

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

pm

API 47 - 170 - 6291 County Doddridge District New Milton  
Quad Smithburg 7.5 Pad Name Smithburgh 28 Field/Pool Name                       
Farm name SUE ANN SPIKER Well Number 514142  
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 4,345,988.3 Easting 522,587.4  
Landing Point of Curve Northing 4,345,808.2 Easting 522,523.3  
Bottom Hole Northing 4,344,395.7 Easting 523,204.8

Elevation (ft) 1254 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 See Attached  
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 based mud 12.4 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, 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 8/6/2013 Date drilling commenced 8/7/2013 Date drilling ceased 12/01/2013  
Date completion activities began 12/11/2013 Date completion activities ceased N/A  
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

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JUL 28 2014

Freshwater depth(s) ft 35',583' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft N Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 50', 281', 557', 628', 1,207', 1,376' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:                       
09/05/2014

API 47-170 - 6291 Farm name SUE ANN SPIKER Well number 514142

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"	72'	New	94#		Y
Surface	17-1/2"	13-3/8"	668'	New	54.5#	393,431	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5,339'	New	40#	550',3018',3246'	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	12,319'	New	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	69	15.6	1.18	81.42	0	8
Surface	Class A	520	15.6	1.21	629	0	8
Coal							
Intermediate 1	Class A	330/1450	14.2/15.6	1.48/1.18	2199	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	375/970	14.2/15.2	1.31/1.94	1791	5439	8
Tubing							

Drillers TD (ft) 12,325' Loggers TD (ft) N/A  
 Deepest formation penetrated Geneseo Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5,555'

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-N/A  
 Surface-bow spring centralizer on the shoe and 191'  
 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 5349'

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 Chemical





**514142 - 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>Toe Pop</b>	1/26/2014 7:59	12,293.00	12,296.00	10	Geneseo
<b>1</b>	1/26/2014 12:28	12,172.00	12,264.00	32	Geneseo
<b>2</b>	1/26/2014 19:00	12,022.00	12,144.00	40	Geneseo
<b>3</b>	1/27/2014 3:36	11,872.00	11,994.00	40	Geneseo
<b>4</b>	1/27/2014 10:27	11,722.00	11,844.00	40	Geneseo
<b>5</b>	1/27/2014 16:35	11,572.00	11,692.00	40	Geneseo
<b>6</b>	1/28/2014 0:00	11,422.00	11,544.00	40	Geneseo
<b>7</b>	1/28/2014 9:13	11,272.00	11,394.00	40	Geneseo
<b>8</b>	1/28/2014 15:55	11,122.00	11,260.00	40	Geneseo
<b>9</b>	1/29/2014 2:30	10,972.00	11,094.00	40	Geneseo
<b>10</b>	1/29/2014 14:48	10,822.00	10,942.00	40	Geneseo
<b>11</b>	1/30/2014 16:42	10,672.00	10,794.00	40	Geneseo
<b>12</b>	1/30/2014 23:55	10,522.00	10,644.00	40	Geneseo
<b>13</b>	1/31/2014 6:35	10,372.00	10,494.00	40	Geneseo
<b>14</b>	1/31/2014 12:04	10,222.00	10,344.00	40	Geneseo
<b>15</b>	1/31/2014 17:05	10,072.00	10,194.00	40	Geneseo
<b>16</b>	1/31/2014 21:25	9,922.00	10,044.00	40	Geneseo
<b>17</b>	2/1/2014 1:50	9,772.00	9,894.00	40	Geneseo
<b>18</b>	2/1/2014 17:31	9,622.00	9,744.00	40	Geneseo
<b>19</b>	2/1/2014 21:30	9,472.00	9,594.00	40	Geneseo
<b>20</b>	2/2/2014 6:35	9,322.00	9,444.00	40	Geneseo
<b>21</b>	2/2/2014 9:55	9,172.00	9,294.00	40	Geneseo
<b>22</b>	2/2/2014 14:37	9,022.00	9,142.00	40	Geneseo
<b>23</b>	2/2/2014 18:35	8,872.00	8,994.00	40	Geneseo
<b>24</b>	2/2/2014 23:00	8,722.00	8,844.00	40	Geneseo
<b>25</b>	2/3/2014 3:35	8,572.00	8,694.00	40	Geneseo
<b>26</b>	3/17/2014 15:49	8,422.00	8,542.00	40	Geneseo
<b>27</b>	3/17/2014 18:30	8,272.00	8,394.00	40	Geneseo
<b>28</b>	3/17/2014 22:35	8,122.00	8,244.00	40	Geneseo
<b>29</b>	3/18/2014 4:03	7,972.00	8,094.00	40	Geneseo
<b>30</b>	3/18/2014 6:00	7,822.00	7,944.00	40	Geneseo
<b>31</b>	3/18/2014 11:50	7,672.00	7,794.00	40	Geneseo
<b>32</b>	3/18/2014 16:35	7,522.00	7,644.00	40	Geneseo
<b>33</b>	3/18/2014 21:17	7,372.00	7,494.00	40	Geneseo
<b>34</b>	3/19/2014 1:32	7,222.00	7,344.00	40	Geneseo
<b>35</b>	3/19/2014 5:22	7,072.00	7,194.00	40	Geneseo
<b>36</b>	3/19/2014 9:35	6,922.00	7,044.00	40	Geneseo

