

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

API 47 - 170 - 6251 County Doddridge District Grant  
Quad Center Point 7.5 Pad Name CPT 11 Field/Pool Name \_\_\_\_\_  
Farm name Jordan Family Partnership Well Number 514319  
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 4359476.9 Easting 523814.1  
Landing Point of Curve Northing 4359560.5 Easting 523891.4  
Bottom Hole Northing 4358248.6 Easting 524581.3

Elevation (ft) 1111 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 See Attachment  
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 12.4 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, ferrocchrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 7/8/2013 Date drilling commenced 10/8/2013 Date drilling ceased 1/19/2014  
Date completion activities began 4/26/2014 Date completion activities ceased 5/4/2014  
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 to plug

Freshwater depth(s) ft 79', 717' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1674', 1402' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 865' - 868', 1277' - 1279' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

RECEIVED  
Office of Oil and Gas  
JUL 29 2014  
WV Department of  
Environmental Protection  
Reviewed by: \_\_\_\_\_

API 47-170 - 6251 Farm name Jordan Family Partnership Well number 514319

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	A500 94#		Y
Surface	17-1/2"	13-3/8"	1036'	New	J55 54.5#	155', 955'	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5256'	New	A500 40#	1111', 3343', 4523'	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	12256'	New	P110 20#		N
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	Class A	38	15.8	1.18	44.8	0	8
Surface	Class A	810	15.6	1.18	955.8	0	8
Coal							
Intermediate 1	Class A	325/1455	14.2/15.6	1.28/1.18	2133	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	400/645	14.2/15.2	1.31/1.94	1775	5269	8
Tubing							

Drillers TD (ft) 12269 Loggers TD (ft) N/A  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5413

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-bow spring centralizer at 115', 955', 881'  
Intermediate-bow spring centralizers ran at the shoe and every 500' to TD.  
Production- plastic centralizer on every joint from the shoe up to intermediate casing point at 5269

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS RECEIVED

Office of Oil and Gas

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS JUL 29 2014

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

WV Department of Environmental Protection







Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
Fresh Water Zone	1	1	717	717
Sand / Shale	1	1	865	865
Coal	865	865	867	867
Sand / Shale	867	867	1,277.00	1,277.00
Coal	1,277.00	1,277.00	1,280.00	1,280.00
Sand / Shale	1,280.00	1,280.00	1,868.00	1,868.00
Maxton	1,868.00	1,868.00	2,110.00	2,109.90
Big Lime	2,110.00	2,109.90	2,514.00	2,513.90
Berea	2,691.00	2,690.90	2,708.00	2,707.90
Gantz	2,708.00	2,707.90	2,767.00	2,766.90
Fifty foot	2,767.00	2,766.90	2,896.00	2,895.90
Weir	2,514.00	2,513.90	2,691.00	2,690.90
Thirty foot	2,896.00	2,895.90	2,921.00	2,920.90
Gordon	2,921.00	2,920.90	3,060.00	3,059.90
Forth Sand	3,060.00	3,059.90	3,219.00	3,218.80
Fifth Sand	3,219.00	3,218.80	3,585.00	3,584.80
Warren	3,585.00	3,584.80	3,806.00	3,805.80
Speechley	3,806.00	3,805.80	4,168.00	4,167.80
Balltown A	4,168.00	4,167.80	4,547.00	4,546.80
Bradford	4,547.00	4,546.80	5,175.00	5,174.70
Benson	5,175.00	5,174.70	5,491.00	5,489.80
Alexander	5,491.00	5,489.80	6,349.00	6,202.90
Elk	6,349.00	6,202.90	6,780.00	6,619.70
Sonyea	6,780.00	6,619.70	6,918.00	6,754.70
Middlesex	6,918.00	6,754.70	6,951.00	6,785.60
Genesee	6,951.00	6,785.60	7,074.00	6,893.00
Geneseo	7,074.00	6,893.00	7,116.00	6,924.90
Tully	7,116.00	6,924.90	7,148.00	6,947.20
Hamilton	7,148.00	6,947.20	7,215.00	6,986.50
Marcellus	7,215.00	6,986.50	12,269.00	7,031.50

Well has not been flowed back or tested - Will send amended report when testing has been completed

Stimulation Notes:

Re-perforated stage 15 (15.1)

