

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

API 47-091-1320 County Taylor District FLEMINGTON  
Quad ROSEMONT 7.5' Pad Name RSM118 Field/Pool Name \_\_\_\_\_  
Farm name JAMES M. TAYLOR ET AL Well Number 515747  
Operator (as registered with the OOG) EQT Production Company  
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,349,728 Easting 569,612  
Landing Point of Curve Northing 4,350,030 Easting 570,193  
Bottom Hole Northing 4,351,088 Easting 569,788

Elevation (ft) 1465 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)

Water base Mud 13.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

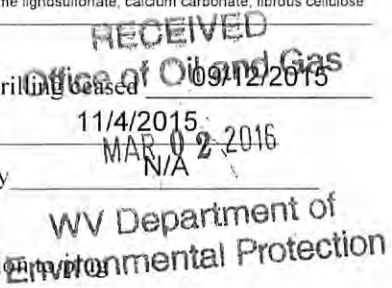
Date permit issued 01/30/2015 Date drilling commenced 06/03/2015 Date drilling ceased 09/12/2015  
Date completion activities began 10/30/2015 Date completion activities ceased 11/4/2015  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 282,606,827 Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1357 Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 22,600,646,697,757,797,813,847,889,938,1071 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

**APPROVED** reviewed by:

NAME: Robert L. Hayes AX 09/10/15  
DATE: 3-21-16 04/01/2016



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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	24"	20"	40'	NEW	A-500 94LB/FT	NONE	Y
Surface	17.5"	13.375"	921'	NEW	J-55 54.5LB/FT	291'	Y
Coal							
Intermediate 1	12.375"	9.625"	2502'	NEW	A-500 40LB/FT	1503'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	12,470'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details N/A

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	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	784	15.6	1.18	925.12	0	8
Coal							
Intermediate 1	CLASS A / CLASS H	436 / 472	15.2 / 16.0	1.25 / 1.25	1135	0	8
Intermediate 2							
Intermediate 3							
Production	Class A / Class H	875 / 580	15.2 / 15.6	1.07 / 1.84	2003.45	3,740'	24
Tubing							

Drillers TD (ft) 12,481' MD Loggers TD (ft) N/A

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 4,676' MD

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

CONDUCTOR- NONE  
SURFACE- JOINTS: 1,11,21  
INTERMEDIATE- 6 CENTRALIZERS RAN AT LEAST EVERY 500' FEET  
PRODUCTION- Composite solid body spiral centralizers installed every joint from bottom to 3,937'

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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 \_\_\_\_\_

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API 47- 091 - 1320 Farm name JAMES M. TAYLOR ET AL Well number 515747

Drilling Contractor Savanna Drilling (Rig 803)  
Address 125 Industry Road City Waynesburg State PA Zip 15370

Logging Company GYRODATA  
Address 601 MAYER ST City BRIDGEVILLE State PA Zip 15017

Logging Company Hoss Co. Services LLC  
Address 614 Trotters Lane City Charleston State WV Zip 25312

Cementing Company C&J Energy Services  
Address 2504 Smith Creek Road City Waynesburg State PA Zip 15370

