

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

API 47-043-03576 County LINCOLN District DUVAL
Quad GRIFFITHSVILLE 7.5' Pad Name MAY, W.S. Field/Pool Name GRIFFITHSVILLE
Farm name RAYBOURN, D. ARTHUR & MARJORIE Well Number 500
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 4,232,553 M Easting 416,525 M
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing 4,232,684 M Easting 416,378 M

Elevation (ft) 721' 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 2/12/18 Date drilling commenced 6/15/18 Date drilling ceased 6/22/18
Date completion activities began 6/29/18 Date completion activities ceased 7/2/18
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 15, 25, 40' Open mine(s) (Y/N) depths None
Salt water depth(s) ft 950' Void(s) encountered (Y/N) depths None
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) N

Reviewed
Jeffrey Little 8-13-18

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Reviewed by: J.S.
WV Department of Environmental Protection

API 47- 043 - 03576 Farm name RAYBOURN, D. ARTHUR & MARJORIE Well number 500

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"	28'	New	LS		Sand In
Surface	8 3/4"	7"	338.6'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2486.58'	New	J-55		Y
Tubing							
Packer type and depth set							

Comment Details Circulated Est. 25 sks to surface on 7" surface cement job. Circulated Est. 10 sks to surface on 4 1/2" cement job.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	120	15.6	1.18	154	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	115/125	13.2/14.2	1.64/1.27	189/186	110'	8
Tubing							

Drillers TD (ft) 2554' Loggers TD (ft) 2552'
 Deepest formation penetrated Berea Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 450'

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 _____

12 Centralizers every 68 from bottom on 4 1/2". Centralizer placed mid string on 7"

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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API 47- 043 - 03576 Farm name RAYBOURN, D. ARTHUR & MARJORIE Well number 500

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Berea</u>	<u>2202'-2224'</u> TVD	<u>2336'- 2360'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

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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	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
Sand/Shale	0	1486	0	1548	
Big Lime	1486	1704	1548	1790	
Big Injun	1704	1790	1790	1884	
Shale	1790	2182	1884	2314	
Coffee Shale	2182	2202	2314	2336	
Berea	2202	2224	2336	2360	Drilled directional N 48° W a distance of 645'
Shale	2224	2405	2360	2554	
TD	2405		2554		

Please insert additional pages as applicable.

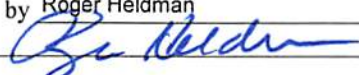
Drilling Contractor Noah Horn Well Drilling
Address 1070 Sandy Valley Lane City Vansant State VA Zip 24656

Logging Company Weatherford International
Address 13211 Old Hwy 50 City Flora State IL Zip 62839

Cementing Company Petroset Services
Address P.O. Box 1076 City Wooster State OH Zip 44691

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  Title Operations Manager Date 7/19/18

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Producers Service Corporation
109 South Graham Street
Zanesville, OH 43701
(740) 454-6253
www.producerservicecorp.com



Frac H&G

Company Rep: Dustin Hendershot
Treater: Daniel L Graham
7/2/2018
Well: W.S.May#500
Lincoln County, WV

Formation: Brea

Casing

OD: 4.5"
ID: N/A
Weight: 10.5 lb.
TD: 2554 ft.

Tubing

Size: N/A
Depth: N/A

Packers

Upper Make: N/A
Upper Depth: N/A
Lower Make: N/A
Lower Depth: N/A

Pressures

PSI Test: 2800 psi
Breakdown: 2024 psi
Max: 1420 psi
Average: 1218 psi
Displacement: 1267 psi

Volumes:

Pad 25 bbl
Treatment: 45 bbl
0.15% Acid: 250 Gal
Total: 146 bbl
Flush: 36 bbl

Open Hole

Size: N/A
From: N/A
To: N/A

Perforations

of Shots: 48
Top Perf: 2340 ft.
Bottom Perf: 2352 ft.

