

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

API 47 - 041 - 5689 County Lewis District Court House
Quad 542 Pad Name PET35 Field/Pool Name _____
Farm name Horner, William & Mary ET Well Number 514167
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 4,314,636 Easting 536,436
Landing Point of Curve Northing 4,314,717 Easting 540,470
Bottom Hole Northing 4,317,104 Easting 539,450

Elevation (ft) 1,156 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

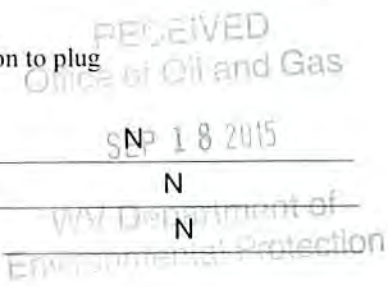
Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
Water base Mud 11.9 ppg barium sulfate, sodium chloride, xanthan gum, poly-anionic 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 12/05/2014 Date drilling commenced 2/27/2015 Date drilling ceased 5/11/2015
Date completion activities began 6/21/2015 Date completion activities ceased 6/27/2015
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 to plug

Freshwater depth(s) ft 141,205,273,323 Open mine(s) (Y/N) depths _____
Salt water depth(s) ft N/A Void(s) encountered (Y/N) depths N
Coal depth(s) ft 196,232,270,684,909,1051,1119 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N



Reviewed by: _____
10/16/2015

API 47-041 - 5689 Farm name Horner, William & Mary ET Well number 514167

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 81.3LB/FT	NONE	Y
Surface	17.5"	13.375"	938'	NEW	J-55 54.5LB/FT	164'	Y
Coal							
Intermediate 1	12.375"	9.625"	3200'	NEW	P-110 40LB/FT	1042'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	15,710'	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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	38	15.6	1.18	45	0	8
Surface	CLASS A	793	15.6	1.20	952	0	8
Coal							
Intermediate 1	CLASS A	1296	15.6	1.18	1,529	0	8
Intermediate 2							
Intermediate 3							
Production	Class A 50/50 POZ / H	400/1070/1470	14.2 / 15.2	1.26 / 1.97	504/2108/2612	5,421	8
Tubing							

Drillers TD (ft) 15,712 Loggers TD (ft) _____

Deepest formation penetrated Marcellus Plug back to (ft) 5463'

Plug back procedure Pilot hole drilled to 7560'. Balance plugs set from 7560-6321'. 93 bbls of 14.2 ppg Vancem 1.24 ft³/sk. Halliburton BHKA tool set with 16.8 ppg 1.04 ft³/sk kick off plug from 6321-5463'

Kick off depth (ft) 5480'

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: 1,10,19

INTERMEDIATE- RAN AT LEAST EVERY 500' FEET JOINTS: 1, 11,21,31,41,56,61,71

PRODUCTION- Composite body centralizers run every joint from bottom to 3913 ft

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- 041 - 5689 Farm name Horner, William & Mary ET Well number 514167

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					Please See Attached

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)
						Please	See	Attached

Please insert additional pages as applicable.

API 47- 041 - 5689

Farm name Horner, William & Mary ET

Well number 514167

PRODUCING FORMATION(S)

DEPTHS

Marcellus 7,207' TVD 7,480' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3,038 psi Bottom Hole N/A psi DURATION OF TEST 82.0 hrs

OPEN FLOW Gas 5,817 mcfpd Oil N/A bpd NGL 0 bpd Water 647.1 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
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Please insert additional pages as applicable.

