

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

API 47-091-01269 County Taylor District Fetterman  
Quad Gladesville 7.5' Pad Name OES Field/Pool Name Unknown  
Farm name Orthodox Educational Society Well Number 6HM  
Operator (as registered with the OOG) PDC Mountaineer, LLC  
Address 120 Genesis Blvd. City Bridgeport State WV Zip 26330

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4365722.477543 Easting 588810.256755  
Landing Point of Curve Northing 4365610.560742 Easting 589174.520721  
Bottom Hole Northing 4363779.754970 Easting 589800.761654

Elevation (ft) 1945 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 Frac Fluid  
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)  
Surface: Air with soap & treated water as needed.

Bottom Hole: Synthetic based mud averaging 12+ ppg & 47 Vis.

Date permit issued 06/18/2012 Date drilling commenced 08/06/2013 Date drilling ceased 08/29/2013  
Date completion activities began 10/06/2013 Date completion activities ceased 11/16/2013  
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 \_\_\_\_\_ Est: 245' Open mine(s) (Y/N) depths \_\_\_\_\_ N  
Salt water depth(s) ft \_\_\_\_\_ Est: 910' Void(s) encountered (Y/N) depths \_\_\_\_\_ N  
Coal depth(s) ft \_\_\_\_\_ Est: 273', 326', 414', & 468' Cavern(s) encountered (Y/N) depths \_\_\_\_\_ N  
Is coal being mined in area (Y/N) \_\_\_\_\_ N

RECEIVED  
Office of Oil & Gas  
MAR 24 2014  
WV Department of  
Environmental Protection

Reviewed by: \_\_\_\_\_

05/23/2014

API 47- 091 - 01269 Farm name Orthodox Educational Society Well number 6HM

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	30"	20"	105'	New	H-40 / 94#	None	N/A
Surface	17 1/2'	13 3/8"	545'	New	J-55 / 54.5#	129', 46'	Y
Coal	N/A						
Intermediate 1	12 1/4"	9 5/8"	2510'	New	J-55 / 40#	372'	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	14,863'	New	P-110 / 20#	None	Y
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	N/A						
Surface	Class A	502	15.6	1.18	592	Surface	14.5
Coal							
Intermediate 1	Class A	891	15.6	1.18	1051	Surface	45
Intermediate 2							
Intermediate 3							
Production	L: Class A / T: Type 1	1845 / 1647	14.5 / 14.5	1.18 / 1.18	4120	Surface	N/A
Tubing							

Drillers TD (ft) 14,875'      Loggers TD (ft) 14,875'  
 Deepest formation penetrated Marcellus Shale      Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) Monitor & nudge surface, KO point at 6000'

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 \_\_\_\_\_

13 3/8" Surface String: Ran a total of 5 centralizers every other joint starting at Joint #1. Ran 1 basket at Joint #12 (129' from surface) & 1 basket at Joint #14 (46' from surface).  
 9 5/8" Intermediate String: Ran a total of 6 centralizers every 500 feet starting at Joint #2. Ran at basket at Joint 51 (depth from surface was 372').  
 5 1/2" Production String: Spraglike centralizers on the first 210 joints. Bow Spring centralizers every 4 joints after that into surface casing, total of 29.

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- 091 - 01269 Farm name Orthodox Educational Society Well number 6HM

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	10/06/13	14550	14655	40	Marcellus
2	10/07/13	14493	14253	50	Marcellus
3	10/08/13	13953	14193	50	Marcellus
4	10/08/13	13653	13893	50	Marcellus
5	10/09/13	13353	13591	50	Marcellus
6	10/09/13	13053	13293	50	Marcellus
7	10/10/13	12753	12993	50	Marcellus
8	10/11/13	12453	12691	50	Marcellus
9	10/12/13	12153	12393	50	Marcellus
10	10/12/13	11853	12093	50	Marcellus
11	10/13/13	11553	11793	50	Marcellus
12	10/14/13	11253	11493	50	Marcellus
13	10/15/13	10953	11193	50	Marcellus
14	10/16/13	10653	10893	50	Marcellus
15	10/17/13	10353	10593	50	Marcellus
16	10/19/13	10053	10293	50	Marcellus

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)
1	10/07/13	62	8018	8758	4980	422166	9735	NA
2	10/08/13	59	8356	9803	7099	314456	9094	NA
3	10/08/13	69	8959	8810	6246	425283	8959	NA
4	10/09/13	71	8330	8703	4899	417294	8823	NA
5	10/09/13	75	8385	8826	5490	422778	9915	NA
6	10/10/13	69	8521	9220	6150	422963	8499	NA
7	10/11/13	64	8378	9319	5987	417389	9185	NA
8	10/12/13	59	8402	9340	6224	170528	5526	NA
9	10/12/13	60	7453	8920	4901	421091	8117	NA
10	10/13/13	66	8159	9430	5742	421019	7769	NA
11	10/14/13	65	8451	9309	5696	371508	8045	NA
12	10/15/13	65	8205	8825	5540	421669	7523	NA
13	10/16/13	56	8432	9168	6846	253250	7039	NA
14	10/17/13	79	8009	8839	6735	419947	7556	NA
15	10/18/13	65	7883	8781	5711	428209	7379	NA
16	10/20/13	73	7616	8536	5086	420883	7379	NA

Please insert additional pages as applicable.