Rates

Average: 4 bbl/min
Max: 4 bbl/min

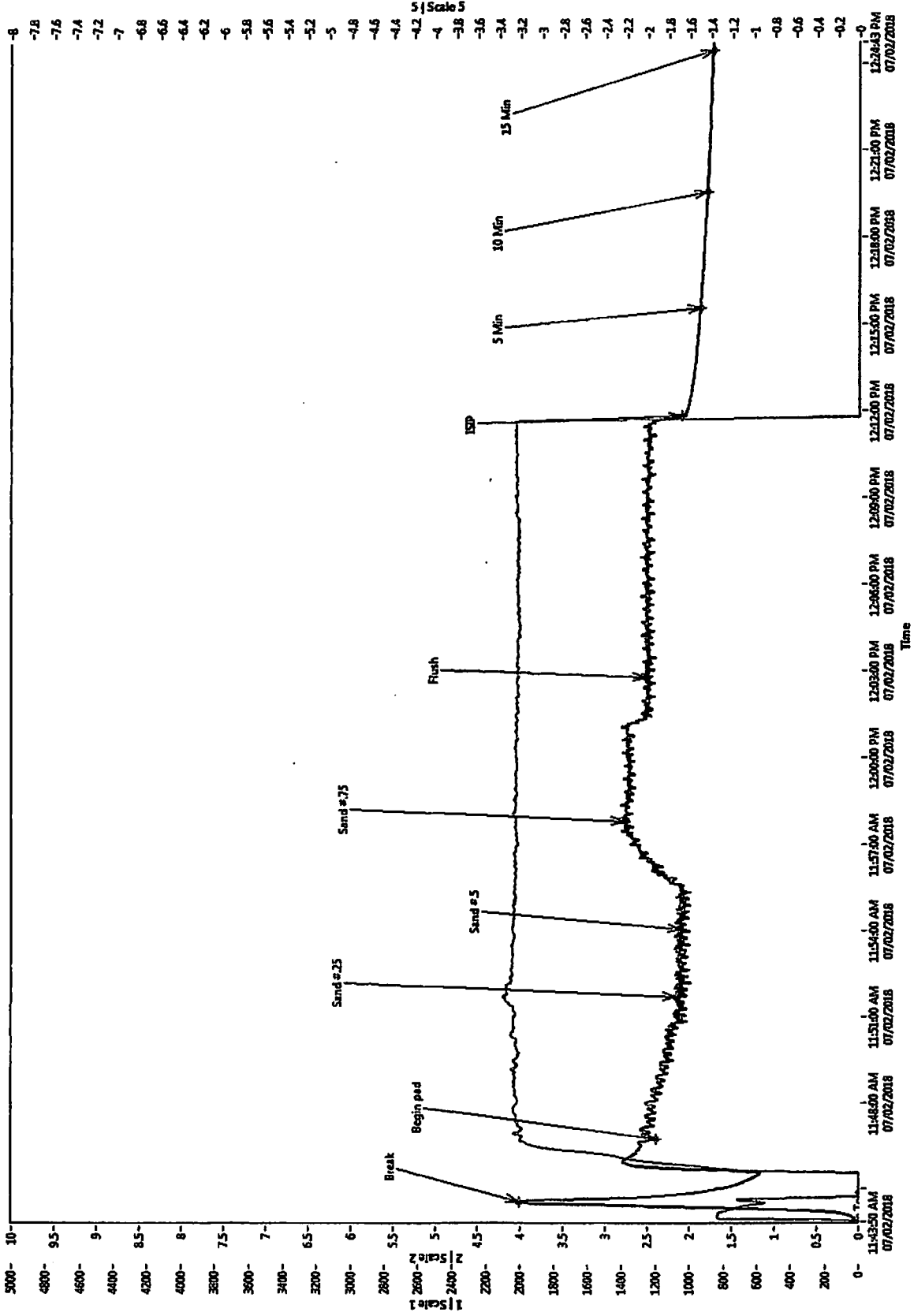
Notes:

