

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

API 47 - 033 - 05751 County HARRISON District TEN MILE
Quad SALEM 7.5' Pad Name W.B. CARPENTER Field/Pool Name WOLF SUMMIT
Farm name JUNKINS, EARL & BELVA Well Number 242
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 4,347,673 M Easting 542,415 M
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 4,347,494 M Easting 542,217 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 5/17/13 Date drilling commenced 9/3/13 Date drilling ceased 9/7/13
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 _____
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

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WV Dept. of Environmental Protection
Reviewed by: _____

02/28/2014

API 47-033 - 05751 Farm name JUNKINS, EARL & BELVA Well number 242

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"	803'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/2"	4 1/2"	3345'	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 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	200	15.6	1.18	236	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix/ Econo	200/75	14.2/11.8	1.27/2.93	254/220	350'	8
Tubing							

Drillers TD (ft) 3362' Loggers TD (ft) 3358'
 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"

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS JAN 2 2014

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS Office of Oil and Gas
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WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

API 47-033-05751 Farm name JUNKINS, EARL & BELVA Well number 242

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Fifth Sand</u>	<u>3018'-3029'</u> TVD	<u>3203'- 3215'</u> 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 ₂ S, ETC)
Sand/Shale	0	696	0	696	
Pittsburgh Coal	696	703	696	703	
Sand/Shale	703	2042	703	2116	
Big Lime	2042	2131	2116	2214	
Big Injun	2131	2190	2214	2284	
Shale	2190	2606	2284	2743	
Fifty Foot	2606	2629	2743	2768	
Shale	2629	2696	2768	2840	
Sand	2696	2852	2840	3018	
Shale	2852	3018	3018	3203	
Fifth Sand	3018	3029	3203	3215	Drilled directional S 10.5 degrees W a distance of 829'
Shale	3029	3165	3215	3362	
TD	3165		3362		

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 26093

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. WV Dept. of Environmental Protection

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

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

HG Energy, LLC

Harrison County, West Virginia

W.B. Carpenter #242

W.B. Carpenter #242

Wellbore #1

Survey: MWD

DDC Survey Report

11 December, 2013

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WV Dept. of Environmental Protection



02/28/2014



I **Larry Wright**, certify that I am employed by **The Appalachian Directional Drilling Company (ADC)**. That I did on the day(s) of **9/3/13** thru **9/5/13** conduct or supervise the taking of a **MWD Survey** from a depth of **802** feet to a depth of **3362** 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 # 242** API No. **47-033-05751** 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.c
om, c=US
Date: 2013.12.12 16:11:57 -06'00'

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JAN 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

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

02/28/2014

DDC
Survey Report



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.B. Carpenter #242
Project:	Harrison County, West Virginia	TVD Reference:	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #242	MD Reference:	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #242	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 #242		
Site Position:		Northing:	14,264,015.98 usft
From:	Lat/Long	Easting:	1,779,517.54 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	39° 16' 38.800 N
		Longitude:	80° 30' 30.400 W
		Grid Convergence:	0.31 °

Well	W.B. Carpenter #242		
Well Position	+N/-S	0.0 usft	Northing: 14,264,015.98 usft
	+E/-W	0.0 usft	Easting: 1,779,517.54 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	39° 16' 38.800 N
		Longitude:	80° 30' 30.400 W
		Ground Level:	1,307.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/11/2013	-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	222.37	