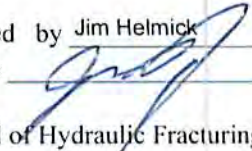
Drilling Contractor ALPHA HUNTER DRILLING (RIG 5)
Address P.O. BOX 430 City RENO State OH Zip 45773

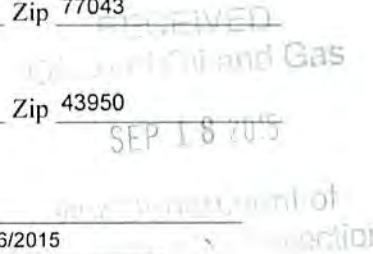
Logging Company Gyrodatta
Address 601 Mayer St City Bridgeville State PA Zip 15017

Cementing Company Nabors
Address 2504 Smith Creek Road City Houston State TX Zip 77043

Stimulating Company Stingray
Address 66680 Executive Drive City Saint Clairsville State OH Zip 43950

Please insert additional pages as applicable.

Completed by Jim Helmick Telephone 412-395-5518
Signature  Title VP Completions Date 9/16/2015



API 47- 041 - 5689 Farm name Horner, William & Mary ET Well number 514167

Drilling Contractor Orion Drilling
Address 601 Aviation Way City Reynoldsville State PA Zip 15851

Logging Company Baker Hughes
Address 17015 Aldine Westfield Road City Houston State TX Zip 77073

Logging Company Phoenix Technology Services
Address 1805 Brittmoore Road City Houston State TX Zip 77043

Cementing Company Nabors
Address 2504 Smith Creek Road City Waynesburg State PA Zip 15370

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West Virginia Department of
Environmental Protection

PET35 514167
 API: 47-410-5689

Farm Name: Horner, William & Mary ET

Formation Name	Final Top MD		Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
	(ftGL) (ft)	Final Top TVD (ft)		
SAND/SHALE	1	1	196	196
REDSTONE COAL	196	196	199	199
SAND/SHALE	199	199	232	232
PITTSBURGH COAL	232	232	234	234
SAND/SHALE	234	234	270	270
COAL	270	270	275	275
SAND/SHALE	275	275	684	684
COAL	684	684	686	686
SAND/SHALE	686	686	909	909
COAL	909	909	911	911
SAND/SHALE	911	911	1,051.00	1,051.00
COAL	1,051.00	1,051.00	1,054.00	1,054.00
SAND/SHALE	1,054.00	1,054.00	1,119.00	1,119.00
COAL	1,119.00	1,119.00	1,122.00	1,122.00
SAND/SHALE	1,122.00	1,122.00	1,784.00	1,784.00
MAXTON	1,784.00	1,784.00	1,859.00	1,859.00
BIG LIME	1,859.00	1,859.00	2,232.00	2,232.00
GANTZ	2,232.00	2,232.00	2,350.00	2,350.00
50F	2,350.00	2,350.00	2,435.00	2,435.00
30F	2,435.00	2,435.00	2,506.00	2,506.00
GORDON	2,506.00	2,506.00	2,528.00	2,528.00
4TH	2,528.00	2,528.00	2,729.00	2,729.00
5TH	2,729.00	2,729.00	2,817.00	2,817.00
BAYARD	2,817.00	2,817.00	3,104.00	3,104.00
WARREN	3,104.00	3,104.00	3,303.00	3,303.00
BALLTOWN A	3,303.00	3,303.00	3,847.00	3,847.00
BALLTOWN B	3,847.00	3,847.00	3,990.00	3,990.00
BRADFORD	3,990.00	3,990.00	4,293.00	4,293.00
RILEY	4,293.00	4,293.00	4,735.00	4,735.00
BENSON	4,735.00	4,735.00	5,047.00	5,047.00
ALEXANDER	5,047.00	5,047.00	6,197.00	6,165.90
RHINESTREET	6,197.00	6,165.90	6,760.00	6,659.50
SONYEA	6,760.00	6,659.50	6,976.00	6,870.80
MIDDLESEX	6,976.00	6,870.80	7,065.00	6,951.30
GENESSEE	7,065.00	6,951.30	7,229.00	7,080.40
GENESE0	7,229.00	7,080.40	7,264.00	7,103.60
TULLY	7,264.00	7,103.60	7,310.00	7,131.50 Gas
HAMILTON	7,310.00	7,131.50	7,480.00	7,206.60
MARCELLUS	7,480.00	7,206.60		