API 47- 091 - 01269 Farm name Orthodox Educational Society Well number 6HM

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	10/20/13	9753	9993	50	Marcellus
18	10/21/13	9456	9697	50	Marcellus
19	10/24/13	9153	9393	50	Marcellus
20	10/26/13	8853	9093	50	Marcellus
21	10/27/13	8555	8793	50	Marcellus

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)
17	10/21/13	75	7208	8632	5817	427648	7397	NA
18	10/21/13	74	7550	8320	5348	434755	7648	NA
19	10/26/13	76	7391	8416	6194	423183	7424	NA
20	10/27/13	78	7300	7804	6451	420726	7426	NA
21	10/28/13	79	7316	8532	6644	421094	7371	NA

Please insert additional pages as applicable.

API 47- 091 - 01269 Farm name Orthodox Educational Society Well number 2HM

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus Shale</u>	<u>7778' - 8165'</u> TVD	<u>8135' - 14,875'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface N/T psi Bottom Hole N/T psi DURATION OF TEST N/T hrs

OPEN FLOW Gas 4,166 mcfpd Oil N/A bpd NGL N/A bpd Water 1080 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 <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
Little Lime	1050	1063	1050	1063	Due to air/fluid rotary drilling, fresh water, salt water, & coal are
Big Lime	1085	1308	1085	1309	estimated from surrounding wells and reported on page 1.
Pocono	1320	1412	1321	1413	
Berea	1440	1482	1441	1483	
Gantz	1608	1621	1609	1622	
50 Foot	1645	1690	1646	1692	
30 Foot	1695	1705	1697	1707	
4th Sand	2127	2172	2129	2174	
5th Sand	2265	2300	2268	2303	
Sycamore	6804	6814	6848	6858	
Tully	7477	7569	7646	7765	
Hamilton	7569	7778	7765	8135	
Marcellus	7778	8165	8135	14,875	Continuous shows of gas while drilling

Please insert additional pages as applicable.

Drilling Contractor Pioneer Energy Services  
Address 1083 N Eighty-Eight Rd City Rices Landing State PA Zip 15357

Logging Company Phoenix Technology Services USA Inc  
Address Foster Plaza 5, Ste. 300, 651 Holiday Drive City Pittsburgh State PA Zip 15220

Cementing Company Baker Hughes  
Address Rt. 2, Box 506, 837 Philippi Pike City Clarksburg State WV Zip 26301

Stimulating Company Baker Hughes  
Address Rt. 2, Box 506, 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Bob Williamson Telephone 304-808-6296  
Signature [Signature] Title Sr Geologist Date 03/21/2014

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

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/7/2013
Job End Date:	10/28/2013
State:	West Virginia
County:	Taylor
API Number:	47-091-01269-00-00
Operator Name:	PDC Energy
Well Name and Number:	OES 6HM
Longitude:	-79.96802100
Latitude:	39.43647300
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	8,000
Total Base Water Volume (gal):	7,224,336
Total Base Non Water Volume:	0



## 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
Water	PDC	Base Fluid	Water	NA	100.00000	87.47963	None
Sand (Proppant)	Baker Hughes	Proppant	Silica Substrate	NA	100.00000	12.04059	None
Hydrochloric Acid (15%)	Baker Hughes	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.04393	None
MaxPerm 20A	Baker Hughes	Friction Reducer	Aliphatic hydrocarbon	Proprietary	30.00000	0.03216	None
			Oxyalkylated alcohol	Proprietary	5.00000	0.00536	None
GW-3LDF	Baker Hughes	Water gellant	Guar gum	9000-30-0	60.00000	0.00622	None
			Paraffinic petroleum distillate	64742-55-8	30.00000	0.00311	None
			Petroleum distillates	64742-47-8	30.00000	0.00311	None
			Isotridecanol, ethoxylated	9043-30-5	5.00000	0.00052	None
			Crystalline silica: Quartz (SiO2)	14808-60-7	5.00000	0.00052	None
			1-Butoxy-2-propanol	5131-66-8	5.00000	0.00052	None
GasFlo G	Baker Hughes	Surfactant	Methanol	67-56-1	30.00000	0.01249	None
SCW5279	Baker Hughes	Scale Inhibitor					

9/10/16  
6/7

91-01269

217

Ingredient Name	Supplier	Function	Chemical Name	Product Code	Quantity	MSDS Reference
Sodium Hypochlorite 12%	Baker Hughes	Biocide	Sodium hypochlorite	7681-52-9	30.00000	0.00117
Sodium Chlorite	Dupont	Biocide	Sodium chlorite	7647-14-5	30.00000	0.00117
GBW 5	Baker Hughes	Frac gel breaker	Sodium chlorite	7758-19-2	31.00000	0.00119
Ferrotrol 300L	Baker Hughes	Iron Control	Ammonium persulphate	7727-54-0	100.00000	0.00116
CI-14	Baker Hughes	Corrosion Inhibitor	Citric Acid	77-92-9	60.00000	0.00114
			Methanol	67-56-1	100.00000	0.00044
			Polyoxyalkylenes	Proprietary	30.00000	0.00013
			Fatty acids	Proprietary	10.00000	0.00004
			Propargyl alcohol	107-19-7	5.00000	0.00002
			Olefin	Proprietary	5.00000	0.00002

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS

\* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)