

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

API 47 - 105 - 01374 County Wirt District Burning Springs  
Quad Girta 7.5' Pad Name Arnold Marks Field/Pool Name \_\_\_\_\_  
Farm name Kirby, Norene Well Number Arnold Marks #1H WV0462  
Operator (as registered with the OOG) Mountain V Oil & Gas, Inc.  
Address PO Box 470 City Bridgeport State WV Zip 26330

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,318,767 Easting 472,785  
Landing Point of Curve Northing \_\_\_\_\_ Easting \_\_\_\_\_  
Bottom Hole Northing \_\_\_\_\_ Easting \_\_\_\_\_


Elevation (ft) 930' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

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

Date permit issued 7/21/2014 Date drilling commenced 9/11/2014 Date drilling ceased 10/16/2014  
Date completion activities began 10/22/2014 Date completion activities ceased 10/22/2014  
Verbal plugging (Y/N) \_\_\_\_\_ Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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

Freshwater depth(s) ft 18' & 70' Open mine(s) (Y/N) depths N/A  
Salt water depth(s) ft 1080' Void(s) encountered (Y/N) depths N/A  
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N/A  
Is coal being mined in area (Y/N) N/A

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API 47-105 - 01374 Farm name Kirby, Norene Well number Arnold Marks #1H WV0462

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	15"	13 3/8"	27'	New			Sand-In
Surface	12 1/4"	9 5/8"	336'	New	22	42'	Yes
Coal							
Intermediate 1	8 3/4"	7"	1267'	New	17		Yes
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	5290'	New	J-55 11.6#		Packer
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	N/A						
Surface	Type I	110	15.6	1.2	132	Surf.	12
Coal							
Intermediate 1	Type 1	176	6.5	1.38	241.5	Surf.	12
Intermediate 2							
Intermediate 3							
Production							
Tubing							

Drillers TD (ft) 5090' Loggers TD (ft) 5080'

Deepest formation penetrated \_\_\_\_\_ Plug back to (ft) 1466'

Plug back procedure 600 sks 50/50 Ro2 2% gel 110 sks Type I 5090' to 1466'

Kick off depth (ft) 1466'

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 None

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

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PRODUCING FORMATION(S)	DEPTHS	
** SEE ATTACHED	_____	_____
	TVD	MD
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump  
 SHUT-IN PRESSURE Surface 750 psi Bottom Hole N/A psi DURATION OF TEST 24 hrs  
 OPEN FLOW Gas Oil NGL Water GAS MEASURED BY  
N/A mcfpd N/A bpd N/A bpd N/A bpd  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 <sub>2</sub> S, ETC)
	0		0		
Big Injun	1180	1292			
Sand / Shale	1292	1695			
Berea SS	1695	1710			
Shale / Shale	1710	2050			
5th SS	2050	2080			
Sand / Shale	2080	2970			
Lower Huron	2970	3230			
Sand / Shale	3230	3680			
Angola Shale	3680	4400			
Rhinestreet	4400	4980			
Marcellus	4980	5038			
Onondaga	5038				

Please insert additional pages as applicable.

Drilling Contractor Waco  
 Address PO Box 397 City Glenville State WV Zip 26351

Logging Company Schlumberger  
 Address PO Box 201193 City Houston State TX Zip 77216-1193

Cementing Company Universal Well Service  
 Address PO Box 200969 City Dallas State TX Zip 75320-0969

Stimulating Company Universal Well Service  
 Address PO Box 200969 City Dallas State TX Zip 75320-0969

Please insert additional pages as applicable.

Completed by [Signature] Telephone 304-842-6320  
 Signature [Signature] Title President Date 5/27/15

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

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105-01374



DC 4382'

- Predator II OH Packer Set @ 4398'
- Strata Port 3.65" ID @ 4447' Open @ 1860 psi Use 3.750" ball
- Predator II OH Packer Set @ 4538'
- Strata Port 3.53" ID @ 4587' Open @ 1860 psi Use 3.625" ball
- Predator II OH Packer Set @ 4678'
- Strata Port 3.40" ID @ 4769' Open @ 1860 psi Use 3.50" ball
- Predator II OH Packer Set @ 4860'
- Strata Port 3.28" ID @ 4951' Open @ 1860 psi Use 3.375" ball
- Predator II OH Packer Set @ 5042'
- Strata Port 3.15" ID @ 5133' Open @ 1860 psi Use 3.25" ball
- Predator II OH Packer Set @ 5224'
- Strata Port 3.03" ID @ 5315' Open @ 1860 psi Use 3.125" ball
- Predator II OH Packer Set @ 5406'
- Floated Pump Out Plug @ 5450' Open @ 4624 psi Use 1.25" Ball