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Department of
 Environmental Protection

10/16/2015

514167- 47-041-05689-0000- Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	5/16/2015	15,708.00	15,710.00	10	MARCELLUS
1	6/21/2015	15,443.00	15,623.00	32	MARCELLUS
1.1	6/21/2015	15,431.00	15,496.00	40	MARCELLUS
2	6/21/2015	15,131.00	15,373.00	40	MARCELLUS
3	6/22/2015	14,831.00	15,073.00	40	MARCELLUS
4	6/22/2015	14,531.00	14,773.00	40	MARCELLUS
5	6/22/2015	14,231.00	14,473.00	40	MARCELLUS
6	6/22/2015	13,931.00	14,173.00	40	MARCELLUS
7	6/23/2015	13,631.00	13,873.00	40	MARCELLUS
8	6/23/2015	13,331.00	13,573.00	40	MARCELLUS
9	6/23/2015	13,031.00	13,273.00	40	MARCELLUS
10	6/24/2015	12,731.00	12,973.00	40	MARCELLUS
11	6/24/2015	12,431.00	12,673.00	40	MARCELLUS
12	6/24/2015	12,131.00	12,373.00	40	MARCELLUS
13	6/24/2015	11,831.00	12,073.00	40	MARCELLUS
14	6/24/2015	11,531.00	11,773.00	40	MARCELLUS
15	6/25/2015	11,231.00	11,473.00	40	MARCELLUS
16	6/25/2015	10,931.00	11,175.00	40	MARCELLUS
17	6/25/2015	10,631.00	10,873.00	40	MARCELLUS
18	6/25/2015	10,331.00	10,573.00	40	MARCELLUS
19	6/26/2015	10,031.00	10,273.00	40	MARCELLUS
20	6/26/2015	9,731.00	9,973.00	40	MARCELLUS
21	6/26/2015	9,431.00	9,673.00	40	MARCELLUS
22	6/26/2015	9,131.00	9,373.00	40	MARCELLUS
23	6/26/2015	8,831.00	9,073.00	40	MARCELLUS
24	6/27/2015	8,531.00	8,773.00	40	MARCELLUS
25	6/27/2015	8,231.00	8,473.00	40	MARCELLUS
26	6/27/2015	7,931.00	8,173.00	40	MARCELLUS
27	6/27/2015	7,631.00	7,873.00	40	MARCELLUS

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 10:00 AM
 DEPT. OF ENERGY
 OPERATIONS

