-3009'	TVD	3115'-3127'	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	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, H_2S, ETC)
Sand/Shale	0	696	0	696	
Pittsburgh Coal	696	703	696	703	
Sand/Shale	703	2044	703	2092	
Big Lime	2044	2124	2092	2184	
Big Injun	2124	2182	2184	2250	
Shale	2182	2590	2250	2689	
Fifty Foot	2590	2598	2689	2698	
Shale	2598	2680	2698	2783	
Sand	2680	2832	2783	2942	
Shale	2832	2998	2942	3115	
Fifth Sand	2998	3009	3115	3127	Drilled directional S 26 degrees E a distance of 663'
Shale	3009	3150	3127	3271	
TD	3150		3271		

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 Baker Hughes
Address 2228 Philippi Pike City Clarksburg State WV Zip 26301

Stimulating Company Universal Services Inc.
Address 2489 Baumen Rd City Wooster State OH Zip 44691

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature [signature] Title Operations Mgr Date 11/25/13

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

HG Energy, LLC

Harrison County, West Virginia
W.B. Carpenter #140
W.B. Carpenter #140

Wellbore #1

Survey: MWD

DDC Survey Report

13 December, 2013

ADC
The APPALACHIAN DIRECTIONAL COMPANY

The APPALACHIAN DIRECTIONAL COMPANY

I **Larry Wright**, certify that I am employed by **The Appalachian Directional Drilling Company (ADC).** That I did on the day(s) of **8/27/13** thru **8/29/13** conduct or supervise the taking of a **MWD Survey** from a depth of **805** feet to a depth of **3271** feet, that the data is true, correct, complete and within the limitations of the tool as set forth by **The Appalachian Directional Drilling Company (ADC).**; that I am authorized and qualified to make this report; that this survey was conducted at the request of **HG. Energy, LLC** for the **W.B. Carpenter # 140** API No. **47-033-05747** in **Harrison, County WV**; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by **The Appalachian Directional Drilling Company (ADC).**

Larry Wright

Digitally signed by Larry Wright
DN: cn=Larry Wright, o=The Directional Drilling Company, ou=GM of Guidance Services, email=larryw@directionaldrillers.com, c=US
Date: 2013.12.19 10:40:49 -06'00'

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

DDC
Survey Report

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well W.B. Carpenter #140
Project:	Harrison County, West Virginia	**TVD Reference:**	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #140	**MD Reference:**	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #140	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Project Harrison County, West Virginia

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

Site W.B. Carpenter #140

Site Position:		**Northing:**	14,263,965.50 usft	**Latitude:**	39° 16' 38.300 N
From:	Lat/Long	**Easting:**	1,779,533.54 usft	**Longitude:**	80° 30' 30.200 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.31 °

Well W.B. Carpenter #140

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,263,965.50 usft	**Latitude:**	39° 16' 38.300 N
	+E/-W	0.0 usft	**Easting:**	1,779,533.54 usft	**Longitude:**	80° 30' 30.200 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,307.0 usft

Wellbore Wellbore #1

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

Design Wellbore #1

Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	178.61

Survey Program **Date** 12/13/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
805.0	3,271.0	MWD (Wellbore #1)		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
FIRST SURVEY @ 805' MD / 805' TVD									
805.0	0.00	0.00	805.0	0.0	0.0	0.0	0.00	0.00	0.00
845.0	1.71	121.60	845.0	-0.3	0.5	0.3	4.28	4.28	0.00
875.0	1.71	114.62	875.0	-0.7	1.3	0.8	0.69	0.00	-23.27
905.0	2.02	130.22	905.0	-1.3	2.1	1.3	1.97	1.03	52.00
935.0	2.59	146.21	934.9	-2.2	2.9	2.2	2.85	1.90	53.30
965.0	3.30	164.80	964.9	-3.6	3.5	3.6	3.94	2.37	61.97
995.0	3.78	182.12	994.8	-5.4	3.7	5.5	3.89	1.60	57.73
1,025.0	4.61	189.72	1,024.8	-7.6	3.4	7.6	3.32	2.77	25.33
1,055.0	5.49	189.02	1,054.6	-10.2	3.0	10.2	2.94	2.93	-2.33