**514319 - 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>	4/26/2014	12,229.00	12,231.00	10	MARCELLUS
<b>1</b>	4/26/2014	12,108.00	12,177.00	32	MARCELLUS
<b>2</b>	4/26/2014	11,958.00	12,080.00	40	MARCELLUS
<b>3</b>	4/26/2014	11,812.00	11,930.00	40	MARCELLUS
<b>4</b>	4/27/2014	11,658.00	11,780.00	40	MARCELLUS
<b>5</b>	4/27/2014	11,508.00	11,630.00	40	MARCELLUS
<b>6</b>	4/27/2014	11,358.00	11,480.00	40	MARCELLUS
<b>7</b>	4/28/2014	11,208.00	11,330.00	40	MARCELLUS
<b>8</b>	4/28/2014	11,058.00	11,174.00	40	MARCELLUS
<b>9</b>	4/29/2014	10,908.00	11,028.00	40	MARCELLUS
<b>10</b>	4/29/2014	10,758.00	10,880.00	40	MARCELLUS
<b>11</b>	4/29/2014	10,608.00	10,730.00	40	MARCELLUS
<b>12</b>	4/29/2014	10,458.00	10,577.00	40	MARCELLUS
<b>13</b>	4/30/2014	10,308.00	10,430.00	40	MARCELLUS
<b>14</b>	4/30/2014	10,158.00	10,280.00	40	MARCELLUS
<b>15</b>	4/30/2014	10,014.00	10,130.00	40	MARCELLUS
<b>15.1 (Re-Perf)</b>	4/30/2014	9,964.00	10,060.00	32	MARCELLUS
<b>16</b>	5/1/2014	9,814.00	9,936.00	40	MARCELLUS
<b>17</b>	5/1/2014	9,664.00	9,786.00	40	MARCELLUS
<b>18</b>	5/1/2014	9,514.00	9,636.00	40	MARCELLUS
<b>19</b>	5/1/2014	9,364.00	9,482.00	40	MARCELLUS
<b>20</b>	5/2/2014	9,214.00	9,336.00	40	MARCELLUS
<b>21</b>	5/2/2014	9,064.00	9,186.00	40	MARCELLUS
<b>22</b>	5/2/2014	8,918.00	9,036.00	40	MARCELLUS
<b>23</b>	5/3/2014	8,764.00	8,886.00	40	MARCELLUS
<b>24</b>	5/3/2014	8,614.00	8,736.00	40	MARCELLUS
<b>25</b>	5/3/2014	8,464.00	8,586.00	40	MARCELLUS
<b>26</b>	5/3/2014	8,314.00	8,428.00	40	MARCELLUS
<b>27</b>	5/4/2014	8,164.00	8,282.00	40	MARCELLUS
<b>28</b>	5/4/2014	8,014.00	8,136.00	40	MARCELLUS
<b>29</b>	5/4/2014	7,864.00	7,986.00	40	MARCELLUS
<b>30</b>	5/4/2014	7,714.00	7,836.00	40	MARCELLUS
<b>31</b>	5/4/2014	7,564.00	7,686.00	40	MARCELLUS
<b>32</b>	5/4/2014	7,414.00	7,536.00	40	MARCELLUS
<b>33</b>	5/4/2014	7,264.00	7,386.00	40	MARCELLUS



