

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

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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

API 47-069-00110 County Ohio District Triadelphia
Quad Valley Grove Pad Name Chad Glauser OHI Field/Pool Name Sand Hill
Farm name Chad Glauser OHI 6H Well Number 834478
Operator (as registered with the OOG) Chesapeake Appalachia, L.L.C.
Address P.O. Box 18496 City Oklahoma City State OK Zip 73154-0496

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 559114.5 Easting 1661215.2
Landing Point of Curve Northing 559275.0 Easting 1660480.4
Bottom Hole Northing 553245.1 Easting 1663870.5

Elevation (ft) 1,240 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)
Synthetic Oil Based Mud

Date permit issued 5-25-2012 Date drilling commenced 7-4-2013 Date drilling ceased 7-17-2013
Date completion activities began 10-4-2013 Date completion activities ceased 11-7-2013
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 30', 300' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 1,135 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 678' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y

Reviewed by: _____

Twilight (329) 6-6

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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		20"	118'	New	J-55/94#		Y to surface
Surface		13 3/8"	762'	New	J-55/54.50#		Y to surface
Coal							
Intermediate 1		9 5/8"	2,115'	New	J-55/40#		Y to surface
Intermediate 2							
Intermediate 3							
Production		5 1/2"	12,943'	New	P-110/20#		Y 500' intermediate csg
Tubing							
Packer type and depth set							

Comment Details _____

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	A						
Surface	A	680		1.20	814 Cu. Ft.	24'	
Coal							
Intermediate 1	A	715		1.24	898 Cu. Ft.	20.2'	
Intermediate 2							
Intermediate 3							
Production	A	2,534		2.56	3,104 Cu. Ft.	1,207'	
Tubing							

Drillers TD (ft) 12,943' Loggers TD (ft) 12,943'
 Deepest formation penetrated Marcellus Plug back to (ft) _____
 Plug back procedure _____

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Kick off depth (ft) 5,590.7'

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 Surface and Intermediate - run centralizers in the middle
 and top of the first joint, top of the third joint and every fourth joint. Production - Run first centralizer 3' from Shoe, second at top of the first joint and then one every third joint to top of curve.

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 _____

API 47- 069 - 00110

Farm name Chad Glauser OHI 6H

Well number 834478

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	Attached				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
	Attached							

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)

DEPTHS

Marcellus Shale 6,433 TVD 6,820-12,776 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1,117 psi Bottom Hole 4,181 psi DURATION OF TEST 72 hrs

OPEN FLOW Gas 1,598 mcfpd Oil 77 bpd NGL NA bpd Water 228 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	
	0		0		
Attached					

Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling
 Address 3400 South Radio Road City El Reno State OK Zip 73036

Logging Company Nomac Drilling
 Address 5701 S.W. 5th Street City Oklahoma City State OK Zip 73128

Cementing Company Schlumberger
 Address 1080 U.S. 33 City Weston State WV Zip 26452

Stimulating Company Schlumberger
 Address 1080 U.S. 33 City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by Marlene Williams Telephone (405)935-4158
 Signature Marlene Williams Title Regulatory Analyst Date 1-7-2014

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

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PERFORATION RECORD ATTACHMENT

Well Number and Name: 834478 Chad Glauser OHI 6H

PERFORATION RECORD					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	10/4/2013	12,564	12,776	7	Marcellus Shale
2	10/4/2013	12,303	12,515	7	Marcellus Shale
3	10/5/2013	12,042	12,254	7	Marcellus Shale
4	10/5/2013	11,781	11,993	7	Marcellus Shale
5	10/5/2013	11,520	11,732	7	Marcellus Shale
6	10/5/2013	11,258	11,471	7	Marcellus Shale
7	10/5/2013	10,997	11,210	7	Marcellus Shale
8	10/6/2013	10,736	10,949	7	Marcellus Shale
9	10/6/2013	10,481	10,688	7	Marcellus Shale
10	10/6/2013	10,218	10,427	7	Marcellus Shale
11	10/6/2013	9,953	10,164	7	Marcellus Shale
12	10/6/2013	9,692	9,897	7	Marcellus Shale
13	10/6/2013	9,431	9,638	7	Marcellus Shale
14	10/7/2013	9,170	9,382	7	Marcellus Shale
15	10/7/2013	8,909	9,121	7	Marcellus Shale
16	10/7/2013	8,648	8,860	7	Marcellus Shale
17	10/7/2013	8,387	8,599	7	Marcellus Shale
18	10/7/2013	8,125	8,338	7	Marcellus Shale
19	10/7/2013	7,864	8,077	7	Marcellus Shale
20	10/8/2013	7,603	7,816	7	Marcellus Shale
21	10/8/2013	7,342	7,555	7	Marcellus Shale
22	10/8/2013	7,081	7,294	7	Marcellus Shale
23	10/8/2013	6,820	7,032	7	Marcellus Shale

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STIMULATION INFORMATION PER STAGE