Survey Program	Date	12/11/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
802.0	3,362.0	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)	
TIE IN @ 802' MD / 802' TVD										
802.0	0.00	0.00	802.0	0.0	0.0	0.0	0.00	0.00	0.00	
846.0	1.49	126.53	846.0	-0.3	0.5	-0.1	3.39	3.39	0.00	
876.0	1.89	106.62	876.0	-0.7	1.2	-0.3	2.35	1.33	-66.37	
906.0	1.41	123.32	906.0	-1.1	2.0	-0.6	2.25	-1.60	55.67	
936.0	1.19	171.22	936.0	-1.6	2.4	-0.4	3.58	-0.73	159.67	
966.0	2.02	209.01	966.0	-2.3	2.2	0.3	4.34	2.77	125.97	
996.0	3.12	222.90	995.9	-3.4	1.4	1.6	4.19	3.67	46.30	
1,026.0	4.22	225.62	1,025.9	-4.8	0.0	3.5	3.71	3.67	9.07	
1,056.0	5.41	229.62	1,055.8	-6.5	-1.8	6.0	4.12	3.97	13.33	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,086.0	6.59	230.81	1,085.6	-8.5	-4.3	9.1	3.95	3.93	3.97
1,116.0	7.78	228.39	1,115.4	-10.9	-7.1	12.8	4.09	3.97	-8.07
1,146.0	8.70	226.33	1,145.0	-13.8	-10.3	17.1	3.22	3.07	-6.87
1,176.0	9.18	222.81	1,174.7	-17.1	-13.5	21.8	2.43	1.60	-11.73
1,206.0	9.89	219.91	1,204.3	-20.9	-16.8	26.8	2.86	2.37	-9.67
1,236.0	10.81	218.42	1,233.8	-25.0	-20.2	32.1	3.19	3.07	-4.97
1,266.0	11.38	218.33	1,263.2	-29.6	-23.8	37.9	1.90	1.90	-0.30
1,296.0	11.91	221.32	1,292.6	-34.2	-27.7	43.9	2.68	1.77	9.97
1,326.0	12.39	221.10	1,321.9	-39.0	-31.8	50.3	1.61	1.60	-0.73
1,356.0	12.92	221.01	1,351.2	-43.9	-36.2	56.8	1.77	1.77	-0.30
1,386.0	13.10	221.71	1,380.4	-49.0	-40.6	63.6	0.80	0.60	2.33
1,416.0	13.71	224.70	1,409.6	-54.1	-45.4	70.5	3.08	2.03	9.97
1,446.0	14.41	229.01	1,438.7	-59.0	-50.7	77.8	4.20	2.33	14.37
1,476.0	15.60	233.62	1,467.7	-63.9	-56.8	85.5	5.62	3.97	15.37
1,506.0	16.92	238.72	1,496.5	-68.5	-63.7	93.6	6.48	4.40	17.00
1,536.0	17.49	239.20	1,525.1	-73.1	-71.4	102.1	1.96	1.90	1.60
1,566.0	18.50	238.41	1,553.7	-77.9	-79.3	111.0	3.46	3.37	-2.63
1,596.0	18.98	237.31	1,582.1	-83.0	-87.4	120.3	1.99	1.60	-3.67
1,626.0	20.21	233.01	1,610.4	-88.8	-95.7	130.1	6.32	4.10	-14.33
1,656.0	21.01	230.33	1,638.4	-95.3	-104.0	140.5	4.12	2.67	-8.93
1,686.0	22.50	229.01	1,666.3	-102.5	-112.4	151.5	5.23	4.97	-4.40
1,716.0	22.98	228.92	1,694.0	-110.2	-121.2	163.1	1.60	1.60	-0.30
1,746.0	23.51	228.13	1,721.5	-118.0	-130.1	174.8	2.05	1.77	-2.63
1,776.0	24.92	227.29	1,748.9	-126.3	-139.2	187.1	4.84	4.70	-2.80
1,806.0	26.10	227.29	1,776.0	-135.0	-148.6	199.9	3.93	3.93	0.00
1,836.0	27.42	226.02	1,802.7	-144.3	-158.5	213.4	4.79	4.40	-4.23
1,866.0	28.08	223.60	1,829.3	-154.2	-168.3	227.4	4.35	2.20	-8.07
1,896.0	28.52	222.02	1,855.7	-164.7	-178.0	241.6	2.90	1.47	-5.27
1,926.0	28.52	220.31	1,882.1	-175.4	-187.4	255.9	2.72	0.00	-5.70
1,956.0	28.39	222.81	1,908.5	-186.1	-196.9	270.2	3.99	-0.43	8.33
1,986.0	28.21	224.92	1,934.9	-196.4	-206.7	284.4	3.39	-0.60	7.03
2,016.0	28.70	228.00	1,961.2	-206.2	-217.1	298.7	5.16	1.63	10.27
2,046.0	29.49	231.29	1,987.5	-215.7	-228.2	313.1	5.95	2.63	10.97
2,076.0	30.28	231.42	2,013.5	-225.0	-239.9	327.9	2.64	2.63	0.43
2,106.0	30.72	230.59	2,039.3	-234.6	-251.7	343.0	2.03	1.47	-2.77
2,136.0	31.20	229.62	2,065.0	-244.5	-263.6	358.2	2.31	1.60	-3.23
2,166.0	31.90	229.40	2,090.6	-254.7	-275.5	373.8	2.36	2.33	-0.73
2,196.0	32.52	228.00	2,116.0	-265.2	-287.5	389.7	3.23	2.07	-4.67
2,226.0	32.61	227.82	2,141.3	-276.1	-299.5	405.8	0.44	0.30	-0.60
2,256.0	31.68	228.92	2,166.7	-286.7	-311.4	421.7	3.66	-3.10	3.67
2,286.0	30.50	228.13	2,192.4	-296.9	-323.0	437.1	4.16	-3.93	-2.63
2,316.0	29.31	225.71	2,218.4	-307.1	-334.0	452.0	5.65	-3.97	-8.07
2,346.0	27.82	223.51	2,244.7	-317.3	-344.0	466.3	6.08	-4.97	-7.33
2,376.0	26.81	220.53	2,271.4	-327.6	-353.2	480.1	5.67	-3.37	-9.93