514167- 47-041-05689-0000- 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	6/21/2015	27.9	7,944.00	9,250.00	3,270.00	0	721	0
1	6/21/2015	74.8	9,057.00	9,517.00	3,815.00	3,500	5109	0
1.1	6/21/2015	90.1	8,275.00	8,832.00	4,227.00	499,120	12009	0
2	6/22/2015	92.6	8,525.00	8,899.00	4,862.00	500,420	12359	0
3	6/22/2015	82.5	8,767.00	9,221.00	4,525.00	499,200	13117	0
4	6/22/2015	85.4	8,684.00	9,118.00	4,496.00	499,480	13096	0
5	6/22/2015	90.7	8,697.00	8,977.00	4,617.00	493,020	12244	0
6	6/23/2015	85.8	8,868.00	9,108.00	4,224.00	500,520	12027	0
7	6/23/2015	87	8,913.00	9,264.00	4,851.00	507,680	12474	0
8	6/23/2015	98.3	8,649.00	8,945.00	4,940.00	503,080	12900	0
9	6/23/2015	88.9	8,830.00	8,997.00	4,709.00	500,360	11846	0
10	6/24/2015	93.2	8,853.00	9,099.00	4,720.00	499,240	12015	0
11	6/24/2015	98	8,378.00	8,577.00	4,462.00	499,880	12510	0
12	6/24/2015	95.2	8,350.00	8,840.00	4,677.00	500,700	12627	0
13	6/24/2015	95.3	8,669.00	9,380.00	4,620.00	497,120	11611	0
14	6/25/2015	92.1	8,810.00	9,151.00	5,286.00	496,460	11451	0
15	6/25/2015	94.6	8,232.00	9,316.00	4,982.00	502,500	13162	0
16	6/25/2015	97.8	8,478.00	9,228.00	5,260.00	499,000	12686	0
17	6/25/2015	97.5	8,722.00	8,977.00	5,730.00	495,720	11384	0
18	6/25/2015	100.6	8,101.00	8,634.00	5,448.00	507,520	11378	0
19	6/26/2015	98.5	8,647.00	8,966.00	5,412.00	499,160	11608	0
20	6/26/2015	99	8,486.00	9,084.00	5,500.00	498,680	12561	0
21	6/26/2015	96	8,232.00	8,562.00	5,887.00	499,360	12184	0
22	6/26/2015	100.1	8,640.00	9,063.00	6,087.00	496,140	11566	0
23	6/27/2015	99.5	8,498.00	8,829.00	5,793.00	494,880	11183	0
24	6/27/2015	95	8,478.00	8,753.00	5,633.00	500,000	12308	0
25	6/27/2015	100.7	8,268.00	9,099.00	5,450.00	499,060	13044	0
26	6/27/2015	99.2	8,350.00	8,679.00	6,263.00	498,460	11889	0
27	6/27/2015	99.4	8,574.00	8,905.00	5,518.00	498,880	11239	0

41-05689

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 OPERATIONS AND GAS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/21/2015
Job End Date:	6/27/2015
State:	West Virginia
County:	Lewis
API Number:	47-041-05689-00-00
Operator Name:	EQT Production
Well Name and Number:	514167
Longitude:	-80.53333800
Latitude:	38.98131700
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,207
Total Base Water Volume (gal):	14,040,936
Total Base Non Water Volume:	0



4105689

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	89.38466	None
Sand (Proppant)	Stingray Pressure Pumping, LLC	Proppant	Silica Substrate	14808-60-7	100.00000	10.29022	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05711	None
FRA-405	Stingray Pressure Pumping, LLC	Friction reducer	Petroleum distillates	64742-47-8	40.00000	0.03456	None
			Sodium chloride	7647-14-5	10.00000	0.00864	None
			Alcohols, C12-16, Ethoxylated	68551-12-2	7.00000	0.00605	None
			Ammonium chloride	12125-02-9	7.00000	0.00605	None
Hydrochloric Acid (15%)	Stingray Pressure Pumping, LLC	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.01776	None
ScaleClear 125	Stingray Pressure Pumping, LLC	Scale inhibitor	Phosphonomethylated polyamine, compd. w/ substituted amine	Proprietary	15.00000	0.00366	None
			Ammonium chloride	12125-02-9	2.50000	0.00061	None

ENVIRONMENTAL PROTECTION

AI 600	Stingray Pressure Pumping, LLC	Acid corrosion inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00025	None
			N,N-Dimethylformamide	68-12-2	20.00000	0.00012	None
			2-Butoxyethanol	111-76-2	15.00000	0.00009	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00009	None
			Cinnamaldehyde	104-55-2	15.00000	0.00009	None
			1-Decanol	112-30-1	5.00000	0.00003	None
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-.omega.-hydroxy-.branched	127087-87-0	5.00000	0.00003	None
			1-Octanol	111-87-5	2.50000	0.00002	None
			Triethyl phosphate	78-40-0	2.50000	0.00002	None
			Isopropanol	67-63-0	2.50000	0.00002	None
Plexgel 907L-EB	Stingray Pressure Pumping, LLC	Slurried Guar					
			Distillates, hydrotreated light	64742-47-8	50.00000	0.00002	None
			Organophylic clay	Proprietary	2.00000	0.00000	None
			Alcohol ethoxylate	34398-01-1	1.00000	0.00000	None
			Crystalline silica	14808-60-7	0.10000	0.00000	None
AP 1	Stingray Pressure Pumping, LLC	Gel Breaker					
			Ammonium Persulfate	7727-54-0	100.00000	0.00001	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.							

