

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

API 47 - 085 - 10096 County RITCHIE District CLAY  
Quad PENNSBORO Pad Name PEN15 Field/Pool Name \_\_\_\_\_  
Farm name DEWAYNE BRITTON ET UX Well Number 515278  
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 4,345,851 Easting 504,197  
Landing Point of Curve Northing 4,345,367 Easting 503,543  
Bottom Hole Northing 4,346,491 Easting 502,997

Elevation (ft) 1119 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 12.5 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 05/22/2014 Date drilling commenced 06/18/2014 Date drilling ceased 04/02/2015  
Date completion activities began 5/20/2015 Date completion activities ceased 5/25/2015  
Verbal plugging (Y/N) N Date permission granted N/A Granted by \_\_\_\_\_

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

Freshwater depth(s) ft 83',163',242',394',770',873' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1652',1943',2521' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 14',273',379',744' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:

JL

10/09/2015

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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	26"	20"	40'	NEW	A-500 40LB/FT	NONE	Y
Surface	17.5"	13.375"	1077'	NEW	J-55 54.5LB/FT	825',327'	Y
Coal							
Intermediate 1	12.25"	9.625"	5417'	NEW	P-110 40LB/FT	4555'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	12,433'	NEW	P-110 20LB/FT	NONE	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	15.6	1.19	45.22	0	8
Surface	CLASS A	980	15.6	1.19	1166.2	0	8
Coal							
Intermediate 1	CLASS A / CLASS A / CLASS A	358 / 242 / 880	14.2 / 15.6 / 15.6	1.24 / 1.19 / 1.19	1779.1	0	8
Intermediate 2							
Intermediate 3							
Production	Class H / Class H	538 / 504	14.2 / 15.2	1.23 / 2.18	1760.5	5,475'	72
Tubing							

Drillers TD (ft) 12,433' 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) 4,040' 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- RAN AT LEAST EVERY 500' FEET  
 PRODUCTION- 195 Composite Centralizers. One on every joint from TD to 5,000'

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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Drilling Contractor Savanna Drilling  
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

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

Logging Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Cementing Company Baker Hughes  
Address 837 Philippi Pike City Clarksburgh State WV Zip 26301

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Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	0	0	876	876
SAND/SHALE	0	0	17	17
WASHINGTON COAL	17	17	19	19
SAND/SHALE	19	19	276	276
COAL	276	276	284	284
SAND/SHALE	284	284	382	382
COAL	382	382	387	387
SAND/SHALE	387	387	747	747
COAL	747	747	751	751
SAND/SHALE	751	751	1,750	1,750
MAXTON	1,750	1,750	1,969	1,969
BIG LIME	1,969	1,969	2,037	2,037
KEENER	2,037	2,037	2,376	2,376
WEIR	2,376	2,376	2,581	2,581
GANTZ	2,581	2,581	2,721	2,721
50F	2,721	2,721	2,802	2,802
30F	2,802	2,802	2,846	2,846
GORDON	2,846	2,846	2,927	2,927
4TH	2,927	2,927	3,073	3,073
5TH	3,073	3,073	3,116	3,116
BAYARD	3,116	3,116	3,465	3,465
WARREN	3,465	3,465	3,508	3,508
B-5	3,508	3,508	3,546	3,546
SPEECHLEY	3,546	3,546	3,931	3,931
BALLTOWN A	3,931	3,931	4,197	4,197
BALLTOWN B	4,197	4,197	4,340	4,339
BRADFORD	4,340	4,339	4,582	4,579
RILEY	4,582	4,579	4,950	4,929
JAVA	4,950	4,929	4,953	4,932
BENSON	4,953	4,932	5,213	5,162
ALEXANDER	5,213	5,162	5,260	5,202
ANGOLA	5,260	5,202	5,739	5,553
RHINESTREET	5,739	5,553	7,325	6,105
SONYEA	7,325	6,105	7,635	6,217
MIDDLESEX	7,635	6,217	7,798	6,274
GENESSEE	7,798	6,274	7,965	6,324
GENESEO	7,965	6,324	8,072	6,351
TULLY	8,072	6,351	8,142	6,366
HAMILTON	8,142	6,366	8,169	6,371
MARCELLUS	8,169	6,371	12,433	6,415

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/20/2015
Job End Date:	5/25/2015
State:	West Virginia
County:	Ritchie
API Number:	47-085-10096-00-00
Operator Name:	EQT Production
Well Name and Number:	515278
Longitude:	-80.95152300
Latitude:	39.26190600
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,371
Total Base Water Volume (gal):	6,547,002
Total Base Non Water Volume:	0