**DOWN HOLE WELL PROFILE**

WELL NAME	Arnold Marks # 1-H	DATE	10/16/14
SUPERVISOR	Mike Shaver	TOOL HAND	David McCauley
PHONE #	304-203-7550	PHONE #	304-472-5555
RIG #	WACO RIG	FIELD TICKET #	40751

ELEVATIONS				
	GL ELEV	KB ELEV	RIG KBD	TVD
		0	7	3897.00
CASING / OPEN HOLE LAYOUT	OD (IN)	LANDED DEPTH	WEIGHT (LB/FT)	TOP OF (FTKB)
CASING DESCRIPTION	7	1270.00	20	0
WINDOW DESCRIPTION	6 1/4			3,114.00
OPEN HOLE DESCRIPTION	6 1/4	5486.00	JUNCTION @	3114.00

**DESCRIPTION**

**Liner Placement Schematic**

**DOWNHOLE DESCRIPTION FROM BOTTOM UP**

BOTTOM @	DESCRIPTION	LENGTH	ID	OD
5449.95	4 1/2" Floated Pump Out Plug	0.85	.750"	5.000
5449.10	1 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	41.80	4.000	4.500
5407.30	7 x 4 1/2 Peak Rotational Centralizer	1.15	3.995	5.750
5406.15	7 x 4 1/2 Predator II Open Hole Isolation Packer	4.00	3.995	5.688
5402.15	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
5399.05	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
5315.45	7 x 4 1/2 Strata-Port Frac Sleeve w/ 3.0313 ID Seat (Activate with 3.125" Ball)	3.55	3.031	5.688
5311.90	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
5308.80	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
5225.20	7 x 4 1/2 Peak Rotational Centralizer	1.15	3.995	5.750
5224.05	7 x 4 1/2 Predator II Open Hole Isolation Packer	4.00	3.995	5.688
5220.05	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
5216.95	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
5133.35	7 x 4 1/2 Strata-Port Frac Sleeve w/ 3.1563 ID Seat (Activate with 3.250" Ball)	3.55	3.156	5.688
5129.80	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
5126.70	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
5043.10	7 x 4 1/2 Peak Rotational Centralizer	1.15	3.995	5.750
5041.95	7 x 4 1/2 Predator II Open Hole Isolation Packer	4.00	3.995	5.688
5037.95	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
5034.85	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
4951.25	7 x 4 1/2 Strata-Port Frac Sleeve w/ 3.2813 ID Seat (Activate with 3.375" Ball)	3.55	3.281	5.688
4947.70	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4944.60	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
4861.00	7 x 4 1/2 Peak Rotational Centralizer	1.15	3.995	5.750
4859.85	7 x 4 1/2 Predator II Open Hole Isolation Packer	4.00	3.995	5.688
4855.85	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4852.75	2 Joints 4 1/2", 11.6#, P-110 Liner with LTC Threads	83.60	4.000	4.500
4769.15	7 x 4 1/2 Strata-Port Frac Sleeve w/ 3.4063 ID Seat (Activate with 3.500" Ball)	3.55	3.406	5.688
4765.60	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4762.50	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
4678.90	7 x 4 1/2 Peak Rotational Centralizer	1.15	3.995	5.750
4677.75	7 x 4 1/2 Predator II Open Hole Isolation Packer	4.00	3.995	5.688
4673.75	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4670.65	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.60	4.000	4.500
4587.05	7 x 4 1/2 Strata-Port Frac Sleeve w/ 3.5313 ID Seal (Activate with 3.625" Ball)	3.55	3.531	5.688
4583.50	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4580.40	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	41.75	4.000	4.500
4538.65	7 x 4 1/2 Peak Rotational Centralizer	1.15	3.995	5.750
4537.50	7 x 4 1/2 Predator II Open Hole Isolation Packer	4.00	3.995	5.688
4533.50	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4530.40	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	83.30	4.000	4.500
4447.10	7 x 4 1/2 Strata-Port Frac Sleeve w/ 3.6563 ID Seat (Activate with 3.750" Ball)	3.55	3.656	5.688
4443.55	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4440.45	2 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	41.75	4.000	4.500
4398.70	7 x 4 1/2 Peak Rotational Centralizer	1.15	3.995	5.750
4397.55	7 x 4 1/2 Predator II Open Hole Isolation Packer	4.00	3.995	5.688
4393.55	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
4390.45	77 Joints 4 1/2", 11.6#, N-80 Liner with LTC Threads	3209.35	4.000	4.500
1181.10	7 x 4 1/2 Peak SMP-X Liner Hanger System	10.50	3.995	6.000
1170.60	4 1/2" P-110 Liner Sub with LTC Threads	3.10	4.000	4.500
1167.50	28 Joints 4 1/2", 11.6#, P-110 Liner with LTC Threads	1167.50	4.000	4.500
0.00	Landed at ground level	0.00	4.000	4.500