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515747 Final Formations API #47-910-01320				
Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1		837	
SAND/SHALE	1		32	
PITTSBURGH COAL	32		38	
SAND/SHALE	38		610	
COAL	610		615	
SAND/SHALE	615		656	
COAL	656		661	
SAND/SHALE	661		707	
UPPER FREEPORT	707		708	
SAND/SHALE	708		767	
LOWER FREEPORT	767		768	
SAND/SHALE	768		807	
UPPER KITTANNING	807		808	
SAND/SHALE	808		823	
MIDDLE KITTANNING	823		828	
SAND/SHALE	828		857	
LOWER KITTANNING	857		858	
SAND/SHALE	858		899	
COAL	899		905	
SAND/SHALE	905		948	
COAL	948		953	
SAND/SHALE	953		1,081.00	
MAXTON	981		1,058.00	
SAND/SHALE	1,058.00		1,360.00	
COAL	1,081.00		1,085.00	
BIG LIME	1,360.00		1,542.00	
SAND/SHALE	1,542.00		1,643.00	
WEIR	1,643.00		1,657.00	
SAND/SHALE	1,657.00		1,871.00	
GANTZ	1,871.00		1,937.00	
SAND/SHALE	1,937.00		1,945.00	
50F	1,945.00		1,995.00	
SAND/SHALE	1,995.00		2,052.00	
30F	2,052.00		2,092.00	
SAND/SHALE	2,092.00		2,130.00	
GORDON	2,130.00		2,180.00	
SAND/SHALE	2,180.00		2,276.00	
4TH SAND	2,276.00		2,371.00	
SAND/SHALE	2,371.00		2,419.00	
BAYARD	2,419.00		2,466.00	
SAND/SHALE	2,466.00		2,811.00	
WARREN	2,811.00		3,157.00	
SPEECHLEY	3,157.00		3,439.00	
BRADFORD	3,439.00		3,608.00	
BALLTOWN B	3,608.00		3,855.00	
RILEY	3,855.00		4,467.00	
BENSON	4,467.00		5,018.00	5,004.30
ELK	5,018.00	5,004.30	7,154.00	6,638.90
SONYEA	7,154.00	6,638.90	7,690.00	7,054.90
MIDDLESEX	7,690.00	7,054.70	7,827.00	7,158.90
GENESSEE	7,827.00	7,158.90	8,008.00	7,291.00
GENESE0	8,008.00	7,293.00	8,035.00	7,311.60
TULLY	8,035.00	7,311.60	8,115.00	7,463.00
HAMILTON	8,115.00	7,363.90	8,351.00	7,488.80
MARCELLUS	8,351.00	7,488.80		

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**515747 - 47-091-01320-0000 - Stimulated Stages**

Stage Number	Stimulation 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)
Initiation Sleeve	10/30/2015	4.30	8,861.00	9,526.00	5,940.00	0	837	0
1	10/30/2015	89.80	8,909.00	9,139.00	5,721.00	250,860	7030	0
2	10/31/2015	97.40	8,866.00	9,001.00	6,118.00	250,180	6598	0
3	10/31/2015	99.00	8,815.00	8,959.00	6,381.00	251,160	6291	0
4	10/31/2015	99.80	8,872.00	9,083.00	6,078.00	251,080	6283	0
5	10/31/2015	99.80	8,897.00	9,101.00	6,403.00	249,880	6537	0
6	10/31/2015	93.70	8,910.00	9,112.00	5,760.00	251,300	6488	0
7	11/1/2015	94.10	8,956.00	9,108.00	5,866.00	251,040	6560	0
8	11/1/2015	97.00	8,961.00	9,201.00	6,160.00	250,300	6062	0
9	11/1/2015	100.00	8,966.00	9,178.00	6,226.00	250,660	6151	0
10	11/1/2015	96.70	8,979.00	9,218.00	6,203.00	249,800	6124	0
11	11/1/2015	85.80	8,973.00	9,185.00	6,312.00	252,560	6257	0
12	11/1/2015	90.10	8,981.00	9,167.00	6,633.00	250,540	6098	0
13	11/2/2015	94.60	8,994.00	9,196.00	6,407.00	251,120	6517	0
14	11/2/2015	100.70	9,000.00	9,213.00	6,544.00	251,140	5994	0
15	11/2/2015	100.30	8,978.00	9,146.00	6,164.00	250,960	6010	0
16	11/2/2015	93.50	8,826.00	9,099.00	6,299.00	249,880	6839	0
17	11/3/2015	96.00	8,858.00	9,052.00	5,972.00	251,020	6378	0
18	11/3/2015	96.80	8,921.00	9,051.00	6,034.00	249,860	6,104	0
19	11/3/2015	100.20	8,980.00	9,207.00	6,052.00	252,880	5,922	0
20	11/3/2015	101.80	8,810.00	8,994.00	6,113.00	251,800	6,129	0
21	11/3/2015	100.70	8,935.00	9,074.00	5,521.00	249,990	6,174	0
22	11/4/2015	99.40	8,799.00	9,143.00	5,879.00	251,610	6,060	0
23	11/4/2015	99.50	8,775.00	8,955.00	5,597.00	251,400	6,055	0
24	11/4/2015	100.10	8,974.00	9,197.00	5,970.00	254,000	5887	0
25	11/4/2015	99.80	9,009.00	9,398.00	5,363.00	250,320	5919	0