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Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,406.0	26.50	221.10	2,298.2	-337.7	-362.0	493.5	1.34	-1.03	1.90
2,436.0	25.62	222.42	2,325.1	-347.6	-370.8	506.7	3.51	-2.93	4.40
2,466.0	25.18	224.61	2,352.2	-356.9	-379.7	519.6	3.46	-1.47	7.30
2,496.0	24.39	225.23	2,379.5	-365.8	-388.6	532.1	2.77	-2.63	2.07
2,526.0	23.60	226.90	2,406.9	-374.3	-397.3	544.3	3.47	-2.63	5.57
2,556.0	23.51	224.92	2,434.4	-382.6	-405.9	556.3	2.65	-0.30	-6.60
2,586.0	22.98	223.82	2,461.9	-391.1	-414.2	568.1	2.28	-1.77	-3.67
2,616.0	22.90	221.01	2,489.6	-399.7	-422.1	579.8	3.66	-0.27	-9.37
2,646.0	23.51	221.93	2,517.2	-408.6	-429.9	591.6	2.37	2.03	3.07
2,676.0	23.51	222.20	2,544.7	-417.5	-438.0	603.6	0.36	0.00	0.90
2,706.0	23.20	224.39	2,572.2	-426.1	-446.1	615.5	3.07	-1.03	7.30
2,736.0	22.90	225.80	2,599.8	-434.4	-454.4	627.2	2.09	-1.00	4.70
2,766.0	23.20	223.39	2,627.4	-442.8	-462.7	638.9	3.30	1.00	-8.03
2,796.0	24.08	229.62	2,654.9	-451.0	-471.4	650.9	8.82	2.93	20.77
2,826.0	25.18	231.03	2,682.2	-459.0	-481.0	663.3	4.16	3.67	4.70
2,856.0	26.50	232.83	2,709.2	-467.1	-491.3	676.2	5.12	4.40	6.00
2,886.0	27.99	235.91	2,735.8	-475.1	-502.5	689.6	6.84	4.97	10.27
2,916.0	28.70	236.21	2,762.2	-483.0	-514.3	703.4	2.41	2.37	1.00
2,946.0	29.09	232.61	2,788.5	-491.4	-526.1	717.6	5.94	1.30	-12.00
2,976.0	29.00	230.59	2,814.7	-500.5	-537.5	732.0	3.28	-0.30	-6.73
3,006.0	28.61	228.30	2,841.0	-509.9	-548.5	746.3	3.90	-1.30	-7.63
3,036.0	28.21	223.69	2,867.4	-519.8	-558.7	760.6	7.43	-1.33	-15.37
3,066.0	26.89	217.49	2,894.0	-530.3	-567.8	774.4	10.52	-4.40	-20.67
3,096.0	25.62	209.50	2,920.9	-541.3	-575.1	787.5	12.51	-4.23	-26.63
3,126.0	25.00	203.91	2,948.1	-552.8	-580.9	799.8	8.23	-2.07	-18.63
3,156.0	24.52	197.01	2,975.3	-564.5	-585.2	811.5	9.76	-1.60	-23.00
3,186.0	23.99	192.09	3,002.7	-576.4	-588.3	822.4	6.96	-1.77	-16.40
3,203.0	23.78	190.45	3,018.2	-583.2	-589.7	828.3	4.10	-1.24	-9.65
3,216.0	23.51	188.31	3,030.1	-588.3	-590.5	832.6	6.92	-2.08	-16.46
3,246.0	23.29	182.60	3,057.7	-600.2	-591.7	842.2	7.59	-0.73	-19.03
3,276.0	22.98	178.60	3,085.2	-612.0	-591.8	850.9	5.34	-1.03	-13.33
3,306.0	22.59	174.91	3,112.9	-623.6	-591.1	859.1	4.94	-1.30	-12.30
TD @ 3362' MD / 3165' TVD									
3,362.0	22.02	167.77	3,164.7	-644.5	-588.0	872.4	4.94	-1.02	-12.75

Received

JAN 21 2014

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
802.0	802.0	0.0	0.0	TIE IN @ 802' MD / 802' TVD
3,362.0	3,164.7	-644.5	-588.0	TD @ 3362' MD / 3165' TVD

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WV Dept. of Environmental Protection

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Well:	W.B. Carpenter #242	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____

Received

JAN 27 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

HG Energy, LLC

Harrison County, West Virginia

W.B. Carpenter #242

W.B. Carpenter #242

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

07 January, 2014

Received

JAN 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection



02/28/2014

DDC
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.B. Carpenter #242
Project:	Harrison County, West Virginia	TVD Reference:	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #242	MD Reference:	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #242	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 #242				
Site Position:	Northing:	14,264,015.98 usft	Latitude:	39° 16' 38.800 N	
From:	Lat/Long	Easting:	1,779,517.54 usft	Longitude:	80° 30' 30.400 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.31 °

Well	W.B. Carpenter #242					
Well Position	+N/-S	0.0 usft	Northing:	14,264,015.98 usft	Latitude:	39° 16' 38.800 N
	+E/-W	0.0 usft	Easting:	1,779,517.54 usft	Longitude:	80° 30' 30.400 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,307.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/11/2013	-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	222.37	

Survey Program	Date	12/11/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
802.0	3,362.0	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		
802.0	0.00	0.00	802.0	0.0	0.0	14,264,015.98	1,779,517.54	39° 16' 38.800 N	80° 30' 30.400 W		
TIE IN @ 802' MD / 802' TVD											
846.0	1.49	126.53	846.0	-0.3	0.5	14,264,015.64	1,779,518.00	39° 16' 38.797 N	80° 30' 30.394 W		
876.0	1.89	106.62	876.0	-0.7	1.2	14,264,015.27	1,779,518.79	39° 16' 38.793 N	80° 30' 30.384 W		
906.0	1.41	123.32	906.0	-1.1	2.0	14,264,014.92	1,779,519.57	39° 16' 38.789 N	80° 30' 30.374 W		
936.0	1.19	171.22	936.0	-1.6	2.4	14,264,014.41	1,779,519.93	39° 16' 38.784 N	80° 30' 30.370 W		
966.0	2.02	209.01	966.0	-2.3	2.2	14,264,013.64	1,779,519.72	39° 16' 38.777 N	80° 30' 30.372 W		
996.0	3.12	222.90	995.9	-3.4	1.4	14,264,012.58	1,779,518.91	39° 16' 38.766 N	80° 30' 30.383 W		
1,026.0	4.22	225.62	1,025.9	-4.8	0.0	14,264,011.21	1,779,517.56	39° 16' 38.753 N	80° 30' 30.400 W		
1,056.0	5.41	229.62	1,055.8	-6.5	-1.8	14,264,009.52	1,779,515.70	39° 16' 38.736 N	80° 30' 30.424 W		
1,086.0	6.59	230.81	1,085.6	-8.5	-4.3	14,264,007.52	1,779,513.29	39° 16' 38.717 N	80° 30' 30.455 W		
1,116.0	7.78	228.39	1,115.4	-10.9	-7.1	14,264,005.08	1,779,510.43	39° 16' 38.693 N	80° 30' 30.491 W		

