

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

DATE: 10-22-2013
API #: 47-069-00158

Farm name: Larry Ball OHI 1H Operator Well No.: 837104

LOCATION: Elevation: 1,324' Quadrangle: Bethany

District: Liberty County: Ohio
Latitude: 10.140' Feet South of 40 Deg. 12 Min. 30 Sec.
Longitude 15,150' 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"	120'	120'	336 Cu. Ft.
Agent: Eric Gillespie	13 3/8"	612'	612'	690 Cu. Ft.
Inspector: Gayne Knitowski/Bill Hendershot	9 5/8"	2,021'	2,021'	870 Cu. Ft.
Date Permit Issued: 2-20-2013	5 1/2"	15,354'	15,354'	3,643 Cu. Ft.
Date Well Work Commenced: 3-27-2013				
Date Well Work Completed: 6-29-2013				
Verbal Plugging:				
Date Permission granted on:				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): 6,256'				
Total Measured Depth (ft): 15,356'				
Fresh Water Depth (ft.): 360'				
Salt Water Depth (ft.): 680'				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): 572'				
Void(s) encountered (N/Y) Depth(s) Y 572'				

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

Producing formation Marcellus Pay zone depth (ft) ^(6,985-15,161)
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow 1,276* MCF/d Final open flow 55 Bbl/d
Time of open flow between initial and final tests 96 Hours
Static rock Pressure 4,012* psig (surface pressure) after 96 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

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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

10-22-2013
Date

WV Department of
Environmental Protection

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Were core samples taken? Yes _____ No

Were cuttings caught during drilling? Yes _____ No

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list LWD GR from 5362'-115302' 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 attachment

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

Formations Encountered:	Top Depth	/	Bottom Depth
Surface:			

See attachment

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PERFORATION RECORD ATTACHMENT

Well Number and Name: 837104 Larry Ball OHI 1H

PERFORATION RECORD			STIMULATION RECORD							
Date	Interval Perforated		Date	Interval	Treated	Fluid		Propping Agent		Average Injection
	From	To				Type	Amount	Type	Amount	
5/21/2013	14,790	15,161	5/21/2013	14,790	15,161	Sik wtr	13,154	Sand	568,200	80
5/21/2013	14,374	14,737	5/22/2013	14,374	14,737	Sik wtr	10,798	Sand	568,880	76
5/22/2013	13,939	14,302	5/22/2013	13,939	14,302	Sik wtr	10,278	Sand	573,720	78
5/22/2013	13,504	13,868	5/22/2013	13,504	13,868	Sik wtr	10,210	Sand	570,260	80
5/22/2013	13,070	13,433	5/22/2013	13,070	13,433	Sik wtr	10,118	Sand	572,400	80
5/22/2013	12,635	12,998	5/23/2013	12,635	12,998	Sik wtr	12,670	Sand	571,220	73
5/23/2013	12,201	12,564	5/24/2013	12,201	12,564	Sik wtr	9,600	Sand	571,340	78
5/24/2013	11,766	12,129	5/28/2013	11,766	12,129	Sik wtr	9,876	Sand	574,400	80
5/28/2013	11,331	11,694	5/28/2013	11,331	11,694	Sik wtr	9,357	Sand	570,720	80
5/28/2013	10,897	11,260	5/28/2013	10,897	11,260	Sik wtr	9,457	Sand	574,620	80
5/28/2013	10,462	10,825	5/28/2013	10,462	10,825	Sik wtr	9,434	Sand	575,780	80
5/28/2013	10,027	10,390	5/29/2013	10,027	10,390	Sik wtr	9,527	Sand	572,260	79
5/29/2013	9,593	9,956	5/29/2013	9,593	9,956	Sik wtr	9,480	Sand	571,820	80
5/29/2013	9,158	9,521	5/29/2013	9,158	9,521	Sik wtr	9,183	Sand	569,920	80
5/29/2013	8,724	9,087	5/30/2013	8,724	9,087	Sik wtr	9,352	Sand	571,440	79
5/30/2013	8,289	8,652	5/30/2013	8,289	8,652	Sik wtr	9,513	Sand	569,920	80
5/30/2013	7,854	8,217	5/30/2013	7,854	8,217	Sik wtr	9,583	Sand	570,640	80
5/30/2013	7,420	7,783	5/30/2013	7,420	7,783	Sik wtr	8,983	Sand	570,220	79
5/30/2013	6,985	7,348	5/30/2013	6,985	7,348	Sik wtr	9,166	Sand	569,160	80