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**515747 - 47-091-01320-0000 - Perforations**

<b>Stage Number</b>	<b>Perforation Date</b>	<b>Top Perf Depth (ftKB)</b>	<b>Bottom Perf Depth (ftKB)</b>	<b>Number of Shots</b>	<b>Formation</b>
<b>Initiation Sleeve</b>	10/23/2015	12,468.00	12,470.00	10	MARCELLUS
<b>1</b>	10/30/2015	12,324.00	12,416.00	32	MARCELLUS
<b>2</b>	10/31/2015	12,174.00	12,296.00	40	MARCELLUS
<b>3</b>	10/31/2015	12,024.00	12,146.00	40	MARCELLUS
<b>4</b>	10/31/2015	11,874.00	11,994.00	40	MARCELLUS
<b>5</b>	10/31/2015	11,724.00	11,846.00	40	MARCELLUS
<b>6</b>	10/31/2015	11,574.00	11,696.00	40	MARCELLUS
<b>7</b>	11/1/2015	11,424.00	11,546.00	40	MARCELLUS
<b>8</b>	11/1/2015	11,274.00	11,396.00	40	MARCELLUS
<b>9</b>	11/1/2015	11,124.00	11,246.00	40	MARCELLUS
<b>10</b>	11/1/2015	10,974.00	11,096.00	40	MARCELLUS
<b>11</b>	11/1/2015	10,827.00	10,946.00	40	MARCELLUS
<b>12</b>	11/1/2015	10,674.00	10,796.00	40	MARCELLUS
<b>13</b>	11/2/2015	10,524.00	10,646.00	40	MARCELLUS
<b>14</b>	11/2/2015	10,374.00	10,496.00	40	MARCELLUS
<b>15</b>	11/2/2015	10,224.00	10,342.00	40	MARCELLUS
<b>16</b>	11/2/2015	10,074.00	10,196.00	40	MARCELLUS
<b>17</b>	11/3/2015	9,924.00	10,046.00	40	MARCELLUS
<b>18</b>	11/3/2015	9,774.00	9,896.00	40	MARCELLUS
<b>19</b>	11/3/2015	9,624.00	9,746.00	40	MARCELLUS
<b>20</b>	11/3/2015	9,474.00	9,596.00	40	MARCELLUS
<b>21</b>	11/3/2015	9,324.00	9,446.00	40	MARCELLUS
<b>22</b>	11/4/2015	9,174.00	9,296.00	40	MARCELLUS
<b>23</b>	11/4/2015	9,024.00	9,146.00	40	MARCELLUS
<b>24</b>	11/4/2015	8,874.00	8,996.00	40	MARCELLUS
<b>25</b>	11/4/2015	8,724.00	8,846.00	40	MARCELLUS

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	10/30/2015
Job End Date	11/4/2015
State	West Virginia
County	Taylor
SPI Number	47-091-01320-00-00
Operator Name	EQT Production
Well Name and Number	515747
Longitude	-80.19293800
Latitude	39.29403600
Datum	NAD83
Federal Title Well	NO
True Vertical Depth	7,489
Total Base Water Volume (gal)	6,606,768
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	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.54000	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	10.19152	None
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00000	0.02016	None
			Alkyl Alcohol	Proprietary	10.00000	0.00672	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00336	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02992	None
AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.00020	None
			N, N-Dimethylformamide	68-12-2	20.00000	0.00010	None
			2-Butoxyethanol	111-76-2	15.00000	0.00008	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00008	None
			Cinnamialdehyde	104-55-2	15.00000	0.00008	None
			Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00003	None

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			1-Decanol	112-30-1	5.00000	0.00003	None
			Isopropyl alcohol	67-63-0	2.50000	0.00001	None
			1-Octanol	111-87-5	2.50000	0.00001	None
			Triethyl Phosphate	78-40-0	2.50000	0.00001	None
Bactron K-139	Keane Group	Biocide					
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	10.00000	0.00008	None
			Ethanol	64-17-5	5.00000	0.00004	None
			Glutaraldehyde	111-30-8	5.00000	0.00004	None
EC6330A	Keane Group	Scale Inhibitor					
			Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00003	None

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)

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