WR-35
Rev (9-11)

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

DATE: 2-26-2015
API #: 47-009-00133

Farm name: Worthley BRK 8H Operator Well No.: 835860

LOCATION: Elevation: 1,160' Quadrangle: Bethany

District: Buffalo County: Brooke
Latitude: 3,790' Feet South of 40 Deg. 15 Min. 00 Sec.
Longitude 12,670' Feet West of 80 Deg. 32 Min. 30 Sec.

Company: Chesapeake Appalachia, L.L.C.

Address: P.O. Box 18496	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Oklahoma City, OK 73154-0496	26"	57'	57'	102 Cu. Ft.
Agent: Jessica Greathouse	18 5/8"	255'	255'	522 Cu. Ft.
Inspector: Gayne J. Knitowski	13 3/8"	375'	375'	359 Cu. Ft.
Date Permit Issued: 6-6-2012	9 5/8"	1,703'	1,703'	808 Cu. Ft.
Date Well Work Commenced: 12-2-2012	5 1/2"	12,558'	12,558'	1,207 Cu. Ft.
Date Well Work Completed: 7-5-2013				
Verbal Plugging:				
Date Permission granted on:				
Rotary ☑ Cable ☐ Rig ☐				
Total Vertical Depth (ft): 6,078'				
Total Measured Depth (ft): 12,561'				
Fresh Water Depth (ft.): 183'				
Salt Water Depth (ft.): 800'				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): 316'				
Void(s) encountered (N/Y) Depth(s) Y 316'				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)
Producing formation Marcellus Pay zone depth (ft) 6,345-12,390
Gas: Initial open flow ____ MCF/d Oil: Initial open flow ____ Bbl/d
Final open flow 3,125* MCF/d Final open flow 243 Bbl/d
Time of open flow between initial and final tests 72 Hours *Calculated
Static rock Pressure 3,951* psig (surface pressure) after 72 Hours

Second producing formation ____ Pay zone depth (ft) ____
Gas: Initial open flow ____ MCF/d Oil: Initial open flow ____ Bbl/d
Final open flow ____ MCF/d Final open flow ____ Bbl/d
Time of open flow between initial and final tests ____ Hours
Static rock Pressure ____ psig (surface pressure) after ____ Hours

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Signature Date 2-26-15

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MORGANTOWN, WV

Were core samples taken? Yes_____ No N_____ Were cuttings caught during drilling? Yes Y_____ No_____

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list_____
LWD GR from 5182-12561' MD.

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

See attached

Plug Back Details Including Plug Type and Depth(s):

Formations Encountered: Top Depth / Bottom Depth
Surface:

See attached

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Surface:

See attached

PERFORATION RECORD ATTACHMENT

Well Name and Number: Worthley BRK 8H **API No. 47-009-00133**

Stage	PERFORATION RECORD				STIMULATION RECORD							
	Date	Interval Perforated		Total Number Of Shots				Fluid		Propping Agent		Average Injection Rate
		From	To		Date	Interval Treated		Type	Amount	Type	Amount	
1	6/1/2013	12189	12390	42	6/1/2013	12189	12390	SLK Wtr	5890	Sand	316130	80
2	6/1/2013	11923	12125	42	6/1/2013	11923	12125	SLK Wtr	5910	Sand	315560	79
3	6/2/2013	11658	11860	42	6/2/2013	11658	11860	SLK Wtr	6094	Sand	318440	80
4	6/2/2013	11392	11599	42	6/2/2013	11392	11599	SLK Wtr	5952	Sand	316420	80
5	6/2/2013	11127	11329	42	6/2/2013	11127	11329	SLK Wtr	5960	Sand	316540	78
6	6/2/2013	10861	11063	42	6/2/2013	10861	11063	SLK Wtr	6246	Sand	314920	79.7
7	6/2/2013	10596	10798	42	6/2/2013	10596	10798	SLK Wtr	6113	Sand	316500	79.3
8	6/3/2013	10331	10529	42	6/3/2013	10331	10529	SLK Wtr	6107	Sand	316440	78.8
9	6/3/2013	10065	10267	42	6/3/2013	10065	10267	SLK Wtr	6007	Sand	315800	75.7
10	6/3/2013	9803	10001	42	6/3/2013	9803	10001	SLK Wtr	6025	Sand	316340	79.5
11	6/3/2013	9534	9736	42	6/3/2013	9534	9736	SLK Wtr	5955	Sand	314320	79.9
12	6/3/2013	9269	9475	42	6/3/2013	9269	9475	SLK Wtr	5903	Sand	314820	80.3
13	6/3/2013	9003	9205	42	6/3/2013	9003	9205	SLK Wtr	5907	Sand	316440	80.3
14	6/4/2013	8738	8940	42	6/4/2013	8738	8940	SLK Wtr	6024	Sand	317140	79.4
15	6/4/2013	8472	8678	42	6/4/2013	8472	8678	SLK Wtr	6103	Sand	315360	76
16	6/4/2013	8210	8409	42	6/4/2013	8210	8409	SLK Wtr	6017	Sand	315620	79.8
17	6/4/2013	7942	8143	42	6/4/2013	7942	8143	SLK Wtr	5898	Sand	316260	80.1
18	6/4/2013	7676	7878	42	6/4/2013	7676	7878	SLK Wtr	5823	Sand	318000	80.1
19	6/5/2013	7411	7613	42	6/5/2013	7411	7613	SLK Wtr	5932	Sand	316160	80.1
20	6/5/2013	7147	7347	42	6/5/2013	7147	7347	SLK Wtr	5923	Sand	312280	76.4
21	6/5/2013	6880	7082	42	6/5/2013	6880	7082	SLK Wtr	5933	Sand	315380	78
22	6/5/2013	6614	6811	42	6/5/2013	6614	6811	SLK Wtr	5971	Sand	316080	79.9
23	6/5/2013	6345	6551	42	6/5/2013	6345	6551	SLK Wtr	5912	Sand	314880	80