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Well:	W.B. Carpenter #140	**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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,085.0	6.50	189.50	1,084.5	-13.3	2.5	13.3	3.37	3.37	1.60
1,115.0	7.29	190.12	1,114.3	-16.8	1.9	16.8	2.64	2.63	2.07
1,145.0	7.78	189.59	1,144.0	-20.7	1.2	20.7	1.65	1.63	-1.77
1,175.0	8.39	187.92	1,173.7	-24.9	0.6	24.9	2.18	2.03	-5.57
1,205.0	9.32	185.11	1,203.4	-29.4	0.1	29.4	3.42	3.10	-9.37
1,235.0	10.59	186.51	1,232.9	-34.6	-0.5	34.6	4.31	4.23	4.67
1,265.0	12.00	187.22	1,262.3	-40.4	-1.2	40.4	4.72	4.70	2.37
1,295.0	12.70	184.62	1,291.6	-46.8	-1.8	46.8	2.98	2.33	-8.67
1,325.0	13.10	181.50	1,320.9	-53.5	-2.2	53.4	2.68	1.33	-10.40
1,355.0	13.01	177.59	1,350.1	-60.3	-2.1	60.2	2.96	-0.30	-13.03
1,385.0	13.40	173.81	1,379.3	-67.1	-1.6	67.0	3.16	1.30	-12.60
1,415.0	14.59	174.03	1,408.4	-74.3	-0.8	74.3	3.97	3.97	0.73
1,445.0	16.00	174.69	1,437.3	-82.2	-0.1	82.2	4.74	4.70	2.20
1,475.0	17.40	175.53	1,466.1	-90.8	0.7	90.8	4.74	4.67	2.80
1,505.0	18.28	176.10	1,494.6	-99.9	1.3	99.9	2.99	2.93	1.90
1,535.0	18.19	176.71	1,523.1	-109.3	1.9	109.3	0.70	-0.30	2.03
1,565.0	18.59	178.21	1,551.6	-118.8	2.3	118.8	2.07	1.33	5.00
1,595.0	18.41	179.79	1,580.0	-128.3	2.5	128.3	1.78	-0.60	5.27
1,625.0	18.19	179.39	1,608.5	-137.7	2.6	137.7	0.84	-0.73	-1.33
1,655.0	18.81	178.82	1,637.0	-147.2	2.7	147.2	2.15	2.07	-1.90
1,685.0	20.21	177.59	1,665.3	-157.2	3.0	157.3	4.86	4.67	-4.10
1,715.0	21.88	177.20	1,693.3	-168.0	3.5	168.0	5.59	5.57	-1.30
1,745.0	22.81	178.82	1,721.0	-179.4	3.9	179.4	3.72	3.10	5.40
1,775.0	23.20	179.22	1,748.6	-191.1	4.1	191.2	1.40	1.30	1.33
1,805.0	22.72	181.19	1,776.2	-202.8	4.1	202.9	3.02	-1.60	6.57
1,835.0	21.62	182.60	1,804.0	-214.1	3.7	214.2	4.07	-3.67	4.70
1,865.0	21.40	184.23	1,831.9	-225.1	3.1	225.1	2.12	-0.73	5.43
1,895.0	21.71	184.93	1,859.8	-236.1	2.2	236.1	1.34	1.03	2.33
1,925.0	22.41	186.60	1,887.6	-247.3	1.0	247.3	3.13	2.33	5.57
1,955.0	22.59	187.52	1,915.4	-258.7	-0.4	258.6	1.32	0.60	3.07
1,985.0	22.72	188.49	1,943.0	-270.1	-2.0	270.0	1.32	0.43	3.23
2,015.0	23.29	190.42	1,970.7	-281.7	-3.9	281.5	3.15	1.90	6.43
2,045.0	24.08	192.40	1,998.1	-293.5	-6.3	293.3	3.74	2.63	6.60
2,075.0	24.39	191.70	2,025.5	-305.6	-8.9	305.3	1.41	1.03	-2.33
2,105.0	25.40	190.82	2,052.7	-317.9	-11.3	317.6	3.59	3.37	-2.93
2,135.0	25.88	189.59	2,079.7	-330.7	-13.6	330.3	2.39	1.60	-4.10
2,165.0	26.72	189.41	2,106.6	-343.8	-15.8	343.3	2.81	2.80	-0.60
2,195.0	27.20	188.31	2,133.4	-357.3	-17.9	356.7	2.31	1.60	-3.67
2,225.0	27.60	188.31	2,160.0	-370.9	-19.9	370.3	1.33	1.33	0.00
2,255.0	27.11	185.59	2,186.7	-384.6	-21.6	384.0	4.47	-1.63	-9.07
2,285.0	26.41	183.22	2,213.4	-398.1	-22.6	397.4	4.25	-2.33	-7.90
2,315.0	25.62	180.62	2,240.4	-411.2	-23.1	410.5	4.62	-2.63	-8.67
2,345.0	24.61	178.69	2,267.6	-424.0	-23.0	423.3	4.33	-3.37	-6.43
2,375.0	23.99	176.10	2,294.9	-436.3	-22.4	435.6	4.11	-2.07	-8.63