**514319 - Stimulated Stages**

<b>Stage Number</b>	<b>Stimulation Date</b>	<b>Ave Pump Rate (BPM)</b>	<b>Ave Treatment Pressure (PSI)</b>	<b>Max Breakdown Pressure (PSI)</b>	<b>ISIP (PSI)</b>	<b>Amount of Proppant (lbs)</b>	<b>Amount of Water (bbls)</b>	<b>Amount of Nitrogen/other (units)</b>
Initiation Sleeve	4/26/2014	18.90	9,584.00	NA	8,800	NA	137,872	0
1	4/26/2014	98.00	7,627.00	NA	3,371	280,200	296,449	0
2	4/26/2014	96.80	8,217.00	7,500.00	3,864	281,400	308,521	0
3	4/26/2014	97.90	7,985.00	6,064.00	3,865	280,900	307,821	0
4	4/27/2014	96.60	8,158.00	6,094.00	3,813	279,600	298,812	0
5	4/27/2014	99.90	8,038.00	6,154.00	3,409	280,500	288,126	0
6	4/28/2014	99.50	8,254.00	6,629.00	4,663	280,000	305,380	0
7	4/28/2014	98.70	8,196.00	6,317.00	3,929	280,400	298,768	0
8	4/29/2014	95.30	8,176.00	6,373.00	3,764	281,400	306,796	0
9	4/29/2014	99.40	8,120.00	6,950.00	4,874	283,400	301,915	0
10	4/29/2014	97.10	8,104.00	6,890.00	3,979	280,000	302,762	0
11	4/29/2014	99.30	8,260.00	6,302.00	5,688	279,200	295,661	0
12	4/30/2014	96.60	8,103.00	6,637.00	5,685	187,400	213,483	0
13	4/30/2014	96.30	8,033.00	6,791.00	4,253	196,800	233,745	0
14	4/30/2014	99.40	8,042.00	6,998.00	4,993	200,400	217,087	0
15	4/30/2014	61.60	8,172.00	7,825.00	5,544	1,100	68,135	0
15:1 (Re-Perf)	5/1/2014	100.30	7,756.00	NA	5,477	200,600	227,223	0
16	5/1/2014	97.60	8,174.00	6,013.00	4,515	202,700	219,268	0
17	5/1/2014	97.00	8,244.00	5,961.00	4,043	201,600	228,643	0
18	5/1/2014	97.57	8,329.00	7,043.00	5,559	199,700	223,036	0
19	5/1/2014	89.70	7,885.00	5,865.00	5,491	195,300	239,113	0
20	5/2/2014	99.60	7,409.00	6,057.00	5,828	199,800	226,060	0
21	5/2/2014	98.73	7,297.00	5,622.00	5,556	199,300	267,773	0
22	5/2/2014	94.26	7,986.00	5,875.00	5,490	198,300	292,664	0
23	5/3/2014	99.69	7,233.00	5,637.00	5,218	117,500	137,616	0
24	5/3/2014	99.28	7,580.00	6,282.00	5,496	121,300	139,808	0
25	5/3/2014	97.80	7,750.00	5,939.00	5,406	118,100	137,555	0
26	5/3/2014	99.80	7,249.00	6,394.00	5,599	120,700	135,495	0
27	5/4/2014	99.70	7,099.00	6,149.00	5,420	119,900	134,999	0
28	5/4/2014	99.10	7,481.00	6,007.00	5,172	120,100	132,006	0
29	5/4/2014	98.39	7,756.00	7,207.00	5,406	120,000	131,192	0
30	5/4/2014	100.60	7,456.00	7,100.00	5,036	122,200	162,324	0
31	5/4/2014	100.30	6,914.00	6,958.00	5,241	122,200	129,692	0
32	5/4/2014	100.50	7,282.00	5,638.00	4,962	122,400	134,588	0
33	5/4/2014	98.90	7,611.00	5,530.00	4,853	114,200	136,670	0

# Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date	4/26/2014
Job End Date	5/4/2014
State	West Virginia
County	Doddridge
API Number	47-017-06251-00-00
Operator Name	EQT Production
Well Name and Number	CPT11 - 514319
Longitude	-80.72365600
Latitude	39.38436400
Datum	NAD27
Federal/Tribal Well	NO
True Vertical Depth	7,049
Total Base Water Volume (gal)	7,854,744
Total Base Non Water Volume	338,158

## 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	Halliburton	Carrier	Water	7732-18-5	100.00000	90.36324	
Sand	Halliburton	Proppant	Crystalline Silica	14808-60-7	100.00000	9.10040	
MX-5	Halliburton	Biocide	Sodium Nitrate	7631-99-4	60.00000	0.05746	
Hydrochloric Acid 15%	Halliburton	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.04353	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02595	
LGC-36	Halliburton	Adds viscosity to fluid	Guar Gum	9000-30-0	50.00000	0.00558	
			Napiha, hydrotreated heavy	64742-48-9	50.00000	0.00558	
BA-40L	Halliburton	Buffer	Potassium carbonate	584-08-7	60.00000	0.01027	
MX-8	Halliburton	Biocide	Bacteria Culture	000-00-0	100.00000	0.00972	
LP-65	Halliburton	Scale Inhibitor	Ammonium Chloride	12125-02-9	10.00000	0.00255	