DDC
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.B. Carpenter #242
Project:	Harrison County, West Virginia	TVD Reference:	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #242	MD Reference:	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #242	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
1,146.0	8.70	226.33	1,145.0	-13.8	-10.3	14,264,002.17	1,779,507.27	39° 16' 38.664 N	80° 30' 30.532 W
1,176.0	9.18	222.81	1,174.7	-17.1	-13.5	14,263,998.84	1,779,504.01	39° 16' 38.631 N	80° 30' 30.573 W
1,206.0	9.89	219.91	1,204.3	-20.9	-16.8	14,263,995.11	1,779,500.73	39° 16' 38.595 N	80° 30' 30.615 W
1,236.0	10.81	218.42	1,233.8	-25.0	-20.2	14,263,990.93	1,779,497.33	39° 16' 38.553 N	80° 30' 30.659 W
1,266.0	11.38	218.33	1,263.2	-29.6	-23.8	14,263,986.41	1,779,493.74	39° 16' 38.509 N	80° 30' 30.705 W
1,296.0	11.91	221.32	1,292.6	-34.2	-27.7	14,263,981.76	1,779,489.86	39° 16' 38.463 N	80° 30' 30.755 W
1,326.0	12.39	221.10	1,321.9	-39.0	-31.8	14,263,977.01	1,779,485.70	39° 16' 38.416 N	80° 30' 30.808 W
1,356.0	12.92	221.01	1,351.2	-43.9	-36.2	14,263,972.05	1,779,481.39	39° 16' 38.368 N	80° 30' 30.863 W
1,386.0	13.10	221.71	1,380.4	-49.0	-40.6	14,263,966.98	1,779,476.92	39° 16' 38.318 N	80° 30' 30.920 W
1,416.0	13.71	224.70	1,409.6	-54.1	-45.4	14,263,961.92	1,779,472.16	39° 16' 38.268 N	80° 30' 30.981 W
1,446.0	14.41	229.01	1,438.7	-59.0	-50.7	14,263,956.94	1,779,466.84	39° 16' 38.219 N	80° 30' 31.049 W
1,476.0	15.60	233.62	1,467.7	-63.9	-56.8	14,263,952.10	1,779,460.78	39° 16' 38.171 N	80° 30' 31.127 W
1,506.0	16.92	238.72	1,496.5	-68.5	-63.7	14,263,947.44	1,779,453.80	39° 16' 38.126 N	80° 30' 31.216 W
1,536.0	17.49	239.20	1,525.1	-73.1	-71.4	14,263,942.87	1,779,446.19	39° 16' 38.081 N	80° 30' 31.313 W
1,566.0	18.50	238.41	1,553.7	-77.9	-79.3	14,263,938.06	1,779,438.27	39° 16' 38.034 N	80° 30' 31.414 W
1,596.0	18.98	237.31	1,582.1	-83.0	-87.4	14,263,932.94	1,779,430.11	39° 16' 37.984 N	80° 30' 31.518 W
1,626.0	20.21	233.01	1,610.4	-88.8	-95.7	14,263,927.18	1,779,421.86	39° 16' 37.927 N	80° 30' 31.623 W
1,656.0	21.01	230.33	1,638.4	-95.3	-104.0	14,263,920.63	1,779,413.58	39° 16' 37.863 N	80° 30' 31.729 W
1,686.0	22.50	229.01	1,666.3	-102.5	-112.4	14,263,913.43	1,779,405.11	39° 16' 37.792 N	80° 30' 31.837 W
1,716.0	22.98	228.92	1,694.0	-110.2	-121.2	14,263,905.82	1,779,396.36	39° 16' 37.717 N	80° 30' 31.949 W
1,746.0	23.51	228.13	1,721.5	-118.0	-130.1	14,263,897.98	1,779,387.49	39° 16' 37.640 N	80° 30' 32.063 W
1,776.0	24.92	227.29	1,748.9	-126.3	-139.2	14,263,889.70	1,779,378.39	39° 16' 37.559 N	80° 30' 32.179 W
1,806.0	26.10	227.29	1,776.0	-135.0	-148.6	14,263,880.93	1,779,368.90	39° 16' 37.473 N	80° 30' 32.300 W
1,836.0	27.42	226.02	1,802.7	-144.3	-158.5	14,263,871.66	1,779,359.08	39° 16' 37.382 N	80° 30' 32.426 W
1,866.0	28.08	223.60	1,829.3	-154.2	-168.3	14,263,861.75	1,779,349.24	39° 16' 37.284 N	80° 30' 32.552 W
1,896.0	28.52	222.02	1,855.7	-164.7	-178.0	14,263,851.32	1,779,339.57	39° 16' 37.181 N	80° 30' 32.675 W