DDC
Survey Report

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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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,405.0	23.51	174.82	2,322.4	-448.3	-21.5	447.7	2.35	-1.60	-4.27
2,435.0	22.81	172.10	2,350.0	-460.0	-20.1	459.4	4.26	-2.33	-9.07
2,465.0	22.02	170.12	2,377.7	-471.3	-18.4	470.8	3.64	-2.63	-6.60
2,495.0	21.31	166.82	2,405.6	-482.2	-16.2	481.7	4.70	-2.37	-11.00
2,525.0	20.30	163.70	2,433.6	-492.5	-13.5	492.0	5.00	-3.37	-10.40
2,555.0	19.12	161.81	2,461.9	-502.2	-10.5	501.8	4.47	-3.93	-6.30
2,585.0	18.11	161.90	2,490.3	-511.3	-7.5	510.9	3.37	-3.37	0.30
2,615.0	17.09	164.89	2,518.9	-520.0	-4.9	519.7	4.54	-3.40	9.97
2,645.0	16.61	168.89	2,547.6	-528.4	-2.9	528.2	4.18	-1.60	13.33
2,675.0	16.48	173.50	2,576.4	-536.9	-1.6	536.7	4.40	-0.43	15.37
2,705.0	16.48	177.81	2,605.1	-545.3	-1.0	545.1	4.07	0.00	14.37
2,735.0	16.08	179.79	2,633.9	-553.7	-0.8	553.6	2.28	-1.33	6.60
2,765.0	15.51	180.32	2,662.8	-561.9	-0.8	561.7	1.96	-1.90	1.77
2,795.0	15.60	182.60	2,691.7	-569.9	-1.0	569.8	2.06	0.30	7.60
2,825.0	16.22	185.50	2,720.5	-578.1	-1.6	577.9	3.36	2.07	9.67
2,855.0	17.18	189.10	2,749.3	-586.7	-2.7	586.5	4.70	3.20	12.00
2,885.0	18.11	192.00	2,777.9	-595.6	-4.4	595.3	4.26	3.10	9.67
2,915.0	18.26	190.73	2,806.4	-604.8	-6.2	604.5	1.41	0.50	-4.23
2,945.0	18.41	189.19	2,834.8	-614.1	-7.8	613.7	1.69	0.50	-5.13
2,975.0	18.41	184.23	2,863.3	-623.5	-8.9	623.1	5.22	0.00	-16.53
3,005.0	17.09	179.00	2,891.9	-632.6	-9.2	632.2	6.90	-4.40	-17.43
3,035.0	15.82	171.61	2,920.7	-641.1	-8.5	640.7	8.15	-4.23	-24.63
3,065.0	15.21	165.73	2,949.6	-648.9	-7.0	648.6	5.62	-2.03	-19.60
3,095.0	15.12	159.53	2,978.5	-656.4	-4.6	656.1	5.41	-0.30	-20.67
3,125.0	14.50	154.30	3,007.5	-663.5	-1.6	663.2	4.91	-2.07	-17.43
3,155.0	13.71	151.31	3,036.6	-670.0	1.7	669.8	3.58	-2.63	-9.97
3,185.0	13.01	146.61	3,065.8	-675.9	5.3	675.8	4.31	-2.33	-15.67
3,215.0	12.49	141.20	3,095.1	-681.3	9.2	681.3	4.34	-1.73	-18.03
TD @ 3271' MD / 3150' TVD									
3,271.0	12.49	141.20	3,149.7	-690.7	16.7	690.9	0.00	0.00	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
805.0	805.0	0.0	0.0	FIRST SURVEY @ 805' MD / 805' TVD
3,271.0	3,149.7	-690.7	16.7	TD @ 3271' MD / 3150' TVD

Checked By: _____ Approved By: _____ Date: _____

HG Energy, LLC

Harrison County, West Virginia
W.B. Carpenter #140
W.B. Carpenter #140

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

07 January, 2014

ADC
The APPALACHIAN DIRECTIONAL COMPANY

DDC

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well W.B. Carpenter #140
Project:	Harrison County, West Virginia	**TVD Reference:**	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #140	**MD Reference:**	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #140	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Project Harrison County, West Virginia

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

Site W.B. Carpenter #140

Site Position:		**Northing:**	14,263,965.50 usft	**Latitude:**	39° 16' 38.300 N
From:	Lat/Long	**Easting:**	1,779,533.54 usft	**Longitude:**	80° 30' 30.200 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.31 °

Well W.B. Carpenter #140

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,263,965.50 usft	**Latitude:**	39° 16' 38.300 N
	+E/-W	0.0 usft	**Easting:**	1,779,533.54 usft	**Longitude:**	80° 30' 30.200 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,307.0 usft

Wellbore Wellbore #1

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

Design Wellbore #1

Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	178.61

Survey Program **Date** 12/13/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
805.0	3,271.0	MWD (Wellbore #1)		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
805.0	0.00	0.00	805.0	0.0	0.0	14,263,965.50	1,779,533.54	39° 16' 38.300 N	80° 30' 30.200 W
FIRST SURVEY @ 805' MD / 805' TVD									
845.0	1.71	121.60	845.0	-0.3	0.5	14,263,965.18	1,779,534.05	39° 16' 38.297 N	80° 30' 30.194 W
875.0	1.71	114.62	875.0	-0.7	1.3	14,263,964.76	1,779,534.84	39° 16' 38.293 N	80° 30' 30.184 W
905.0	2.02	130.22	905.0	-1.3	2.1	14,263,964.23	1,779,535.65	39° 16' 38.287 N	80° 30' 30.173 W
935.0	2.59	146.21	934.9	-2.2	2.9	14,263,963.33	1,779,536.43	39° 16' 38.278 N	80° 30' 30.163 W
965.0	3.30	164.80	964.9	-3.6	3.5	14,263,961.93	1,779,537.03	39° 16' 38.265 N	80° 30' 30.156 W
995.0	3.78	182.12	994.8	-5.4	3.7	14,263,960.11	1,779,537.22	39° 16' 38.247 N	80° 30' 30.154 W
1,025.0	4.61	189.72	1,024.8	-7.6	3.4	14,263,957.93	1,779,536.98	39° 16' 38.225 N	80° 30' 30.157 W
1,055.0	5.49	189.02	1,054.6	-10.2	3.0	14,263,955.33	1,779,536.55	39° 16' 38.199 N	80° 30' 30.162 W
1,085.0	6.50	189.50	1,084.5	-13.3	2.5	14,263,952.24	1,779,536.05	39° 16' 38.169 N	80° 30' 30.169 W
1,115.0	7.29	190.12	1,114.3	-16.8	1.9	14,263,948.69	1,779,535.43	39° 16' 38.134 N	80° 30' 30.177 W