85-10096

## 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	Stingray Pressure Pumping, LLC	Carrier/Base Fluid	Water	7732-18-5	100.00000	90.35032	None
Sand (Proppant)	Stingray Pressure Pumping, LLC	Proppant	Silica Substrate	14808-60-7	100.00000	9.29871	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05693	None
Hydrochloric Acid (15%)	Stingray Pressure Pumping, LLC	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03333	None
FRA-405	Stingray Pressure Pumping, LLC	Friction reducer	Petroleum distillates	64742-47-8	40.00000	0.00320	None
			Sodium chloride	7647-14-5	10.00000	0.00080	None
			Ammonium chloride	12125-02-9	7.00000	0.00056	None
			Alcohols, C12-16, Ethoxylated	68551-12-2	7.00000	0.00056	None
ScaleClear 125	Stingray Pressure Pumping, LLC	Scale inhibitor	Phosphonomethylated polyamine, compd. w/ substituted amine	Proprietary	15.00000	0.00368	None
			Ammonium chloride	12125-02-9	2.50000	0.00061	None

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AI 600	Stingray Pressure Pumping, LLC	Acid corrosion inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00052	None
			N,N-Dimethylformamide	68-12-2	20.00000	0.00026	None
			Cinnamaldehyde	104-55-2	15.00000	0.00020	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00020	None
			2-Butoxyethanol	111-76-2	15.00000	0.00020	None
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00007	None
			1-Decanol	112-30-1	5.00000	0.00007	None
			1-Octanol	111-87-5	2.50000	0.00003	None
			Triethyl phosphate	78-40-0	2.50000	0.00003	None
			Isopropanol	67-63-0	2.50000	0.00003	None
AP 1	Stingray Pressure Pumping, LLC	Gel Breaker					
			Ammonium Persulfate	7727-54-0	100.00000	0.00006	None

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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.

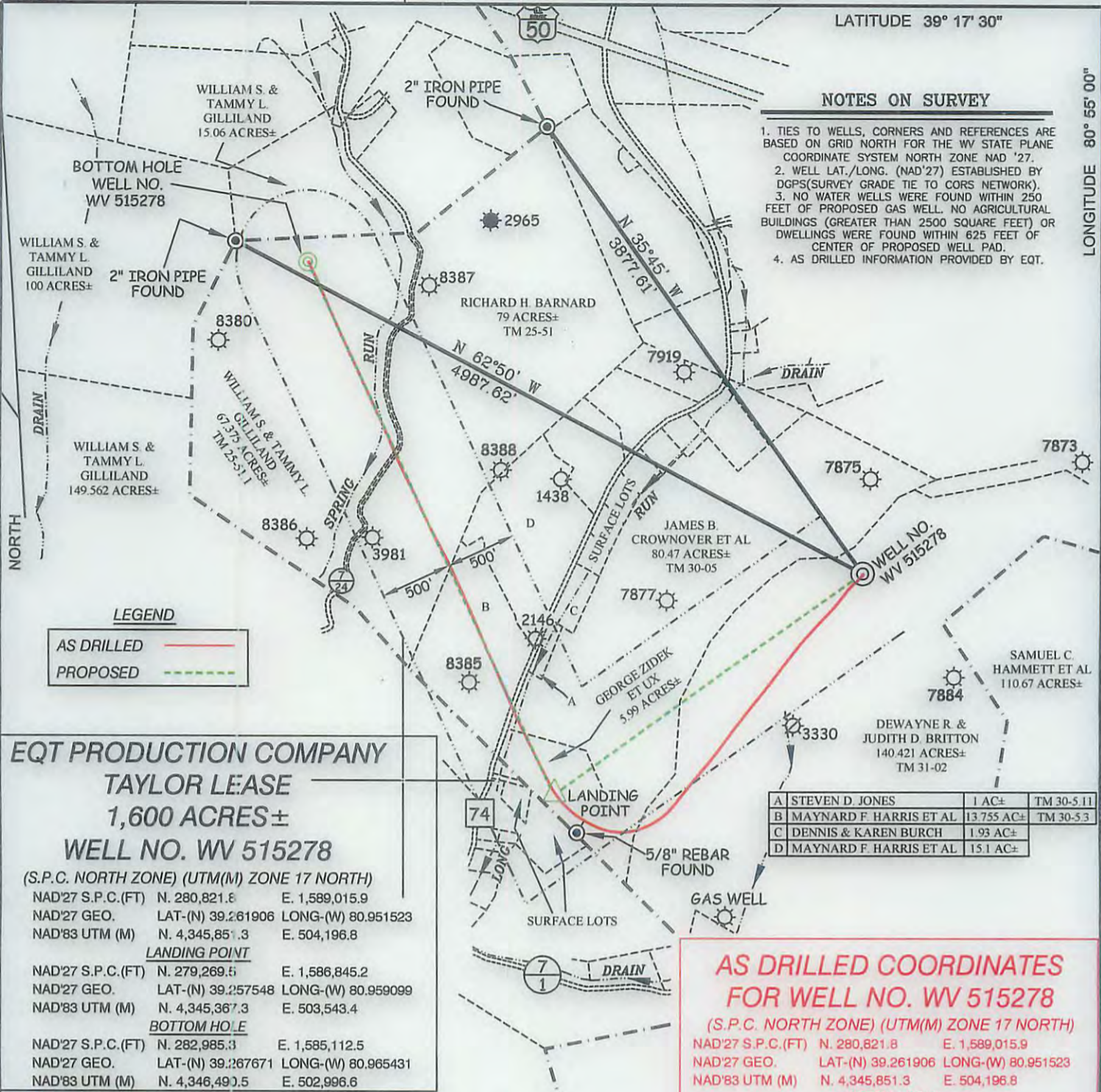
\* Total Water Volume sources may include fresh water, produced water, and/or recycled water  
 \*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