6895017

* 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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 SEP 18 2014
 Energy Services Division

WV 514167
EQT Production Company
47-041-05689

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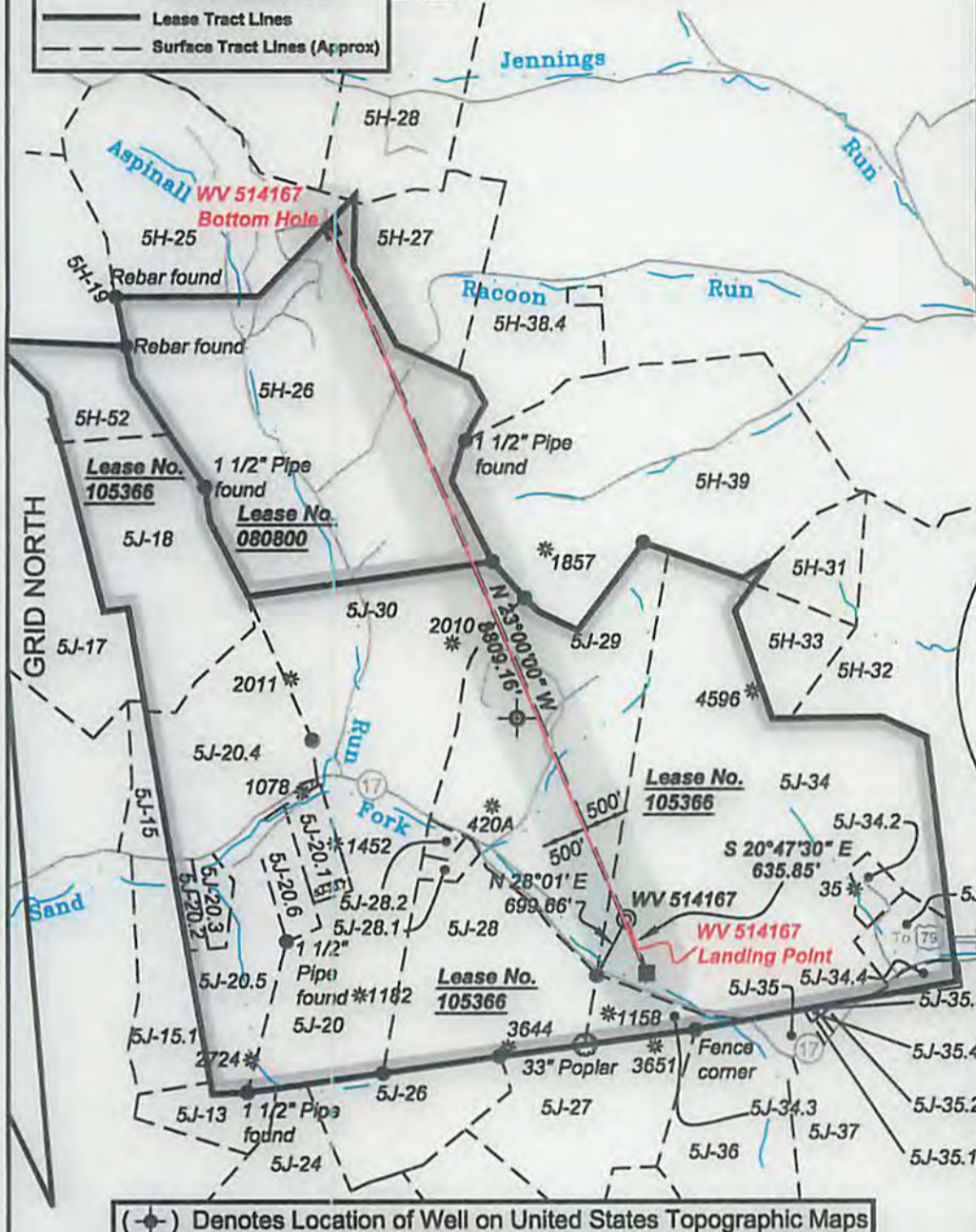
Lease No.	Acres	Owner
080800	200	William L. Fury, et al