DDC

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well W.B. Carpenter #140
Project:	Harrison County, West Virginia	**TVD Reference:**	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #140	**MD Reference:**	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #140	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,145.0	7.78	189.59	1,144.0	-20.7	1.2	14,263,944.81	1,779,534.76	39° 16' 38.095 N	80° 30' 30.186 W
1,175.0	8.39	187.92	1,173.7	-24.9	0.6	14,263,940.64	1,779,534.12	39° 16' 38.054 N	80° 30' 30.194 W
1,205.0	9.32	185.11	1,203.4	-29.4	0.1	14,263,936.05	1,779,533.60	39° 16' 38.009 N	80° 30' 30.201 W
1,235.0	10.59	186.51	1,232.9	-34.6	-0.5	14,263,930.90	1,779,533.07	39° 16' 37.958 N	80° 30' 30.208 W
1,265.0	12.00	187.22	1,262.3	-40.4	-1.2	14,263,925.06	1,779,532.37	39° 16' 37.900 N	80° 30' 30.218 W
1,295.0	12.70	184.62	1,291.6	-46.8	-1.8	14,263,918.68	1,779,531.71	39° 16' 37.837 N	80° 30' 30.227 W
1,325.0	13.10	181.50	1,320.9	-53.5	-2.2	14,263,912.00	1,779,531.36	39° 16' 37.771 N	80° 30' 30.231 W
1,355.0	13.01	177.59	1,350.1	-60.3	-2.1	14,263,905.22	1,779,531.41	39° 16' 37.704 N	80° 30' 30.231 W
1,385.0	13.40	173.81	1,379.3	-67.1	-1.6	14,263,898.39	1,779,531.93	39° 16' 37.637 N	80° 30' 30.225 W
1,415.0	14.59	174.03	1,408.4	-74.3	-0.8	14,263,891.18	1,779,532.69	39° 16' 37.565 N	80° 30' 30.216 W
1,445.0	16.00	174.69	1,437.3	-82.2	-0.1	14,263,883.30	1,779,533.47	39° 16' 37.487 N	80° 30' 30.207 W
1,475.0	17.40	175.53	1,466.1	-90.8	0.7	14,263,874.72	1,779,534.20	39° 16' 37.402 N	80° 30' 30.198 W
1,505.0	18.28	176.10	1,494.6	-99.9	1.3	14,263,865.55	1,779,534.87	39° 16' 37.312 N	80° 30' 30.190 W
1,535.0	18.19	176.71	1,523.1	-109.3	1.9	14,263,856.18	1,779,535.46	39° 16' 37.219 N	80° 30' 30.183 W
1,565.0	18.59	178.21	1,551.6	-118.8	2.3	14,263,846.73	1,779,535.88	39° 16' 37.126 N	80° 30' 30.178 W
1,595.0	18.41	179.79	1,580.0	-128.3	2.5	14,263,837.21	1,779,536.04	39° 16' 37.031 N	80° 30' 30.177 W
1,625.0	18.19	179.39	1,608.5	-137.7	2.6	14,263,827.79	1,779,536.11	39° 16' 36.938 N	80° 30' 30.177 W
1,655.0	18.81	178.82	1,637.0	-147.2	2.7	14,263,818.27	1,779,536.26	39° 16' 36.844 N	80° 30' 30.176 W
1,685.0	20.21	177.59	1,665.3	-157.2	3.0	14,263,808.26	1,779,536.58	39° 16' 36.745 N	80° 30' 30.172 W
1,715.0	21.88	177.20	1,693.3	-168.0	3.5	14,263,797.50	1,779,537.07	39° 16' 36.639 N	80° 30' 30.167 W
1,745.0	22.81	178.82	1,721.0	-179.4	3.9	14,263,786.10	1,779,537.46	39° 16' 36.526 N	80° 30' 30.162 W
1,775.0	23.20	179.22	1,748.6	-191.1	4.1	14,263,774.38	1,779,537.66	39° 16' 36.410 N	80° 30' 30.161 W
1,805.0	22.72	181.19	1,776.2	-202.8	4.1	14,263,762.68	1,779,537.62	39° 16' 36.294 N	80° 30' 30.162 W
1,835.0	21.62	182.60	1,804.0	-214.1	3.7	14,263,751.36	1,779,537.25	39° 16' 36.183 N	80° 30' 30.168 W
1,865.0	21.40	184.23	1,831.9	-225.1	3.1	14,263,740.38	1,779,536.60	39° 16' 36.074 N	80° 30' 30.177 W
1,895.0	21.71	184.93	1,859.8	-236.1	2.2	14,263,729.40	1,779,535.72	39° 16' 35.966 N	80° 30' 30.189 W