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LATERAL SIDETRACK WELLBORE (no vertical pilot hole associated with this well)**Maximum TVD of wellbore: 6256 ft TVD @ 7148 ft MD**

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
SILT/LS/SH	0	0	555	555
PITTSBURG COAL	555	555	561	561
SS/LS	561	561	694	694
SS	694	694	820	820
SH	820	820	992	992
SH/SS/LS	992	992	1058	1058
SS/SILT/SH	1058	1058	1460	1460
SH/SILT	1460	1460	1544	1544
SILT	1544	1544	1570	1570
LS	1570	1570	1670	1670
SS/SH	1670	1670	1689	1689
BIG INJUN (SS)	1689	1689	1881	1881
SILT/SHALE	1881	1881	6440	6048
GENESEO (SH)	6440	6048	6476	6064
TULLY (LS)	6476	6064	6582	6112
HAMILTON (SH)	6582	6112	6857	6212
MARCELLUS (SH)	6857	6212		
TD OF LATERAL			15356	6173

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Hydraulic Fracturing Fluid Product Component Information Disclosure

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Fracture Date:	4/26/2013
State:	WEST VIRGINIA
County:	OHIO
API Number:	4706900158
Operator Name:	CHEESAPEAKE APPALACHIA LLC
Well Name and Number:	LARRY BALL OHI 1H
Longitude:	-80.577953
Latitude:	40.166779
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	6,256
Total Water Volume (gal)*:	8,347,080

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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	CHEESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.000000%	81.77147%	
Recycled Produced Water	CHEESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.000000%	3.95896%	
EC6486A	NALCO	Scale Inhibitor	Ethylene Glycol	000107-21-1	30.000000%	0.00157%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol	000064-17-5	5.000000%	0.00134%	
			Glutaraldehyde (Pentanedio)	000111-30-8	60.000000%	0.01609%	
			Quaternary Ammonium Compounds	NA	10.000000%	0.00268%	
Acid, Hydrochloric 15pct, A264, B315, J218, J475, J580, J610, L058, 100 Mesh Sand, Northern White Sand	SCHLUMBERGER	Acid, Breaker, Corrosion Inhibitor, Cross Linker, Friction Reducer, Gelling Agent, Iron Control Agent, Proppant - Natural	Crystalline silica	14808-60-7	98.40942%	13.92659%	
			Hydrogen chloride	7647-01-0	0.91686%	0.12975%	
			Water	007732-18-5	0.82617%	0.11789%	
			Guar gum	9000-30-0	0.44605%	0.06312%	
			Acrylamide sodium acrylate copolymer	25085-02-3	0.09878%	0.01398%	
			Distillates (petroleum), hydrotreated light	64742-47-8	0.08582%	0.01214%	

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Diammonium peroxodisulphate	7727-54-0	0.01406%	0.00199%
Alkylalcohol, ethoxylate >C10	68002-97-1	0.00525%	0.00074%
Sorbitan monooleate	1338-43-8	0.00420%	0.00059%
Methanol	67-56-1	0.00329%	0.00047%
Sodium erythorbate	6381-77-7	0.00283%	0.00040%
Thiocyanic acid, ammonium salt	1762-95-4	0.00259%	0.00037%
Poly(oxyethylene) sorbitol monostearate	9005-67-8	0.00245%	0.00035%
Fatty acids, tall-oil	61790-12-3	0.00241%	0.00034%
Thiourea, polymer with formaldehyde and 1-phenylethanone	68527-49-1	0.00199%	0.00028%
Non-crystalline silica	7631-86-9	0.00122%	0.00017%
Alcohols, C14-15, ethoxylated (TEO)	68951-67-7	0.00092%	0.00013%
Prop-2-yn-1-ol	107-19-7	0.00062%	0.00009%
Alkenes, C>10 a-	64743-02-8	0.00041%	0.00006%
Tetrasodium ethylenediaminetetraacetate	64-02-8	0.00003%	0.00006%

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	0.00060%
			Proprietary Organic Acid Derivatives	TRADE SECRET	0.00181%
			Water	007732-18-5	0.02342%

* 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.