1,926.0	28.52	220.31	1,882.1	-175.4	-187.4	14,263,840.53	1,779,330.15	39° 16' 37.075 N	80° 30' 32.796 W
1,956.0	28.39	222.81	1,908.5	-186.1	-196.9	14,263,829.84	1,779,320.67	39° 16' 36.970 N	80° 30' 32.917 W
1,986.0	28.21	224.92	1,934.9	-196.4	-206.7	14,263,819.59	1,779,310.81	39° 16' 36.869 N	80° 30' 33.043 W
2,016.0	28.70	228.00	1,961.2	-206.2	-217.1	14,263,809.75	1,779,300.45	39° 16' 36.773 N	80° 30' 33.176 W
2,046.0	29.49	231.29	1,987.5	-215.7	-228.2	14,263,800.31	1,779,289.34	39° 16' 36.680 N	80° 30' 33.318 W
2,076.0	30.28	231.42	2,013.5	-225.0	-239.9	14,263,790.97	1,779,277.66	39° 16' 36.588 N	80° 30' 33.467 W
2,106.0	30.72	230.59	2,039.3	-234.6	-251.7	14,263,781.39	1,779,265.83	39° 16' 36.494 N	80° 30' 33.618 W
2,136.0	31.20	229.62	2,065.0	-244.5	-263.6	14,263,771.49	1,779,253.99	39° 16' 36.397 N	80° 30' 33.770 W
2,166.0	31.90	229.40	2,090.6	-254.7	-275.5	14,263,761.30	1,779,242.05	39° 16' 36.297 N	80° 30' 33.922 W
2,196.0	32.52	228.00	2,116.0	-265.2	-287.5	14,263,750.74	1,779,230.04	39° 16' 36.193 N	80° 30' 34.076 W
2,226.0	32.61	227.82	2,141.3	-276.1	-299.5	14,263,739.92	1,779,218.06	39° 16' 36.087 N	80° 30' 34.229 W
2,256.0	31.68	228.92	2,166.7	-286.7	-311.4	14,263,729.32	1,779,206.13	39° 16' 35.982 N	80° 30' 34.381 W
2,286.0	30.50	228.13	2,192.4	-296.9	-323.0	14,263,719.06	1,779,194.52	39° 16' 35.882 N	80° 30' 34.530 W
2,316.0	29.31	225.71	2,218.4	-307.1	-334.0	14,263,708.85	1,779,183.59	39° 16' 35.781 N	80° 30' 34.669 W
2,346.0	27.82	223.51	2,244.7	-317.3	-344.0	14,263,698.64	1,779,173.52	39° 16' 35.681 N	80° 30' 34.798 W
2,376.0	26.81	220.53	2,271.4	-327.6	-353.2	14,263,688.42	1,779,164.30	39° 16' 35.580 N	80° 30' 34.916 W
2,406.0	26.50	221.10	2,298.2	-337.7	-362.0	14,263,678.24	1,779,155.50	39° 16' 35.480 N	80° 30' 35.029 W
2,436.0	25.62	222.42	2,325.1	-347.6	-370.8	14,263,668.40	1,779,146.73	39° 16' 35.383 N	80° 30' 35.141 W
2,466.0	25.18	224.61	2,352.2	-356.9	-379.7	14,263,659.07	1,779,137.87	39° 16' 35.292 N	80° 30' 35.255 W
2,496.0	24.39	225.23	2,379.5	-365.8	-388.6	14,263,650.17	1,779,128.99	39° 16' 35.204 N	80° 30' 35.368 W
2,526.0	23.60	226.90	2,406.9	-374.3	-397.3	14,263,641.70	1,779,120.21	39° 16' 35.121 N	80° 30' 35.480 W
2,556.0	23.51	224.92	2,434.4	-382.6	-405.9	14,263,633.36	1,779,111.60	39° 16' 35.039 N	80° 30' 35.590 W
2,586.0	22.98	223.82	2,461.9	-391.1	-414.2	14,263,624.90	1,779,103.32	39° 16' 34.956 N	80° 30' 35.696 W
2,616.0	22.90	221.01	2,489.6	-399.7	-422.1	14,263,616.27	1,779,095.43	39° 16' 34.871 N	80° 30' 35.797 W
2,646.0	23.51	221.93	2,517.2	-408.6	-429.9	14,263,607.41	1,779,087.61	39° 16' 34.783 N	80° 30' 35.898 W
2,676.0	23.51	222.20	2,544.7	-417.5	-438.0	14,263,598.53	1,779,079.59	39° 16' 34.696 N	80° 30' 36.000 W
2,706.0	23.20	224.39	2,572.2	-426.1	-446.1	14,263,589.87	1,779,071.43	39° 16' 34.611 N	80° 30' 36.104 W
2,736.0	22.90	225.80	2,599.8	-434.4	-454.4	14,263,581.58	1,779,063.12	39° 16' 34.529 N	80° 30' 36.211 W
2,766.0	23.20	223.39	2,627.4	-442.8	-462.7	14,263,573.22	1,779,054.87	39° 16' 34.447 N	80° 30' 36.316 W