1,925.0	22.41	186.60	1,887.6	-247.3	1.0	14,263,718.19	1,779,534.58	39° 16' 35.855 N	80° 30' 30.204 W
1,955.0	22.59	187.52	1,915.4	-258.7	-0.4	14,263,706.79	1,779,533.17	39° 16' 35.742 N	80° 30' 30.223 W
1,985.0	22.72	188.49	1,943.0	-270.1	-2.0	14,263,695.35	1,779,531.56	39° 16' 35.629 N	80° 30' 30.244 W
2,015.0	23.29	190.42	1,970.7	-281.7	-3.9	14,263,683.79	1,779,529.63	39° 16' 35.515 N	80° 30' 30.269 W
2,045.0	24.08	192.40	1,998.1	-293.5	-6.3	14,263,671.98	1,779,527.25	39° 16' 35.398 N	80° 30' 30.300 W
2,075.0	24.39	191.70	2,025.5	-305.6	-8.9	14,263,659.93	1,779,524.68	39° 16' 35.279 N	80° 30' 30.334 W
2,105.0	25.40	190.82	2,052.7	-317.9	-11.3	14,263,647.55	1,779,522.21	39° 16' 35.157 N	80° 30' 30.366 W
2,135.0	25.88	189.59	2,079.7	-330.7	-13.6	14,263,634.77	1,779,519.91	39° 16' 35.031 N	80° 30' 30.396 W
2,165.0	26.72	189.41	2,106.6	-343.8	-15.8	14,263,621.66	1,779,517.72	39° 16' 34.901 N	80° 30' 30.425 W
2,195.0	27.20	188.31	2,133.4	-357.3	-17.9	14,263,608.23	1,779,515.63	39° 16' 34.769 N	80° 30' 30.453 W
2,225.0	27.60	188.31	2,160.0	-370.9	-19.9	14,263,594.56	1,779,513.63	39° 16' 34.634 N	80° 30' 30.479 W
2,255.0	27.11	185.59	2,186.7	-384.6	-21.6	14,263,580.88	1,779,511.96	39° 16' 34.498 N	80° 30' 30.501 W
2,285.0	26.41	183.22	2,213.4	-398.1	-22.6	14,263,567.42	1,779,510.92	39° 16' 34.365 N	80° 30' 30.515 W
2,315.0	25.62	180.62	2,240.4	-411.2	-23.1	14,263,554.27	1,779,510.48	39° 16' 34.235 N	80° 30' 30.522 W
2,345.0	24.61	178.69	2,267.6	-424.0	-23.0	14,263,541.54	1,779,510.55	39° 16' 34.110 N	80° 30' 30.522 W
2,375.0	23.99	176.10	2,294.9	-436.3	-22.4	14,263,529.21	1,779,511.11	39° 16' 33.988 N	80° 30' 30.516 W
2,405.0	23.51	174.82	2,322.4	-448.3	-21.5	14,263,517.17	1,779,512.06	39° 16' 33.868 N	80° 30' 30.504 W
2,435.0	22.81	172.10	2,350.0	-460.0	-20.1	14,263,505.45	1,779,513.40	39° 16' 33.753 N	80° 30' 30.488 W
2,465.0	22.02	170.12	2,377.7	-471.3	-18.4	14,263,494.15	1,779,515.16	39° 16' 33.641 N	80° 30' 30.466 W
2,495.0	21.31	166.82	2,405.6	-482.2	-16.2	14,263,483.30	1,779,517.37	39° 16' 33.533 N	80° 30' 30.439 W
2,525.0	20.30	163.70	2,433.6	-492.5	-13.5	14,263,472.99	1,779,520.08	39° 16' 33.431 N	80° 30' 30.405 W
2,555.0	19.12	161.81	2,461.9	-502.2	-10.5	14,263,463.33	1,779,523.07	39° 16' 33.336 N	80° 30' 30.368 W
2,585.0	18.11	161.90	2,490.3	-511.3	-7.5	14,263,454.23	1,779,526.05	39° 16' 33.245 N	80° 30' 30.331 W
2,615.0	17.09	164.89	2,518.9	-520.0	-4.9	14,263,445.54	1,779,528.65	39° 16' 33.159 N	80° 30' 30.298 W
2,645.0	16.61	168.89	2,547.6	-528.4	-2.9	14,263,437.08	1,779,530.63	39° 16' 33.076 N	80° 30' 30.274 W
2,675.0	16.48	173.50	2,576.4	-536.9	-1.6	14,263,428.64	1,779,531.93	39° 16' 32.992 N	80° 30' 30.258 W
2,705.0	16.48	177.81	2,605.1	-545.3	-1.0	14,263,420.16	1,779,532.58	39° 16' 32.908 N	80° 30' 30.250 W
2,735.0	16.08	179.79	2,633.9	-553.7	-0.8	14,263,411.76	1,779,532.76	39° 16' 32.825 N	80° 30' 30.248 W
2,765.0	15.51	180.32	2,662.8	-561.9	-0.8	14,263,403.59	1,779,532.75	39° 16' 32.744 N	80° 30' 30.249 W