As-Drilled Well Information
 WV 514167 coordinates are:
 Nad 83, South Zone, feet
 N: 721,871.97 E: 2,101,218.46
 Nad 83 UTM, Zone 17 meters
 UTM N: 4,314,636.27 E: 540,435.85
 WV 514167 Landing Point coordinates are:
 Nad 83, South Zone, feet
 N: 721,541.63 E: 2,101,331.19
 Nad 83 UTM, Zone 17 meters
 UTM N: 4,314,716.73 E: 540,470.20
 WV 514167 Bottom Hole coordinates are:
 Nad 83, South Zone, feet
 N: 729,378.26 E: 2,097,984.81
 Nad 83 UTM, Zone 17 meters
 UTM N: 4,317,104.28 E: 539,450.37

LONGITUDE 80 - 30 - 00

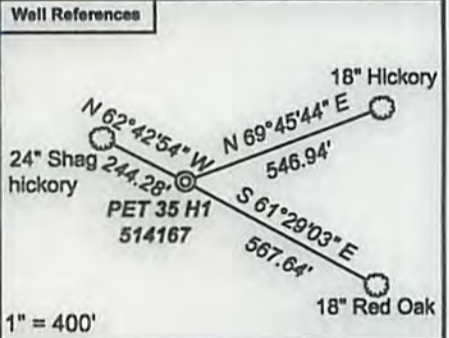
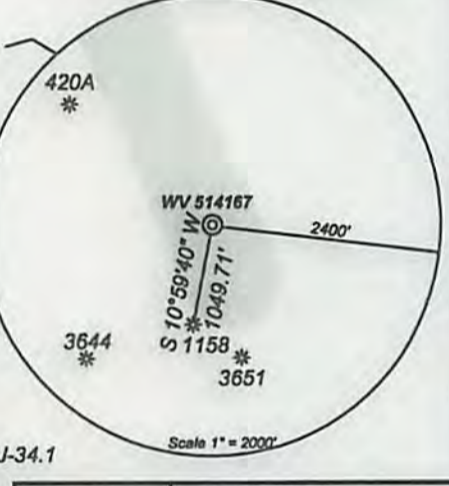
- ⊙ Proposed Gas Well
- 5/8" Rebar Found unless otherwise noted
- Lease Tract Lines
- - - Surface Tract Lines (Approx)

As-Drilled Bore Path = ———



PET 35

H1, 514167
H2, 514168
H3, 514169
H4, 514170
H5, 514171
H6, 514172



(⊙) Denotes Location of Well on United States Topographic Maps



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 Department of Environmental Protection.

Ben R. Singleton
 P.S. 2092



FILE NO: 371-12-C-13
 DRAWING NO: 514167 As Drilled
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1:2500
 PROVEN SOURCE OF ELEVATION: NGS CORS Station

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

DATE: June 3 20 15
 OPERATOR'S WELL NO. WV 514167
 API WELL NO 47 - 41 - 05689
 STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION: STORAGE DEEP SHALLOW
 LOCATION: ELEVATION: 1161.00' Existing / 1155.75' Proposed WATERSHED Sand Fork QUADRANGLE: Peterson
 DISTRICT: Court House COUNTY: Lewis
 SURFACE OWNER: William & Mary Horner, et al ACREAGE: 292.94
 ROYALTY OWNER: Weston Creek, LLC et al. LEASE NO: 105366 ACREAGE: 1100
 PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus ESTIMATED DEPTH: TVD 7,417

WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray
 ADDRESS: 115 Professional Place PO Box 280 ADDRESS: 115 Professional Place PO Box 280
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10/16/2015