DDC
Survey Report - Geographic



Company:	HG Energy, LLC	Local Co-ordinate Reference:	Well W.B. Carpenter #242
Project:	Harrison County, West Virginia	TVD Reference:	WELL @ 1315.0usft (Decker #6)
Site:	W.B. Carpenter #242	MD Reference:	WELL @ 1315.0usft (Decker #6)
Well:	W.B. Carpenter #242	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,796.0	24.08	229.62	2,654.9	-451.0	-471.4	14,263,564.96	1,779,046.15	39° 16' 34.366 N	80° 30' 36.428 W
2,826.0	25.18	231.03	2,682.2	-459.0	-481.0	14,263,556.98	1,779,036.52	39° 16' 34.288 N	80° 30' 36.551 W
2,856.0	26.50	232.83	2,709.2	-467.1	-491.3	14,263,548.92	1,779,026.23	39° 16' 34.208 N	80° 30' 36.682 W
2,886.0	27.99	235.91	2,735.8	-475.1	-502.5	14,263,540.93	1,779,015.06	39° 16' 34.130 N	80° 30' 36.825 W
2,916.0	28.70	236.21	2,762.2	-483.0	-514.3	14,263,532.98	1,779,003.25	39° 16' 34.052 N	80° 30' 36.976 W
2,946.0	29.09	232.61	2,788.5	-491.4	-526.1	14,263,524.54	1,778,991.47	39° 16' 33.969 N	80° 30' 37.126 W
2,976.0	29.00	230.59	2,814.7	-500.5	-537.5	14,263,515.50	1,778,980.05	39° 16' 33.880 N	80° 30' 37.272 W
3,006.0	28.61	228.30	2,841.0	-509.9	-548.5	14,263,506.10	1,778,969.07	39° 16' 33.788 N	80° 30' 37.412 W
3,036.0	28.21	223.69	2,867.4	-519.8	-558.7	14,263,496.19	1,778,958.81	39° 16' 33.691 N	80° 30' 37.544 W
3,066.0	26.89	217.49	2,894.0	-530.3	-567.8	14,263,485.68	1,778,949.78	39° 16' 33.587 N	80° 30' 37.659 W
3,096.0	25.62	209.50	2,920.9	-541.3	-575.1	14,263,474.65	1,778,942.45	39° 16' 33.479 N	80° 30' 37.753 W
3,126.0	25.00	203.91	2,948.1	-552.8	-580.9	14,263,463.21	1,778,936.69	39° 16' 33.366 N	80° 30' 37.827 W
3,156.0	24.52	197.01	2,975.3	-564.5	-585.2	14,263,451.46	1,778,932.30	39° 16' 33.250 N	80° 30' 37.884 W
3,186.0	23.99	192.09	3,002.7	-576.4	-588.3	14,263,439.54	1,778,929.20	39° 16' 33.132 N	80° 30' 37.924 W
3,203.0	23.78	190.45	3,018.2	-583.2	-589.7	14,263,432.79	1,778,927.85	39° 16' 33.066 N	80° 30' 37.942 W
3,216.0	23.51	188.31	3,030.1	-588.3	-590.5	14,263,427.65	1,778,927.00	39° 16' 33.015 N	80° 30' 37.953 W
3,246.0	23.29	182.60	3,057.7	-600.2	-591.7	14,263,415.80	1,778,925.87	39° 16' 32.898 N	80° 30' 37.968 W
3,276.0	22.98	178.60	3,085.2	-612.0	-591.8	14,263,404.02	1,778,925.74	39° 16' 32.781 N	80° 30' 37.971 W
3,306.0	22.59	174.91	3,112.9	-623.6	-591.1	14,263,392.43	1,778,926.40	39° 16' 32.666 N	80° 30' 37.963 W
3,362.0	22.02	167.77	3,164.7	-644.5	-588.0	14,263,371.45	1,778,929.58	39° 16' 32.459 N	80° 30' 37.924 W

TD @ 3362' MD / 3165' TVD

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,362.0	3,164.7	-644.5	-588.0	TD @ 3362' MD / 3165' TVD

Checked By: _____ Approved By: _____ Date: _____

Received

JAN 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

W.B. Carpenter #242
 Harrison County, West Virginia
 Q130709 & AM-13690
 Design #2

Company Name: HG Energy, LLC
 W.B. Carpenter #242
 Harrison County, West Virginia
 Rig: Original Well Elev
 Created By: TIFFANI MIZELL
 Date: 08/30/2013



HG Energy

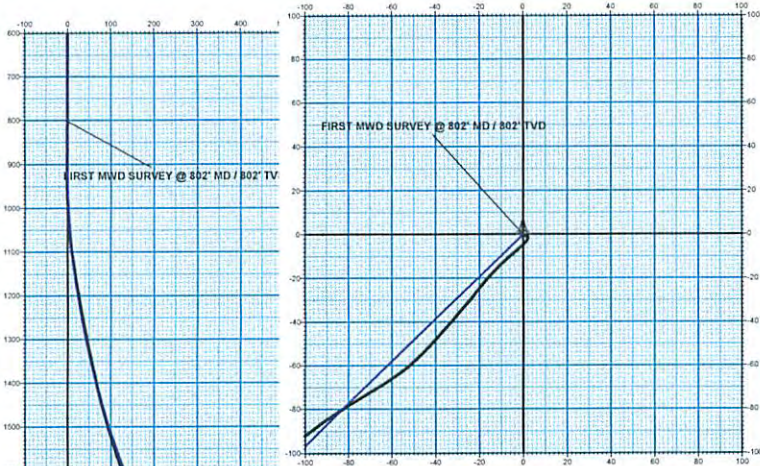
WELL DETAILS: W.B. Carpenter #242

Ground Level: 1307.0
 +N/-S +E/-W Northing Easting Latitude Longitude
 0.0 0.0 284763.24 1714526.2039° 16' 38.800 N 80° 30' 30.400 W