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well W.B. Carpenter #140
Project:	Harrison County, West Virginia	**TVD Reference:**	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #140	**MD Reference:**	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #140	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,795.0	15.60	182.60	2,691.7	-569.9	-1.0	14,263,395.55	1,779,532.54	39° 16' 32.665 N	80° 30' 30.252 W
2,825.0	16.22	185.50	2,720.5	-578.1	-1.6	14,263,387.35	1,779,531.96	39° 16' 32.584 N	80° 30' 30.260 W
2,855.0	17.18	189.10	2,749.3	-586.7	-2.7	14,263,378.80	1,779,530.86	39° 16' 32.499 N	80° 30' 30.275 W
2,885.0	18.11	192.00	2,777.9	-595.6	-4.4	14,263,369.87	1,779,529.19	39° 16' 32.411 N	80° 30' 30.297 W
2,915.0	18.26	190.73	2,806.4	-604.8	-6.2	14,263,360.69	1,779,527.34	39° 16' 32.321 N	80° 30' 30.321 W
2,945.0	18.41	189.19	2,834.8	-614.1	-7.8	14,263,351.40	1,779,525.71	39° 16' 32.229 N	80° 30' 30.342 W
2,975.0	18.41	184.23	2,863.3	-623.5	-8.9	14,263,341.99	1,779,524.61	39° 16' 32.136 N	80° 30' 30.357 W
3,005.0	17.09	179.00	2,891.9	-632.6	-9.2	14,263,332.86	1,779,524.33	39° 16' 32.046 N	80° 30' 30.361 W
3,035.0	15.82	171.61	2,920.7	-641.1	-8.5	14,263,324.41	1,779,525.01	39° 16' 31.962 N	80° 30' 30.353 W
3,065.0	15.21	165.73	2,949.6	-648.9	-7.0	14,263,316.55	1,779,526.57	39° 16' 31.884 N	80° 30' 30.333 W
3,095.0	15.12	159.53	2,978.5	-656.4	-4.6	14,263,309.07	1,779,528.91	39° 16' 31.810 N	80° 30' 30.304 W
3,125.0	14.50	154.30	3,007.5	-663.5	-1.6	14,263,302.02	1,779,531.91	39° 16' 31.740 N	80° 30' 30.267 W
3,155.0	13.71	151.31	3,036.6	-670.0	1.7	14,263,295.51	1,779,535.24	39° 16' 31.676 N	80° 30' 30.225 W
3,185.0	13.01	146.61	3,065.8	-675.9	5.3	14,263,289.58	1,779,538.81	39° 16' 31.617 N	80° 30' 30.180 W
3,215.0	12.49	141.20	3,095.1	-681.3	9.2	14,263,284.23	1,779,542.70	39° 16' 31.564 N	80° 30' 30.131 W
3,271.0	12.49	141.20	3,149.7	-690.7	16.7	14,263,274.79	1,779,550.29	39° 16' 31.470 N	80° 30' 30.035 W
TD @ 3271' MD / 3150' TVD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
3,271.0	3,149.7	-690.7	16.7	TD @ 3271' MD / 3150' TVD

Checked By: _____ Approved By: _____ Date: _____

02/28/2014

W.B. Carpenter #140
Harrison County, West Virginia
Q130711 & AM-13674
Design #1

Company Name: HG Energy, LLC
W.B. Carpenter #140
Harrison County, West Virginia
Rig: Original Well Elev
Created By: Guthrey Johnson
Date: 08/27/2013

WELL DETAILS:	W.B. Carpenter #140				
		Ground Level:	1307.0		
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	284712.48	1714541.3635	39° 16' 38.300 N	80° 30' 30.200 W