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**514142 - 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)
Toe Pop	1/26/14 10:16	13.60	7,873.00	NA	5,100	NA	734	0
1	1/26/14 15:02	87.10	8,045.00	5,628.00	2,920	201,200	7,753	0
2	1/26/14 20:25	94.70	8,050.00	6,704.00	3,309	195,300	5,274	0
3	1/27/14 5:51	96.40	8,123.00	7,049.00	3,088	201,000	5,160	0
4	1/27/14 12:00	94.10	7,873.00	7,398.00	2,985	199,100	5,677	0
5	1/27/14 18:15	91.00	7,673.00	6,973.00	2,883	199,100	5,898	0
6	1/28/14 6:00	86.50	7,777.00	7,341.00	3,179	190,400	5,674	0
7	1/28/14 12:40	90.90	7,918.00	6,933.00	3,004	197,800	5,241	0
8	1/28/14 20:20	95.80	8,107.00	6,537.00	2,886	200,500	5,446	0
9	1/29/14 11:50	93.40	7,913.00	6,736.00	3,266	199,700	6,477	0
10	1/29/14 18:30	94.40	7,943.00	6,933.00	3,708	199,600	6,435	0
11	1/30/14 20:38	99.10	7,780.00	6,442.00	3,667	201,900	5,168	0
12	1/31/14 3:18	99.00	7,938.00	6,887.00	3,752	204,500	5,035	0
13	1/31/14 9:38	99.40	8,007.00	6,279.00	3,482	201,800	5,005	0
14	1/31/14 12:30	99.70	7,701.00	6,723.00	3,536	203,200	4,918	0
15	1/31/14 18:48	99.80	7,947.00	6,424.00	3,604	202,100	5,007	0
16	1/31/14 23:04	97.50	8,105.00	5,983.00	3,467	200,200	5,023	0
17	2/1/14 3:19	97.90	8,020.00	5,718.00	3,390	202,400	4,972	0
18	2/1/14 18:53	99.60	7,831.00	6,498.00	3,395	199,100	4,972	0
19	2/2/14 4:16	100.10	7,239.00	5,987.00	3,455	204,200	4,957	0
20	2/2/14 7:39	99.82	7,477.00	6,273.00	3,541	195,600	4,801	0
21	2/2/14 12:24	100.60	7,492.00	6,500.00	3,468	204,800	5,111	0
22	2/2/14 16:10	99.40	7,692.00	7,451.00	3,623	199,400	5,120	0
23	2/2/14 20:21	99.80	7,112.00	6,637.00	3,274	199,100	4,912	0
24	2/3/14 0:56	98.40	7,062.00	6,635.00	3,328	201,700	4,979	0
25	3/17/14 11:47	96.80	8,174.00	4,756.00	3,506	200,700	6,289	0
26	3/17/14 17:02	97.80	7,332.00	6,815.00	3,045	201,100	4,848	0
27	3/17/14 20:30	99.70	7,489.00	6,732.00	3,421	197,000	4,952	0
28	3/18/14 1:42	100.20	7,458.00	6,636.00	3,541	199,100	4,728	0
29	3/18/14 6:15	97.90	7,611.00	6,745.00	3,660	199,300	4,991	0
30	3/18/14 9:00	99.70	7,413.00	5,966.00	3,769	200,000	5,026	0
31	3/18/14 13:00	99.10	7,684.00	5,968.00	3,620	199,900	5,238	0
32	3/18/14 19:02	100.30	7,268.00	6,757.00	3,699	199,600	4,811	0
33	3/18/14 23:11	100.20	7,406.00	6,050.00	3,798	201,500	4,878	0
34	3/19/14 2:55	100.20	7,313.00	6,747.00	3,784	197,400	4,712	0
35	3/19/14 7:15	97.80	7,111.00	5,859.00	3,873	199,800	4,971	0
36	3/19/14 10:00	100.10	7,274.00	6,793.00	3,395	201,200	4,989	0