LATERAL WELLBORE (no vertical pilot hole associated with this well)

Maximum TVD of wellbore: 6078 ft TVD @ 12361 ft MD

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
SILT/COAL	0	0	100	100
LS/SS	100	100	316	316
PITTSBURG COAL	316	316	340	340
LS/SS/SILT	340	340	400	400
SILT/SHALE/SS	400	400	910	910
SS	910	910	1336	1336
BIG LIME	1336	1336	1375	1375
BIG INJUN (SS)	1375	1375	1600	1600
SHALE	1600	1600	5853	5808
GENESEO (SH)	5853	5808	5876	5826
TULLY (LS)	5876	5826	5956	5880
HAMILTON (SH)	5956	5880	6183	5985
MARCELLUS (SH)	6183	5985		
TD OF LATERAL			12561	6074

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	6/1/2013
State:	WEST VIRGINIA
County:	BROOKE
API Number:	4700900133
Operator Name:	CHESAPEAKE APPALACHIA LLC
Well Name and Number:	WORTHLEY BRK 8H
Longitude:	-80.555242
Latitude:	40.215239
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	6,079
Total Water Volume (gal)*:	6,276,018

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by Mass)**	Maximum Ingredient Concentration in HF Fluid (% by Mass)**	Comments
Fresh Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00000%	73.34418%	
Recycled Produced Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00000%	13.46337%	
EC6486A	NALCO	Scale Inhibitor	Ethylene Glycol	000107-21-1	30.00000%	0.00155%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol	000064-17-5	5.00000%	0.00136%	
			Glutaraldehyde (Pentanediol)	000111-30-8	60.00000%	0.01629%	
			Quaternary Ammonium Compounds	NA	10.00000%	0.00271%	
Acid, Hydrochloric 15pct, A264, B315, J218, J580, L058, 100 Mesh Sand, Northern White Sand	SCHLUMBERGER	Acid, Breaker, Corrosion Inhibitor, Friction Reducer, Gelling Agent, Iron Control Agent, Proppant - Natural	Crystalline silica	14808-60-7	98.08773%	12.61613%	
			Hydrogen chloride	7647-01-0	1.47181%	0.18931%	
			Water	007732-18-5	2.50419%	0.33036%	
			Acrylamide sodium acrylate copolymer	25085-02-3	0.17907%	0.02303%	
			Distillates (petroleum), hydrotreated light	64742-47-8	0.15558%	0.02001%	
			Guar gum	9000-30-0	0.05238%	0.00674%	

			Alkylalcohol, ethoxylate >C10	68002-97-1	0.00953%	0.00123%	
			Sorbitan monooleate	1338-43-8	0.00762%	0.00098%	
			Sodium erythorbate	6381-77-7	0.00559%	0.00072%	
			Methanol	67-56-1	0.00539%	0.00069%	
			Thiocyanic acid, ammonium salt	1762-95-4	0.00470%	0.00060%	
			Poly(oxyethylene) sorbitol monostearate	9005-67-8	0.00445%	0.00057%	
			Diammonium peroxidisulphate	7727-54-0	0.00418%	0.00054%	
			Fatty acids, tall-oil	61790-12-3	0.00396%	0.00051%	
			Thiourea, polymer with formaldehyde and 1-phenylethanone	68527-49-1	0.00326%	0.00042%	
			Alcohols, C14-15, ethoxylated (7EO)	68951-67-7	0.00152%	0.00020%	
			Prop-2-yn-1-ol	107-19-7	0.00101%	0.00013%	
			Alkenes, C>10 a-	64743-02-8	0.00067%	0.00009%	
			Non-crystalline silica	7631-86-9	0.00014%	0.00002%	
			Tetrasodium ethylenediaminetetraacetate	64-02-8	0.00006%	0.00001%	

Additional Ingredients Not Listed on MSDS							
EC6110A, EC6486A	NALCO	Anti-Bacterial Agent, Scale Inhibitor	Diethylene Glycol	000111-46-6		0.00006%	
			Proprietary Inorganic Phosphate	TRADE SECRET		0.00059%	
			Proprietary Organic Acid Derivatives	TRADE SECRET		0.00176%	
			Water	007732-18-5		0.02323%	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

"Additional Ingredients Not Listed on MSDS" component information were obtained directly from the supplier. As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of this information should be directed to the supplier who provided it.