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

M G T

Azimuths to Grid North

Magnetic North: -7.99°

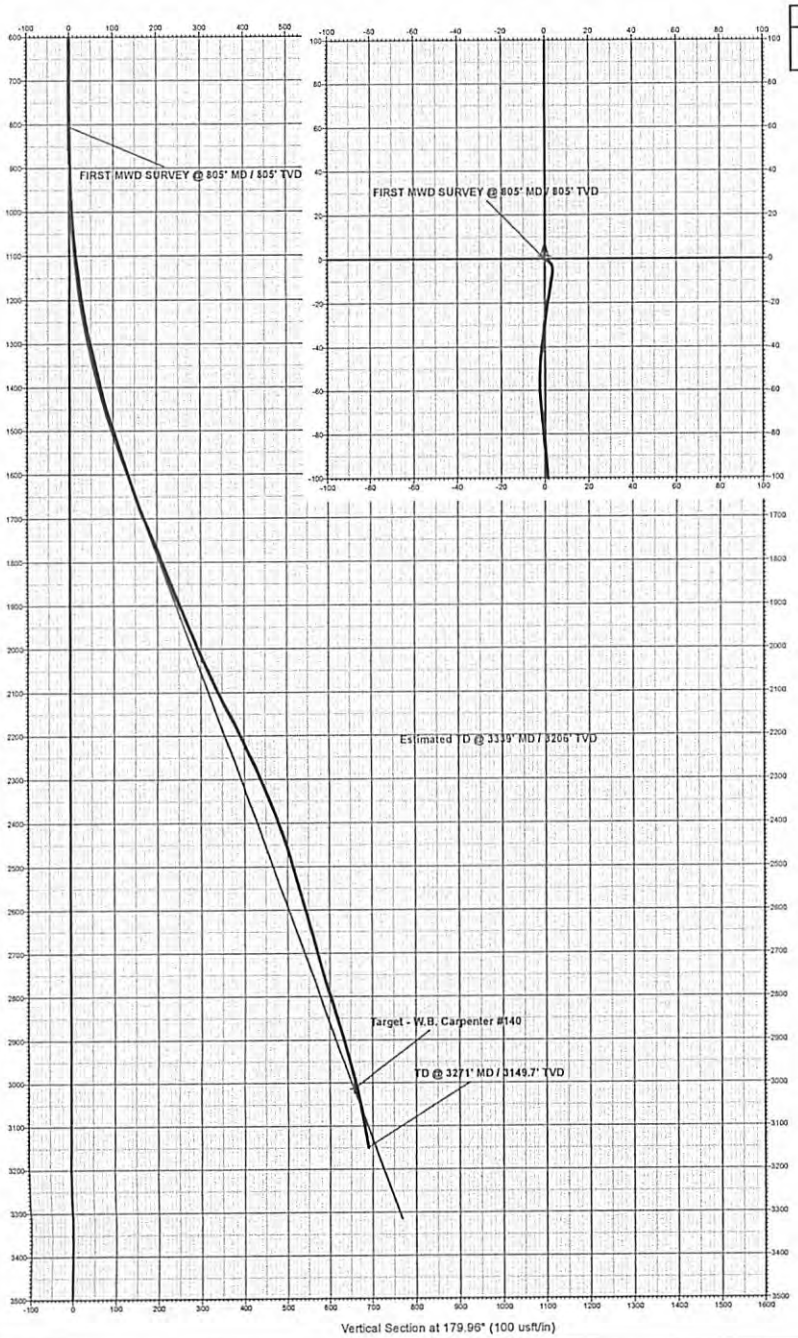
Magnetic Field
Strength: 52357.2snT
Dip Angle: 66.85°
Date: 8/14/2013
Model: IGRF2010

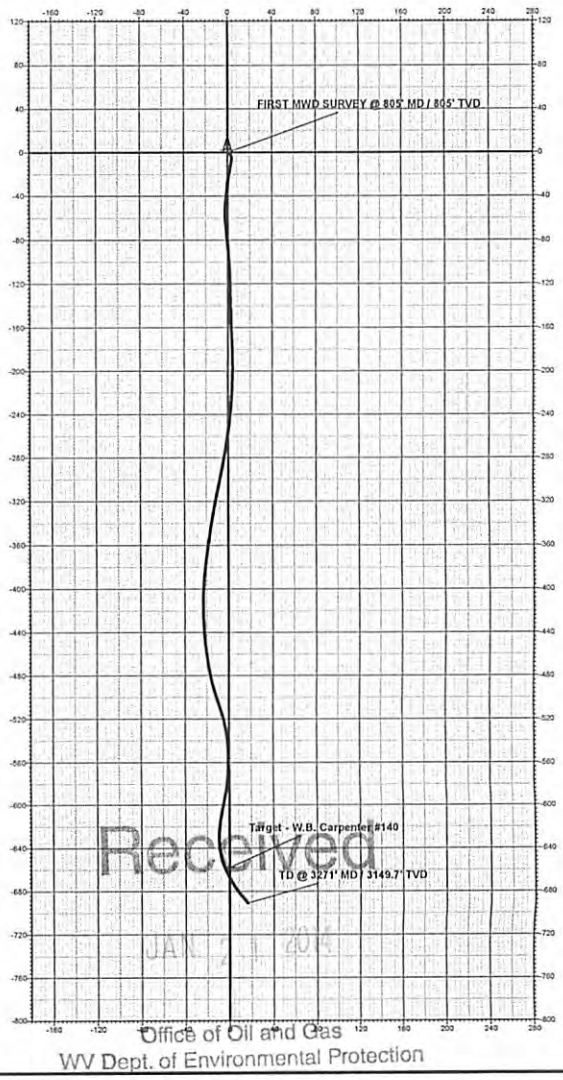
The APPALACHIAN DIRECTIONAL COMPANY

HG Energy

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Target - W.B. Carpenter #140 - plan hits target center	3014.5	-657.7	0.5	284054.82	1714541.84	39° 16' 31.800 N	80° 30' 30.100 W

ANNOTATIONS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
805.0	0.00	360.00	805.0	0.0	0.0	0.0	0.0	FIRST MWD SURVEY @ 805' MD / 805' TVD
3271.0	12.49	141.20	3149.7	-690.7	16.7	690.9	705.3	TD @ 3271' MD / 3149.7' TVD





02/28/2014

WBC 140

UNIVERSAL WELL SERVICES, INC.