WEIGHT OF STRING	45205	TOTAL STRING LENGTH	5449.95
PUSH / PULL TEST		STICK-UP OFF RIG FLOOR	GL
TOP OF OPEN HOLE PACKER	4398.00	TUBING BOTTOM	5449.95

Total Drilled Depth 5486'

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NOT TO BE DISCLOSED OUTSIDE OF: OIL AND GAS MOUNTAIN V

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12.00 AM 10/19/00

10/30/2015



105.01374

**TREATMENT SUMMARY**

Mountain V Oil & Gas Arnold Marks 1H

Stage #1-5

Date: 10/22/2014

DESCRIPTION OF JOB

Foam Frac

Pressures (psi)	Treatment Stats	Perforations (ft)
-----------------	-----------------	-------------------

Well Open 74  
Breakdown 3771  
  
ISIP

Avg Pressure 3654 psi  
Max Pressure 4080 psi

Mid (TVD) 5315  
Top Depth (MD) 4447  
Middle (MD) 4881  
Bottom Depth (MD) 5315

**Pumping Volumes (SCF)/(BBL)**

Load & Breakdown 21  
Total Nitrogen 3787548  
Total Clean 653  
Total Slurry 755

Avg Rate 27585.0 SCF/min  
Max Rate 35812.0 SCF/min  
Avg Rate 5.8 BPM  
Max Rate 8.3 BPM

Number of Perfs

Time	Rate (SCF/min)	Nitrogen Cum. Volume (SCF)	Slurry Rate (BPM)	Slurry Cum Vol. (BBL)	Pressure (psi)	Description of Stage or Event
7:00						Arrive on Location
9:00						Safety Meeting
9:22					5015	Test Lines
9:27					74	Open Well
9:36	24020.0	135591	1.8	21	5277	Establish Rate
9:38	24000.0	211498	2.2	27	4080	Start Sand @ 10.00# 80/100
9:42	23979.0	311650	3.4	40	3450	Start Sand @ 13.30# 80/100
9:45	24000.0	379743	5.3	55	3255	Start Sand @ 15.00# 80/100
9:48	24082.0	456233	7.6	78	3229	Finish Sand
9:53	0.0	543716	5.2	99	2122	Drop Frac Ball 3.125#
9:58	24147.0	628729	3.5	118	3771	Break Formation
10:02	30328.0	737760	5.4	135	2695	Start Sand @ 10.00# 80/100
10:05	35735.0	835533	5.3	151	2857	Start Sand @ 13.30# 80/100
10:09	35812.0	990656	8.6	189	3624	Finish Sand
10:13	0.0	1072230	5.3	204	2083	Drop Frac Ball 3.25#
10:17	24034.0	1160490	3.4	225	3874	Break Formation
10:21	19358.0	1241440	3.4	238	3891	Start Sand @ 10.00# 80/100
10:25	25387.0	1335720	3.4	252	3414	Start Sand @ 13.30# 80/100
10:28	25437.0	1411700	5.5	268	3434	Start Sand @ 15.00# 80/100
10:31	25390.0	1479460	7.8	288	3395	Finish Sand
10:35	0.0	1549060	5.2	304	2332	Drop Frac Ball 3.375#
10:40	24077.0	1632640	3.5	323	3979	Break Formation
10:43	29945.0	1719470	3.5	335	3557	Start Sand @ 10.00# 80/100
10:46	29887.0	1799540	5.2	349	3588	Start Sand @ 13.30# 80/100
10:49	29885.0	1904050	7.1	374	3764	Start Sand @ 15.00# 80/100
10:51	29885.0	1948430	8.2	385	3855	Finish Sand
10:55	0.0	2033130	5.2	401	2390	Drop Frac Ball 3.5#
11:00	24047.0	2129250	3.4	422	3231	Break Formation
11:03	30177.0	2223710	4.3	434	3556	Start Sand @ 10.00# 80/100
11:07	32907.0	2356630	5.3	455	4021	Start Sand @ 13.30# 80/100
11:10	29035.0	2441950	7.3	478	3571	Start Sand @ 15.00# 80/100
11:11	29135.0	2471060	8.3	486	3720	Finish Sand
11:16	29136.0	2592080	3.4	502	2980	Shut Down

