

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

DATE: 12-12-2013
API #: 47-009-00154

Farm name: Thomas Parkinson BRK 8H Operator Well No.: 837060

LOCATION: Elevation: 1,160' Quadrangle: Bethany

District: Buffalo County: Brooke
Latitude: 6,330' Feet South of 40 Deg. 15 Min. 00 Sec.
Longitude 13,570' Feet West of 80 Deg. 32 Min. 30 Sec.

Company: Chesapeake Appalachia, L.L.C.

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
P.O. Box 18496 Oklahoma City, OK 73154-0496	20"	118'	118'	224 Cu. Ft.
Agent: Eric Gillespie	13 3/8"	363'	363'	404 Cu. Ft.
Inspector: Bill Hendershot & Gayne J. Knitowski	9 5/8"	1,780'	1,780'	819 Cu. Ft.
Date Permit Issued: 2-8-2013	5 1/2"	12,667'	12,667'	3,020 Cu. Ft.
Date Well Work Commenced: 3-9-2013				
Date Well Work Completed: 7-30-2013				
Verbal Plugging:				
Date Permission granted on:				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): 6072'				
Total Measured Depth (ft): 12671'				
Fresh Water Depth (ft.): 183'				
Salt Water Depth (ft.): 640'				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): 318'				
Void(s) encountered (N/Y) Depth(s) N				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Marcellus Pay zone depth (ft) 6,280-12,495

Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d

Final open flow 3,027* MCF/d Final open flow 325 Bbl/d

Time of open flow between initial and final tests 48 Hours

Static rock Pressure 3,947* psig (surface pressure) after 48 Hours *Calculated

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.

Marlene Williams
Signature

12-16-2013
Date

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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 GR, neutron, density, and resistivity
Open hole logs run from 0-1800' MD; LWD GR from 5335-12671' 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: Surface:	Top Depth	/	Bottom Depth
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See attached

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PERFORATION RECORD ATTACHMENT

Well Number and Name: 837060 Thomas Parkinson BRK 8H

PERFORATION RECORD			STIMULATION RECORD							
Date	Interval Perforated		Date	Interval Treated	Fluid		Propping Agent		Average Injection	
	From	To			Type	Amount	Type	Amount		
6/27/2013	12,120	12,495	6/27/2013	12,120	12,495	Slk wtr	9,050	Sand	539,620	77
6/27/2013	11,671	12,046	6/27/2013	11,671	12,046	Slk wtr	8,977	Sand	538,920	79
6/27/2013	11,221	11,597	6/27/2013	11,221	11,597	Slk wtr	9,200	Sand	540,260	77
6/27/2013	10,772	11,148	6/28/2013	10,772	11,148	Slk wtr	9,179	Sand	541,000	78
6/28/2013	10,323	10,699	6/28/2013	10,323	10,699	Slk wtr	9,183	Sand	538,860	77
6/28/2013	9,875	10,249	6/28/2013	9,875	10,249	Slk wtr	8,973	Sand	540,860	72
6/28/2013	9,424	9,800	6/28/2013	9,424	9,800	Slk wtr	8,930	Sand	540,900	74
6/28/2013	8,975	9,351	6/29/2013	8,975	9,351	Slk wtr	8,882	Sand	542,280	79
6/29/2013	8,526	8,902	6/29/2013	8,526	8,902	Slk wtr	8,798	Sand	542,700	80
6/29/2013	8,077	8,452	6/29/2013	8,077	8,452	Slk wtr	8,721	Sand	537,360	80
6/29/2013	7,628	8,003	6/29/2013	7,628	8,003	Slk wtr	14,229	Sand	543,600	67
6/30/2013	7,178	7,554	6/29/2013	7,178	7,554	Slk wtr	8,893	Sand	411,420	69
6/30/2013	6,729	7,105	6/30/2013	6,729	7,105	Slk wtr	8,715	Sand	540,600	79
6/30/2013	6,280	6,656	6/30/2013	6,280	6,656	Slk wtr	8,859	Sand	540,460	79

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

Maximum TVD of wellbore: 6072 ft TVD @ 12671 ft MD

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
LS/SILT	0	0	318	318
PITTSBURG COAL	318	318	322	322
LS/SILT	322	322	440	440
SHALE	440	440	880	880
SS/SILT/SHALE	880	880	1090	1090
SHALE	1090	1090	1150	1150
SS	1150	1150	1240	1240
SHALE/SS	1240	1240	1330	1330
BIG LIME	1330	1330	1394	1394
BIG INJUN (SS)	1394	1394	1638	1638
SHALE	1638	1638	5828	5798
GENESEO (SH)	5828	5798	5846	5812
TULLY (LS)	5846	5812	5922	5868
HAMILTON (SH)	5922	5868	6164	5975
MARCELLUS (SH)	6164	5975		
TD OF LATERAL			12671	6072