PROJECT DETAILS: Harrison County, West Virginia

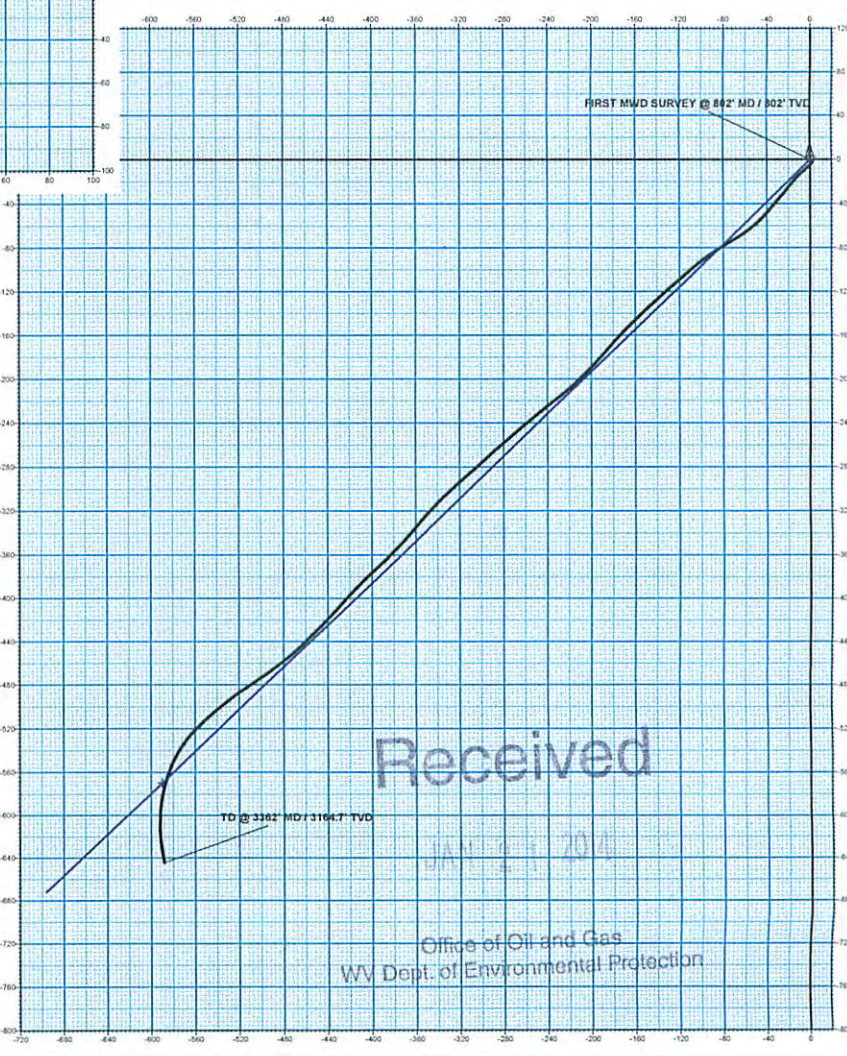
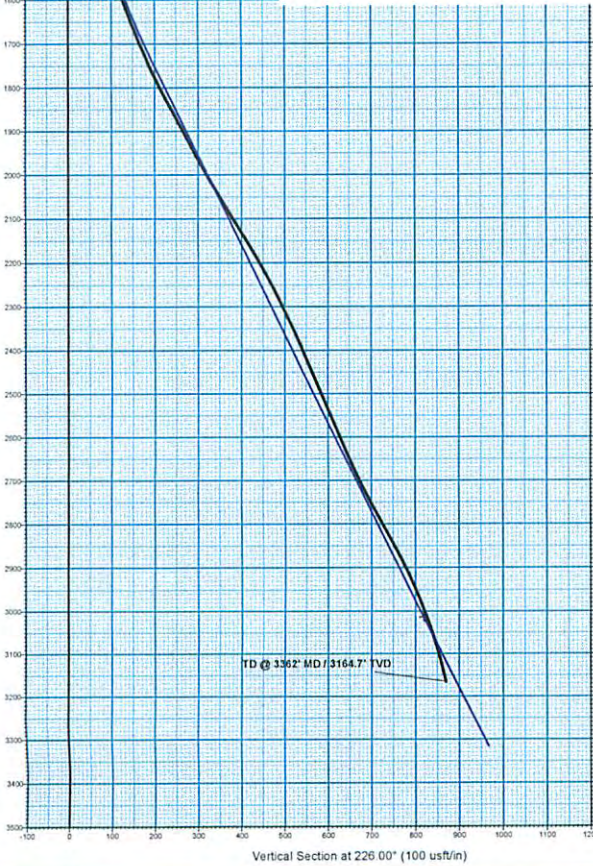
Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: West Virginia North 4701
 System Datum: Mean Sea Level