Field Ticket - (This Is not an Invoice)

Customer	HG ENERGY LLC	End Date -				Date -	
5260 DUPONT RD		Customer No.	5069		Project No.		
PARKERSBURG, WV, 26101		AFE / PO No.			Task No.	1177501944	
		Job Type	Job Type Description		Formation	Upper Devonian	
		Frac	CROSSLINK FRAC		Operator Name	SHIREY	
District	Wooster	Casing	New/Used	Size	From	To	Weight
		Tubing					
Well Name and No.				Arrived on Location		Left Location	
WB CARPENTER#140		Open Hole		Time	Date	Time	Date
Well Type	County: HARRISON	Perforations				No. of Shots	
Gas	Township:	Perforations				No. of Shots	
State	API #	Perforations				No. of Shots	
WV	47-033-05747	Depth		Drilling Contractor		Max PSI Allowed	

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	140.000				
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	350.000				
802306	Minimum Pump Charge, <1500 HP, 1st 4 Hrs	Ea	1.000				
803401	0 - 10 BPM Computerized Blender, 1st 4 Hrs	Ea	1.000				
805520	Frac Ball Dropping Head	Ea	1.000				
810010	Treatment Van, (WINFRAC Data Monitoring or Similar)	Job	1.000				
820035	Unihib G	Gal	0.500				
820505	LEB 10X - Lquid Enzyme Breaker	Qts	0.800				
820815	EC6116A, BACTERIACIDE	Gal	2.600				
820955	Cla-Chek G	Gal	10.700				
821125	Unilink 8.5 Crosslinker (Borate)	Gal	17.600				
822235	Unigel 19 XL	Lb	300.000				
822935	NE-90, Non-Emulsifier (Non-Ionic)	Gal	12.700				
827945	15% Iron Chek Acid	Gal	300.000				
833000	20-40 mesh White Sand, Area 1	CWT	100.000				
837000	Proppant Pumping Charge, 20/40 mesh or smaller	CWT	100.000				
						0.00%	
						0.00%	

Mileage Calculation Section		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		$8.25			
		UNITS		Total (Qty)			
800070	Proppant and Bulk Delivery Charges, Per Ton Mile	TM		$2.50			
		Loaded Total Miles					
800050	Cement Delivery Charge	TM					
		Loaded Total Miles					

Comments:

X

CUSTOMER AUTHORIZED AGENT SIGNATURE

Customer Represental

UWS Authorized Agen

Date:

I have read, understood and agreed to the terms and conditions printed on the second page thereof and represent that I have full power and authority to execute this service order.

Received

JAN 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

Version: 10-1-13

02/28/2014

TREATMENT SUMMARY

Customer Name:	HG ENERGY LLC	DATE: NOV 7TH 2013
Well Name:	WB CARPENTER#140	

PRESSURES IN PSI

BREAKDOWN 2839 TOP PERF MD ____
AVERAGE 1813 BTM PERF MD ____
INSTANT 1633 5-MIN 1536 10-MIN ____

CLEAN VOLUMES IN GAL

TOP PERF TVD ____ PAD ____
BTM PERF TVD ____ ____
TREATMENT ____ TTL VOL ____

HYDRAULIC HORSEPOWER

USED ____

RATES IN B.P.M.

AVG TREATING 10.4 MAXIMUM ____

DESCRIPTION OF JOB WATER SAND FRAC W N/2 ASSIST

Time	Rate (bpm)	Slurry Volume (gal)	Pressure (psi)	Description of Stage or Event
11;33				SAFETY MEETING
11;41			5000	TEST LINES
11;42	4	300	VACUUM	PUMP ACID
11;47	14	1980	100	LOAD HOLE
11;49	3	2000	2839	BREAK FORMATION
11;58	11.1	2000	1890	EST RATE/PAD
12;00	10	3150	1846	START CROSSLINK
12;04	10	4879	1845	SAND 1 PSA
12;09	10.9	5530	1870	SAND 2PSA
12;10	10.3	6,590	1814	SAND 3PSA
12;11	10	7,630	1735	SAND 4 PSA
12;14	10	8,977	1670	FLUSH SAND
12;18			1633	COMPLETE JOB
12;23			1536	5 MIN SHUT IN
12;28			1494	10 MIN SHUT IN
12;33			1467	15 MININ SHUT

Totals

Sand	20/40		Sks	
Chemicals	Unigel 5F		Lbs	
	LEB 10X Breaker		Qts	
	SuperSurf		Gals	
	FloMax 50		Gals	
	Cla Chek		Gals	
	Iron Sta IIC		Gals	
	15% HCL		Gals	

UNIVERSAL WELL SERVICES, INC.