**Material Totals**

Propant	80/100	1520	sks
Additives	Nitrogen	3787548	SCF
	5F Gel	350	lbs
	Iron Control A	8	gal
	Unifoam	35	gal
	NE-90	22	gal
	Clay Chek	9	gal
	LEB	4	qts



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**TREATMENT SUMMARY**

Mountain V Oil & Gas Arnold Marks 1H Stages 6 & 7 Date: 10/22/2014

DESCRIPTION OF JOB Foam Frac

Pressures (psi)	Treatment Stats	Perforations (ft)
Well Open <u>1780</u>	Avg Pressure <u>3878</u> psi	Mid (TVD) <u>2657</u>
Breakdown <u>4911</u>		Top Depth (MD) <u>4447</u>
ISIP _____	Max Pressure <u>4087</u> psi	Middle (MD) <u>4881</u>
		Bottom Depth (MD) <u>5315</u>
<b>Pumping Volumes (SCF)/(BBL)</b>	Avg Rate <u>25607.0</u> SCF/min	Number of Perfs _____
Load & Breakdown <u>20</u>	Max Rate <u>27979.0</u> SCF/min	
Total Nitrogen <u>3787548</u>	Avg Rate <u>5.3</u> DPH	
Total Clean <u>653</u>	Max Rate <u>7.2</u> DPH	
Total Slurry <u>755</u>		

Time	Rate (SCF/min)	Nitrogen Cum. Volume (SCF)	Slurry Rate (BPM)	Slurry Cum Vol. (BBL)	Pressure (psi)	Description of Stage or Event
12:03					1780	Open Well
12:05			5.3		1774	Establish Rate
12:06			5.4	5	1655	Drop Frac Ball 3.625#
12:11	18045.0	2696070	3.4	20	4911	Break Formation
12:17	23235.0	2824600	3.6	47	3905	Start Sand @ 10.00# 80/100
12:21	27836.0	2929340	5.4	82	3859	Start Sand @ 13.30# 80/100
12:25	27898.0	3036300	7.2	83	4087	Start Sand @ 15.00# 80/100
12:30	27898.0	3156950	3.9	117	4093	Finish Sand
12:33	27979.0	3261150	3.6	130	3957	Shut Down
12:52					1948	Open Well
12:54			5.4	131	1939	Establish Rate
12:56			5.4	136	1886	Drop Frac Ball 3.75#
12:59	24008.0	3333560	3.6	154	3191	Break Formation
13:03	24027.0	3423180	5.3	168	3670	Start Sand @ 10.00# 80/100
13:06	27154.0	3510940	5.3	184	3897	Start Sand @ 13.30# 80/100
13:10	27526.0	3593270	7.2	205	3852	Start Sand @ 15.00# 80/100
13:14	24385.0	3706850	7.2	230	3690	Finish Sand
13:19	0.0	3787548	9.6	151	2523	Shut Down

**Material Totals**

Preppant	80/100	1502	skc
Material Totals			
Additives	Nitrogen	3787548	SCF
	Unigel 5F	350	lbs
	Unifoam	36	gal
	Clay Chok	9	gal
	Iron	8	gal
	NE-80	22	gal
	Unifoam	9	gal
	LEB	4	qts



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