Invoice #: 21309



HG W.S May #500 INV#21308

- 1 | Pressure 1
- 2 | Rate*
- 5 | Bladder PPA



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HG W.S May #500 INV#21308

Timestamp	Annotation	Pressure	Flow	Gas Total	Oil Total
7/2/2018 11:43:50 AM	Pressure Test	24.13	0.00	0.00	0.00
7/2/2018 11:44:40 AM	Break	1468.08	0.00	1.11	1.11
7/2/2018 11:46:45 AM	Begin pad	1198.41	3.99	4.60	4.60
7/2/2018 11:51:42 AM	Sand #.25	1078.17	4.21	24.75	24.75
7/2/2018 11:54:03 AM	Sand #.5	1054.31	4.10	9.66	34.48
7/2/2018 11:57:46 AM	Sand #.75	1388.23	4.05	15.04	49.59
7/2/2018 12:02:46 PM	Flush	1282.64	4.03	18.71	69.86
7/2/2018 12:11:50 PM	ISIP	1050.62	0.00	35.93	105.85
7/2/2018 12:15:33 PM	5 Min	940.54	0.00	35.93	105.85
7/2/2018 12:19:34 PM	10 Min	901.36	0.00	35.93	105.85
7/2/2018 12:24:27 PM	15 Min	868.21	0.00	35.93	105.85

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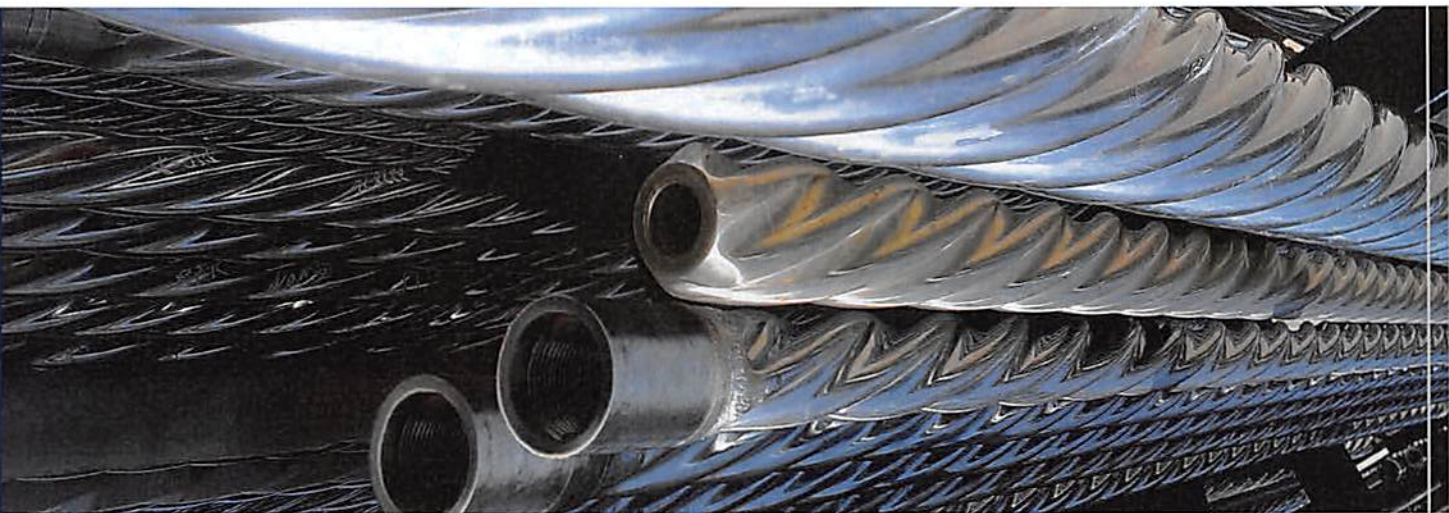
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PRO DIRECTIONAL



WS May 500

Lincoln County, WV

Noah Horn 294 Rig

June 21, 2018

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Survey Certification Report



Survey Certification Letter

June 21, 2018

HG Energy

Operator Name: HG Energy WS
Well Name: May 500
County/Parish: Lincoln County
State: WV
Rig Name: Noah Horn 294
Job Number: LWW3110318

This is to certify the surveys performed on the referenced well by Professional Directional Ent., Inc. are true and correct MWD Surveys, data provided as follows:

Surveyor	Surveyed Depths	Projection to Bit	Dates Performed	Type of Survey
ProDirectional	362'MD – 2,492'MD	2,554'MD	06/18/18 – 06/21/18	MWD-OWSG

Sincerely,

John Jordan
Well Planning Analyst
Professional Directional

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850 Conroe Park West Drive | Conroe, TX 77303 | Phone: 936.441.7266

prodirectional.com