Well Number and Name: 834478 Chad Glauser OHI 6H

STIMULATION RECORD							
Stage No.	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)
1	10/4/2013	75	7,542	6,238	3,893	388,940	8,829
2	10/4/2013	77	7,294	6,664	3,806	390,780	7,333
3	10/5/2013	79	7,035	6,479	4,144	392,160	7,287
4	10/5/2013	70	7,138	6,514	4,229	391,260	7,269
5	10/5/2013	80	7,204	5,922	4,818	390,780	7,166
6	10/5/2013	79	7,140	5,881	4,327	390,760	7,219
7	10/5/2013	79	7,244	6,405	4,639	390,660	7,070
8	10/6/2013	80	6,979	6,951	4,354	390,900	7,315
9	10/6/2013	79	6,999	6,098	4,101	390,680	8,196
10	10/6/2013	77	7,254	6,030	4,113	390,400	7,722
11	10/6/2013	79	6,923	5,310	4,403	389,720	7,134
12	10/6/2013	79	6,766	6,652	4,484	390,780	6,998
13	10/7/2013	80	6,683	6,325	4,101	390,680	7,206
14	10/7/2013	80	6,639	6,203	4,144	390,720	7,243
15	10/7/2013	79	6,720	6,105	4,145	390,300	6,932
16	10/7/2013	79	6,871	7,738	4,329	389,020	7,015
17	10/7/2013	80	6,629	5,753	4,170	388,700	7,038
18	10/7/2013	80	6,479	6,161	4,185	389,900	6,959
19	10/8/2013	80	6,519	6,525	4,185	390,800	7,030
20	10/8/2013	79	6,612	7,010	4,270	390,220	6,969
21	10/8/2013	80	6,362	6,213	4,270	390,980	6,999
22	10/8/2013	79	6,948	7,566	4,223	389,320	6,926
23	10/8/2013	79	6,550	5,287	4,079	393,400	7,162

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

Maximum TVD of wellbore: 6488 ft TVD @ 12567 ft MD

Formation/Lithology	Top Depth, MD (ft)	Top Depth, TVD (ft)	Bottom Depth, MD (ft)	Bottom Depth, TVD (ft)
SS	0	0	480	480
LS/SILT	480	480	648	648
PITTSBURG COAL	648	648	652	652
LS	652	652	710	710
SHALE/SS/SILT	710	710	1700	1700
BIG LIME (LS)	1700	1700	1796	1796
BIG INJUN (SS)	1796	1796	1974	1974
SHALE	1974	1974	6393	6233
GENESEO (SH)	6393	6233	6423	6252
TULLY (LS)	6423	6252	6476	6284
HAMILTON (SH)	6476	6284	6727	6393
MARCELLUS (SH)	6727	6393		
TD OF LATERAL			12943	6473

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	10/4/2013
State:	WEST VIRGINIA
County:	OHIO
API Number:	4706900710
Operator Name:	CHESAPEAKE APPALACHIA LLC
Well Name and Number:	CHAD GLAUSER OH16H
Longitude:	-80.597554
Latitude:	40.029806
Fracture Fluid Type:	NAD27
Proppant Type:	GAS
Proppant Density (lb/gal):	6.488
Proppant Volume (gal):	7,213,752

Hydraulic Fracturing Fluid Composition:

Fluid Type	Supplier	Purpose	Chemical Name	Chemical ID	Weight %	Volume %	Other
Fresh Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	81.39723%	
Recycled Produced Water	CHESAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	6.28461%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol	000064-17-5	5.00%	0.00111%	
			Glutaraldehyde (Pentanediol)	000111-30-8	60.00%	0.01326%	
			Quaternary Ammonium Compounds	NA	10.00%	0.00221%	
			No Hazardous Components	NONE		0.00000%	
			Crystalline silica	14808-60-7	98.02921%	12.07540%	
EC6629A	NALCO	Scale Inhibitor	Hydrogen chloride	7647-01-0	1.44112%	0.17752%	
			Guar gum	9000-30-0	0.13152%	0.01620%	
			Acrylamide, 2-acrylamido-2-	38193-60-1	0.10750%	0.01324%	
			Ammonium sulfate	7783-20-2	0.10160%	0.01252%	
			Sodium erythorbate	6381-77-7	0.08217%	0.01012%	
A264, J218, J680, J609, L058, U028, Acid, Hydrochloric	SCHLUMBERGER	Breaker, Corrosion Inhibitor, Friction Reducer, Gelling Agent, Iron Control Agent, Acid, Proppant - Natural					
15pct, Northern White Sand, 100 Mesh Sand							

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Sodium sulfate	7757-82-6	0.04391%	0.00541%	
Sodium hydroxide	1310-73-2	0.02091%	0.00258%	
Polymer of 2-acrylamido-2-	136793-29-8	0.01152%	0.00142%	
Diammonium peroxidisulphate	7727-54-0	0.00814%	0.00100%	
Urea	57-13-6	0.00708%	0.00087%	
Methanol	67-56-1	0.00428%	0.00053%	
Fatty acids, tall-oil	61790-12-3	0.00314%	0.00039%	
Thiourea, polymer with	68527-49-1	0.00259%	0.00032%	
Non-crystalline silica	7631-86-9	0.00138%	0.00017%	
Alcohols, C14-15, ethoxylated	68951-67-7	0.00120%	0.00015%	
Prop-2-yn-1-ol	107-19-7	0.00080%	0.00010%	
Alkenes, C-10 a-	64743-02-8	0.00053%	0.00007%	
Tetrasodium	64-02-8	0.00022%	0.00003%	
Dimethyl siloxanes and silicones	63148-62-9	0.00010%	0.00001%	
Siloxanes and Silicones, di-Me,	67762-90-7	0.00001%	< 0.00001%	
Octamethylcyclotetrasiloxane	556-67-2	0.00001%	< 0.00001%	
Decamethyl cyclopentasiloxane	541-02-6	0.00001%	< 0.00001%	
Dodecamethylcyclohexasiloxane	540-97-6	< 0.00001%	< 0.00001%	

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Additional Ingredients Not Listed on MSDS

EC6110A, EC6629A	NALCO	Anti-Bacterial Agent, Scale Inhibitor	Methanol (Methyl Alcohol)	000067-56-1		0.00636%	
			Proprietary Acrylate Polymer	TRADE SECRET		0.00636%	
			Proprietary Quaternary Ammonium Salt	TRADE SECRET		0.00636%	
			Water	007732-18-5		0.02257%	

* 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.