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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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. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORNS NETWORK).
3. NO WATER WELLS WERE FOUND WITHIN 250 FEET OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS (GREATER THAN 2500 SQUARE FEET) OR DWELLINGS WERE FOUND WITHIN 625 FEET OF CENTER OF PROPOSED WELL PAD.
4. AS DRILLED INFORMATION PROVIDED BY EQT.



LEGEND

- AS DRILLED (solid red line)
- PROPOSED (dashed green line)

**EQT PRODUCTION COMPANY  
TAYLOR LEASE  
1,600 ACRES±  
WELL NO. WV 515278**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
 NAD'27 S.P.C.(FT) N. 280,821.8 E. 1,589,015.9  
 NAD'27 GEO. LAT-(N) 39.261906 LONG-(W) 80.951523  
 NAD'83 UTM (M) N. 4,345,851.3 E. 504,196.8

**LANDING POINT**  
 NAD'27 S.P.C.(FT) N. 279,269.5 E. 1,586,845.2  
 NAD'27 GEO. LAT-(N) 39.257548 LONG-(W) 80.959099  
 NAD'83 UTM (M) N. 4,345,367.3 E. 503,543.4

**BOTTOM HOLE**  
 NAD'27 S.P.C.(FT) N. 282,985.3 E. 1,585,112.5  
 NAD'27 GEO. LAT-(N) 39.267671 LONG-(W) 80.965431  
 NAD'83 UTM (M) N. 4,346,491.5 E. 502,996.6

A	STEVEN D. JONES	1 AC±	TM 30-5.11
B	MAYNARD F. HARRIS ET AL	13.755 AC±	TM 30-5.3
C	DENNIS & KAREN BURCH	1.93 AC±	
D	MAYNARD F. HARRIS ET AL	15.1 AC±	

**AS DRILLED COORDINATES  
FOR WELL NO. WV 515278**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
 NAD'27 S.P.C.(FT) N. 280,821.8 E. 1,589,015.9  
 NAD'27 GEO. LAT-(N) 39.261906 LONG-(W) 80.951523  
 NAD'83 UTM (M) N. 4,345,851.3 E. 504,196.8

**BOTTOM HOLE**  
 NAD'27 S.P.C.(FT) N. 282,988.6 E. 1,585,116.1  
 NAD'27 GEO. LAT-(N) 39.267680 LONG-(W) 80.965419  
 NAD'83 UTM (M) N. 4,346,491.5 E. 502,997.7

**Professional Energy Consultants**  
 A DIVISION OF SMITH LAND SURVEYING, INC.  
  
 SURVEYORS  
 ENGINEERS  
 ENVIRONMENTAL  
 PROJECT MGMT.  
 (304) 482-5634 WWW.SLSSURVEYS.COM

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. 2288 *Earl N. Thompson*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE JANUARY 10, 20 14  
 REVISED 02/10/14 & 04/14/15  
 OPERATORS WELL NO. WV 515278  
 API WELL NO. **47 - 085 - 10096-H**  
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7496AD515278  
 PROVEN SOURCE OF ELEVATION DGPS (SUVERY GRADE TIE TO CORNS NETWORK) SCALE 1" = 1000'

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 1,119 (PAD ELEVATION) WATERSHED LONG RUN OF NORTH FORK HUGHES RIVER  
 DISTRICT CLAY COUNTY RITCHIE QUADRANGLE PENNSBORO 7.5'

SURFACE OWNER DEWAYNE BRITTON ET UX ACREAGE 140.421  
 ROYALTY OWNER E. R. TAYLOR HEIRS ACREAGE 1,600±

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 105804

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 BRIDGEPORT, WV 26330

COUNTY NAME  
 PERMIT

10/09/2015