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	6/27/2013
State	WEST VIRGINIA
County	BROOKE
Operator	4700900154
Operator Number	CHESAPEAKE
Operator Name	APPALACHIAN
Operator Address	THOMAS
Operator City	PARKINSON BRK
Operator State	8H
Operator Phone	80-564356
Operator Fax	40-212736
Operator Email	NAD27
Operator Website	GAS
Operator License	6.072
Operator License Expiration	5.616.912

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Name	CAS #	Concentration (%)	Concentration (%)	Concentration (%)
Fresh Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water		007732-18-5	100.00%	73.83099%	
Recycled Produced Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water		007732-18-5	100.00%	12.10046%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol Glutaraldehyde (Pentanediol) Quaternary Ammonium Compounds		000064-17-5 000111-30-8 NA	5.00% 60.00% 10.00%	0.00136% 0.01627% 0.00271%	
EC6629A	NALCO	Scale Inhibitor	No Hazardous Components		NONE		0.00000%	
Northern White Sand, 100 Mesh Sand, Acid	SCHLUMBERGER	Proppant - Natural, Acid, Friction Reducer, Gelling Agent, Breaker, Cross Linker, Iron Control Agent, Corrosion Inhibitor	Crystalline silica Hydrogen chloride Guar gum Acrylamide, 2-acrylamido-2-methylpropanesulfonic acid, sodium salt polymer Ammonium sulfate		14808-60-7 7647-01-0 9000-30-0 38193-60-1 7783-20-2	98.59234% 0.90013% 0.15779% 0.12395% 0.11715%	13.97917% 0.12763% 0.02237% 0.01758% 0.01661%	

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			Sodium sulfate	7757-82-6	0.05064%	0.00718%	
			Polymer of 2-acrylamido-2-methylpropanesulfonic acid sodium salt and methyl acrylate	136793-29-8	0.01328%	0.00188%	
			Diammonium peroxodisulphate	7727-54-0	0.00952%	0.00135%	
			Potassium borate	1332-77-0	0.00846%	0.00120%	
			Urea	57-13-6	0.00816%	0.00116%	
			Sodium erythorbate	6381-77-7	0.00396%	0.00056%	
			Potassium hydroxide	1310-58-3	0.00313%	0.00044%	
			Methanol	67-56-1	0.00309%	0.00044%	
			Glycerol	56-81-5	0.00276%	0.00039%	
			Fatty acids, tall-oil	61790-12-3	0.00227%	0.00032%	
			Thiourea, polymer with formaldehyde and 1-phenylethanol	68527-49-1	0.00187%	0.00027%	
			Non-crystalline silica	7631-86-9	0.00161%	0.00023%	
			Alcohols, C14-15, ethoxylated (TEO)	68951-67-7	0.00087%	0.00012%	
			Prop-2-yn-1-ol	107-19-7	0.00058%	0.00008%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.00045%	0.00006%	
			Alkenes, C>10 a-ethylenediaminetetraacetate	64743-02-8	0.00039%	0.00005%	
			Tetrasodium ethylenediaminetetraacetate	64-02-8	0.00026%	0.00004%	
			Dimethyl siloxanes and silicones	63148-62-9	0.00012%	0.00002%	
			Siloxanes and Silicones, di-Me, reaction products with silica	67762-90-7	0.00002%	< 0.00001%	
			Magnesium silicate hydrate (talc)	14807-96-6	0.00001%	< 0.00001%	
			Octamethylcyclotetrasiloxane	556-67-2	0.00001%	< 0.00001%	
			Sodium hydroxide	1310-73-2	0.00001%	< 0.00001%	
			Decamethyl cyclopentasiloxane	541-02-6	0.00001%	< 0.00001%	
			poly(tetrafluoroethylene)	9002-84-0	0.00001%	< 0.00001%	
			Dodecamethylcyclohexasiloxane	540-97-6	< 0.00001%	< 0.00001%	
Additional Ingredients Not Listed on MSDS							
EC6110A,	NALCO	Anti-Bacterial Agent, Scale Inhibitor	Methanol (Methyl Alcohol)	000067-56-1		0.00594%	
EC6629A			Proprietary Acrylate Polymer	TRADE SECRET		0.00594%	
			Proprietary Quaternary Ammonium Salt	TRADE SECRET		0.00594%	
			Water	007732-18-5		0.02600%	

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* 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.

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