Methanol	Halliburton	Corrosion inhibitor	Methanol	57-56-1	60.00000	0.00027
SP Breaker	Halliburton	Oxidizing Breaker				
Propargyl Alcohol	Halliburton	Corrosion inhibitor	Sodium Persulfate	7775-27-1	100.00000	0.00014
			Propargyl Alcohol	107-19-7	10.00000	0.00005
<b>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.</b>						

\* 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)

# EQT PRODUCTION COMPANY J.D. McREYNOLDS LEASE 1500± ACRES WELL NO. WV 514319

**WELL NO. WV 514319**  
**STATE PLANE COORDINATES**  
**NORTH ZONE (NAD 27)**  
N. 324,458.6  
E. 1,654,137.1

**LANDING POINT**  
**WELL NO. WV 514319**  
**STATE PLANE COORDINATES**  
**NORTH ZONE (NAD 27)**  
N. 323,819.1  
E. 1,654,891.3

**LAT=(N) 39.382636**  
**LONG=(W) 80.720958**  
**UTM (NAD'83)(METERS)**  
N. 4,359,476.9  
E. 524,047.2

**BOTTOM HOLE**  
**WELL NO. WV 514319**  
**STATE PLANE COORDINATES**  
**NORTH ZONE (NAD 27)**  
N. 320,404.5  
E. 1,656,681.5

**LAT=(N) 39.373325**  
**LONG=(W) 80.714915**  
**UTM (NAD'83)(METERS)**  
N. 4,358,254.2  
E. 524,579.5

### NOTES ON SURVEY

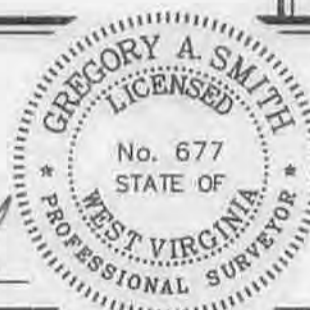
1. TIES TO WELLS, CORNERS, AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 280 PAGE 695, DEED BOOK 223 PAGE 430, DEED BOOK 282 PAGE 406 & DEED BOOK 175 PAGE 633.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2012.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK).
5. PLAT UPDATED ON 07/08/14 TO SHOW THE AS DRILLED PATH COORDINATES FROM INFORMATION PROVIDED BY EQT ON 01/27/14.



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677

*Gregory A. Smith*



### AS DRILLED INFORMATION

<b>BOTTOM HOLE</b> <b>WELL NO. WV 514319</b> <b>STATE PLANE COORDINATES</b> <b>NORTH ZONE (NAD 27)</b>	<b>WELL NO. WV 514319</b> <b>STATE PLANE COORDINATES</b> <b>NORTH ZONE (NAD 27)</b>
N. 320,386.1 E. 1,656,587.1	N. 324,458.6 E. 1,654,137.1
LAT=(N) 39.373274 LONG=(W) 80.714794	LAT=(N) 39.384364 LONG=(W) 80.723658
UTM (NAD'83)(METERS) N. 4,358,248.8 E. 524,581.3	UTM (NAD'83)(METERS) N. 4,359,476.9 E. 523,814.1

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE MARCH 15 , 20 13  
 REVISED DATE JULY 08 , 20 14  
 OPERATORS WELL NO. WV 514319  
 API WELL NO. 47-017-06251  
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7749ASDRILLED514319  
 SCALE 1" = 2000'  
 PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK)

STATE OF WEST VIRGINIA  
 DIVISION OF ENVIRONMENTAL PROTECTION  
 OFFICE OF OIL AND GAS



WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION 1,130' (GROUND) 1,111' (PROPOSED) WATERSHED FLINT RUN OF McELROY CREEK  
 DISTRICT GRANT COUNTY DODDRIDGE QUADRANGLE CENTER POINT 7.5'

SURFACE OWNER JORDAN FAMILY PARTNERSHIP ACREAGE 460±  
 ROYALTY OWNER J.D. McREYNOLDS HEIRS/ASSIGNS ACREAGE 1500± LEASE NO. 090500

PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
 ESTIMATED DEPTH \_\_\_\_\_

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY  
 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330