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Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
SAND / SHALE	0	0	55	55
FRESH WATER ZONE	1	1	570	570
COAL	55	55	60	60
SAND / SHALE	60	60	281	281
COAL	281	281	285	285
SAND / SHALE	285	285	577	577
COAL	577	577	650	650
COAL	628	628	633	633
SAND / SHALE	633	633	1,207.00	1,207.00
SAND / SHALE	650	650	628	628
COAL	1,207.00	1,207.00	1,210.00	1,210.00
SAND / SHALE	1,210.00	1,210.00	1,376.00	1,376.00
COAL	1,376.00	1,376.00	1,381.00	1,381.00
SAND / SHALE	1,381.00	1,381.00	1,766.00	1,766.00
MAXTON	1,766.00	1,766.00	1,967.00	1,967.00
BIG LIME	1,967.00	1,967.00	2,061.00	2,061.00
BIG INJUN	2,061.00	2,061.00	2,264.00	2,264.00
WEIR	2,264.00	2,264.00	2,364.00	2,364.00
SAND / SHALE	2,364.00	2,364.00	2,471.00	2,471.00
GANTZ	2,471.00	2,471.00	2,593.00	2,593.00
FIFTY FOOT	2,593.00	2,593.00	2,664.00	2,664.00
GORDON	2,664.00	2,664.00	3,264.00	3,264.00
WARREN	3,264.00	3,264.00	3,343.00	3,343.00
SPEECHLEY	3,343.00	3,343.00	4,006.00	4,005.90
BALLTOWN B	4,006.00	4,005.90	4,216.00	4,215.90
BRADFORD	4,216.00	4,215.90	4,516.00	4,515.90
RILEY	4,516.00	4,515.90	4,931.00	4,930.80
BENSON	4,931.00	4,930.80	5,190.00	5,189.60
ALEXANDER	5,190.00	5,189.60	6,363.00	6,283.20
RHINESTREET	6,363.00	6,283.20	6,472.00	6,379.50
SONYEA	6,472.00	6,379.50	6,658.00	6,517.80
MIDDLESEX	6,658.00	6,517.80	6,762.00	6,571.20
GENESEE	6,762.00	6,571.20	7,220.00	6,651.10
GENESE0	7,220.00	6,651.10	12,325.00	6,688.44

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WV Dept. of Environmental Protection

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Amended Report with Flow Back Data

Updated Completions Work Start and End Dates

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Office of Oil and Gas  
WV Dept. of Environmental Protection

09/05/2014



# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/26/2014
Job End Date:	3/19/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06291-00-00
Operator Name:	EQT Production
Well Name and Number:	514142
Longitude:	-80.73835300
Latitude:	39.26285200
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,688
Total Base Water Volume (gal):	8,236,882
Total Base Non Water Volume:	366,721