M G T Azimuths to Grid North
 Correction: -7.99°
 Magnetic Field
 Strength: 52357.2snT
 Dip Angle: 66.85°
 Date: 8/14/2013
 Model: IGRF2010



DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBH - W.B. Carpenter #242 D8014.5	-569.6	-589.9	284193.62	1713936.34	39° 16' 33.105 N	80° 30' 37.819 W	- plan hits target center

ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation	
802.0	0.00	0.00	802.0	0.0	0.0	0.0	0.0	FIRST MWD SURVEY @ 802' MD / 802' TVD	
3362.0	22.02	167.77	3164.7	-644.5	-589.0	870.7	803.2	TD @ 3362' MD / 3164.7' TVD	

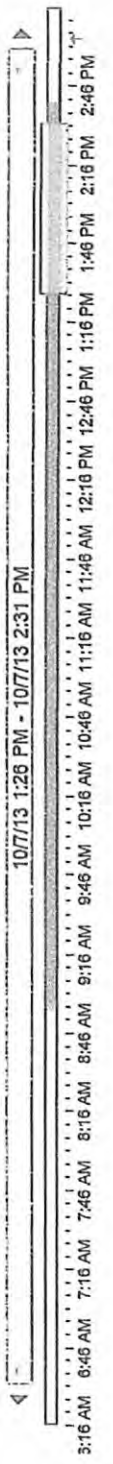
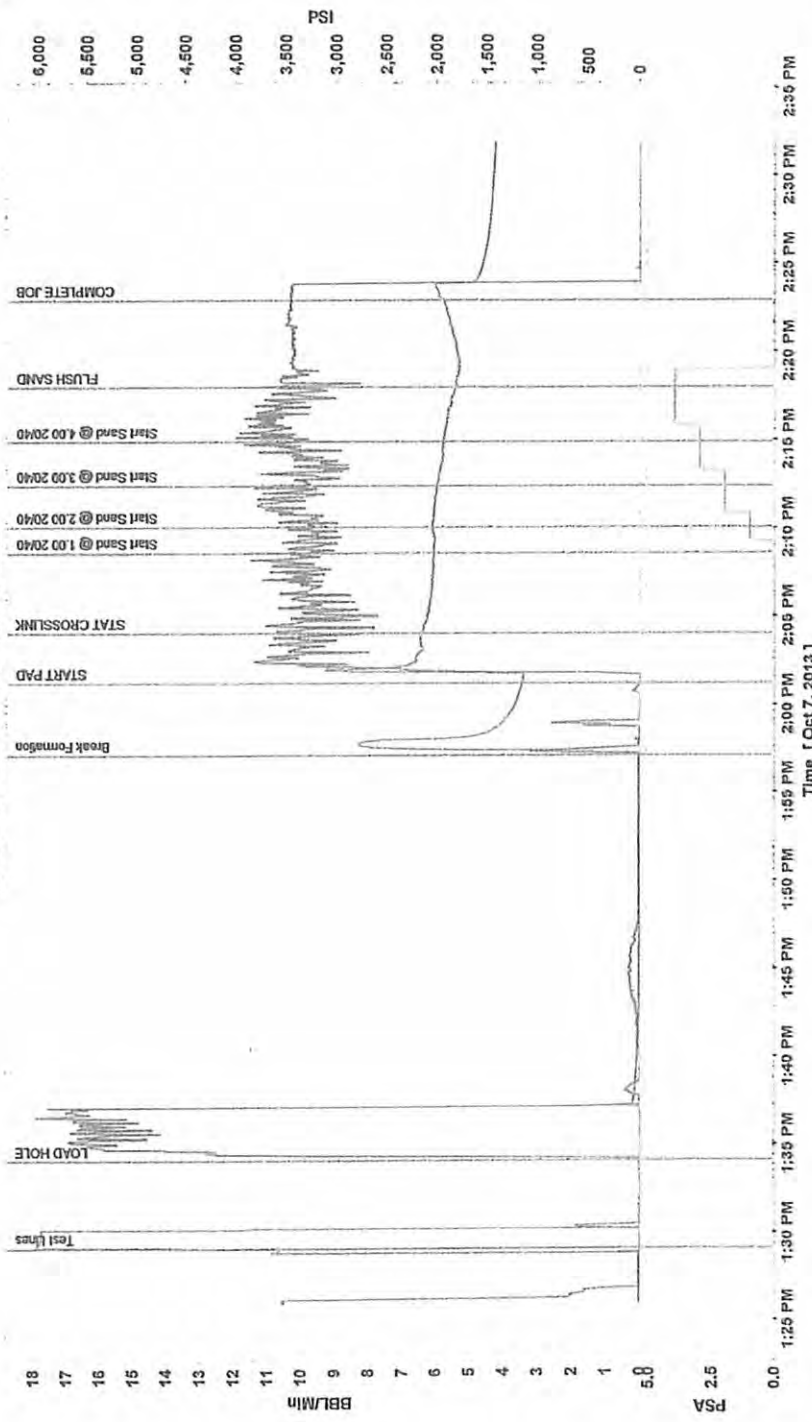


02/28/2014



HG ENERGY LLC W B CARPENTER #242

- Density
- Well Head PSA
- Flow
- Well Head Slurry Flow
- Pressure
- Well Head Pressure



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