WV Dept. of Environmental Protection  
Office of Oil and Gas

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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
Water	Halliburton	Carrier	Water	7732-18-5	100.00000	90.16654	
Sand	Halliburton	Proppant	Crystalline Silica	14808-60-7	100.00000	9.46067	
Hydrochloric Acid 15%	Halliburton	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.15233	
MX-5	Halliburton	Biocide	Sodium Nitrate	7631-99-4	60.00000	0.09413	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.07325	
LP-65	Halliburton	Scale Inhibitor	Ammonium Chloride	12125-02-9	10.00000	0.02530	
BA-40L	Halliburton	Buffer	Potassium carbonate	584-08-7	60.00000	0.01218	
MX-8	Halliburton	Biocide	Bacteria Culture	000-00-0	100.00000	0.00954	
WG-36	Halliburton	Gelling Agent	Guar Gum	9000-30-0	100.00000	0.00307	
Calcium Chloride	Halliburton	Prevent Freezing					

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Methanol	Halliburton	Corrosion inhibitor	Calcium Chloride	10043-52-4	100.00000	0.00256
SP Breaker	Halliburton	Oxidizing Breaker	Methanol	67-56-1	60.00000	0.00029
Propargyl Alcohol	Halliburton	Corrosion inhibitor	Sodium Persulfate	7775-27-1	100.00000	0.00009
			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)

Received

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Office of Oil and Gas  
WV Dept. of Environmental Protection

09/05/2014

# MAXWELL LEASE 1447.16 ACRES ± WELL NO. WV 514142



**WELL NO. WV 514142**  
STATE PLANE COORDINATES  
NORTH ZONE (NAD '27)

N. 280,262.7  
E. 1,849,373.4

LAT=(N) 39.262852  
LONG=(W) 80.738353

UTM (NAD'83)(METERS)  
N. 4,345,988.3  
E. 522,587.4

**WELL NO. WV 514142**  
LANDING POINT  
STATE PLANE COORDINATES  
NORTH ZONE (NAD '27)

N. 279,675.5  
E. 1,849,153.1

LAT=(N) 39.261231  
LONG=(W) 80.739102

UTM (NAD'83)(METERS)  
N. 4,345,808.2  
E. 522,523.3

**WELL NO. WV 514142**  
BOTTOM HOLE  
STATE PLANE COORDINATES  
NORTH ZONE (NAD '27)

N. 275,008.0  
E. 1,851,329.6

LAT=(N) 39.248500  
LONG=(W) 80.731190

UTM (NAD'83)(METERS)  
N. 4,344,397.4  
E. 523,210.1

**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 103 PAGE 185, DEED BOOK 126 PAGE 238 & DEED BOOK 133 PAGE 310.
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 07/09/14 TO SHOW THE AS DRILLED PATH INFORMATION PROVIDED BY EOT ON 12/09/13.

**LEGEND**

AS DRILLED	———
PROPOSED	- - - -

**AS DRILLED INFORMATION**

BOTTOM HOLE WELL NO. WV 514142 STATE PLANE COORDINATES NORTH ZONE (NAD '27)	WELL NO. WV 514142 STATE PLANE COORDINATES NORTH ZONE (NAD '27)
N. 275,008.0 E. 1,851,329.6	N. 280,262.7 E. 1,849,373.4
LAT=(N) 39.248485 LONG=(W) 80.731251	LAT=(N) 39.262852 LONG=(W) 80.738353
UTM (NAD'83)(METERS) N. 4,344,396.7 E. 523,204.8	UTM (NAD'83)(METERS) N. 4,345,988.3 E. 522,587.4



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*



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

DATE	APRIL 23	20	13
REVISED	JULY 09	20	14
OPERATORS WELL NO.	WV 514142		
API WELL NO.	47-017-06291		
STATE	COUNTY	PERMIT	

MINIMUM DEGREE OF ACCURACY: 1/2500  
FILE NO. 7428ASDRILLED514142  
PROVEN SOURCE OF ELEVATION: DGPS (SURVEY GRADE TIE TO CORS NETWORK)  
SCALE: 1" = 1,000'

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 1254' (PAD ELEVATION) WATERSHED TRIBUTARY OF GEORGESCAMP RUN  
DISTRICT NEW MILTON COUNTY DODDRIDGE QUADRANGLE SMITHBURG 7.5

SURFACE OWNER SUE ANN SPIKER ACREAGE 872.83±  
ROYALTY OWNER LEWIS MAXWELL HEIRS LEASE ACREAGE 1447.16±  
PROPOSED WORK: LEASE NO. 080617

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 GENESEO  
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

09/05/2014