

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514167

API: 47 - 041 - 05689

Submission:  Initial  Amended

Notes: Correction to Production Cement Top  
(MD)

RECEIVED  
Office of Oil and Gas  
DEC 21 2015 ?  
WV Department of  
Environmental Protection

AX 4/27/17  
04/28/2017

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

API 47 - 041 - 05689 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

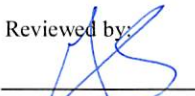
Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine

Mud Type(s) and Additive(s)  
Water base Mud 11.9 ppg barium sulfate, sodium chloride, xanthan gum, 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 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 N  
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:   
04/28/2017

API 47-041 - 05689 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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	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	4,338'	8
Tubing							

Drillers TD (ft) 15,712' Loggers TD (ft) 7,560

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 Varicem 1.24 fl/sk. Halliburton BHKA tool set with 16.8 ppg 1.04 fl/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

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

PET35 514167  
API: 47-410-5689

Farm Name: Horner, William & Mary ET

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm 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
HAMILTON	7,310.00	7,131.50	7,480.00	7,206.60
MARCELLUS	7,480.00	7,206.60		

04/28/2017



## **EQT Production - Marcellus**

**Lewis County, WV  
Lewis County 514167  
Well #514167**

### **Main Wellbore**

API: 47-410-5689

**Design: 514167 As Drilled Surveys**

## **Standard Survey Report**

12 May, 2015





PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Lewis County 514167
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1179.0usft
Project:	Lewis County, WV	MD Reference:	KB@23 @ 1179.0usft
Site:	Lewis County 514167	North Reference:	Grid
Well:	Well #514167	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514167 As Drilled Surveys		

Project	Lewis County, WV		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia South 4702		Using geodetic scale factor

Site Lewis County 514167

Site Position:		Northing:	721,821.77 usft	Latitude:	38 98
From:	Map	Easting:	2 132,669 28 usft	Longitude:	-80.53
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.29 "

Well Well #514167

Well Position	+N-S	0.0 usft	Northing:	721 821 77 usft	Latitude:	38 58' 52 740 N
	+E-W	0.0 usft	Easting:	2 132 669 28 usft	Longitude:	80° 32' 0 016 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	1,156 0 usft

Wellbore Main Wellbore

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/14/2015	-8 63	66 42	52,204

Design 514167 As Drilled Surveys

Audit Notes:

Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0 0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	336 66

Survey Program Date 5/12/2015

From (')	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,510.0	514167 VES Outrun (Main Wellbore)	InFlex Gyro-VES 01-12-15	Triaxial Continuous Gyro Model
0 00	15 712 0	514167 PHX MWD (Main Wellbore)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 0	0 00	0 00	0 0	-1 179 0	0 0	0 0	0 0	0 00	0 00	0 00
110 0	0 21	299 76	110 0	-1 069 0	0 1	-0 2	0 2	0 19	0 19	0 00
210 0	0 35	261 22	210 0	-969 0	0 1	-0 6	0 4	0 23	0 14	-38 54
310 0	0 26	292 33	310 0	-869 0	0 2	-1 1	0 6	0 19	-0 09	31 11
410 0	0 17	259 03	410 0	-769 0	0 2	-1 5	0 8	0 15	-0 09	-33 30
510 0	0 22	281 55	510 0	-669 0	0 3	-1 8	1 0	0 09	0 05	22 52
610 0	0 21	175 18	610 0	-569 0	0 1	-2 0	0 9	0 34	-0 01	-106 37
710 0	0 15	198 93	710 0	-469 0	-0 2	-2 0	0 6	0 09	-0 06	23 75



PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Lewis County 514167
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1179.8usft
Project:	Lewis County, WV	MD Reference:	KB@23 @ 1179.0usft
Site:	Lewis County 514167	North Reference:	Grid
Well:	Well #514167	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514167 As Drilled Surveys		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
810.0	0.14	218.69	810.0	-369.0	-0.4	-2.2	0.5	0.05	-0.01	19.76
910.0	0.16	197.94	910.0	-269.0	-0.6	-2.3	0.3	0.06	0.02	-20.75
1,010.0	0.19	117.73	1,010.0	-169.0	-0.9	-2.2	0.1	0.23	0.03	-80.21
1,110.0	0.17	127.94	1,110.0	-69.0	-1.0	-1.9	-0.2	0.04	-0.02	10.21
1,210.0	0.20	133.77	1,210.0	31.0	-1.2	-1.7	-0.5	0.04	0.03	5.83
1,310.0	0.26	153.71	1,310.0	131.0	-1.6	-1.4	-0.9	0.10	0.06	19.94
1,410.0	0.45	184.08	1,410.0	231.0	-2.2	-1.4	-1.4	0.26	0.19	30.37
1,510.0	0.46	194.88	1,510.0	331.0	-2.9	-1.5	-2.1	0.09	0.01	10.80
1,610.0	0.42	185.37	1,610.0	431.0	-3.7	-1.6	-2.7	0.08	-0.04	-9.51
1,710.0	0.39	188.46	1,710.0	531.0	-4.4	-1.7	-3.3	0.04	-0.03	3.09
1,810.0	0.42	185.24	1,810.0	631.0	-5.1	-1.8	-4.0	0.04	0.03	-3.22
1,910.0	0.46	175.98	1,910.0	731.0	-5.9	-1.8	-4.7	0.08	0.04	-9.26
2,010.0	0.48	176.91	2,010.0	831.0	-6.7	-1.8	-5.4	0.02	0.02	0.93
2,110.0	0.65	192.80	2,110.0	931.0	-7.6	-1.9	-6.3	0.23	0.17	15.89
2,210.0	0.66	192.74	2,210.0	1,031.0	-8.8	-2.1	-7.2	0.01	0.01	-0.06
2,310.0	0.67	203.89	2,310.0	1,131.0	-9.9	-2.5	-8.1	0.13	0.01	11.15
2,410.0	0.66	206.11	2,409.9	1,230.9	-10.9	-3.0	-8.8	0.03	-0.01	2.22
2,510.0	0.58	198.25	2,509.9	1,330.9	-11.9	-3.4	-9.6	0.12	-0.08	-7.86
2,610.0	0.57	191.27	2,609.9	1,430.9	-12.9	-3.6	-10.4	0.07	-0.01	-6.98
2,710.0	0.57	175.87	2,709.9	1,530.9	-13.9	-3.7	-11.3	0.15	0.00	-15.40
2,810.0	0.58	176.39	2,809.9	1,630.9	-14.9	-3.6	-12.2	0.01	0.01	0.52
2,910.0	0.62	170.77	2,909.9	1,730.9	-15.9	-3.5	-13.2	0.07	0.04	-5.62
3,010.0	0.57	162.64	3,009.9	1,830.9	-16.9	-3.3	-14.2	0.10	-0.05	-8.13
3,110.0	0.58	164.76	3,109.9	1,930.9	-17.9	-3.0	-15.2	0.02	0.01	2.12
3,210.0	0.63	167.70	3,209.9	2,030.9	-18.9	-2.7	-16.3	0.06	0.05	2.94
3,310.0	0.64	166.60	3,309.9	2,130.9	-20.0	-2.5	-17.4	0.02	0.01	-1.10
3,410.0	0.65	158.41	3,409.9	2,230.9	-21.0	-2.2	-18.5	0.09	0.01	-8.19
3,510.0	0.59	155.58	3,509.9	2,330.9	-22.0	-1.7	-19.6	0.07	-0.06	-2.83
3,610.0	0.63	160.52	3,609.9	2,430.9	-23.0	-1.3	-20.6	0.07	0.04	4.94
3,710.0	0.70	145.01	3,709.9	2,530.9	-24.1	-0.8	-21.8	0.19	0.07	-15.51
3,810.0	0.72	132.89	3,809.9	2,630.9	-25.0	0.0	-22.9	0.15	0.02	-12.12
3,910.0	0.84	122.06	3,909.9	2,730.9	-25.8	1.1	-24.1	0.19	0.12	-10.83
4,010.0	1.24	109.98	4,009.8	2,830.8	-26.6	2.7	-25.5	0.45	0.40	-12.08
4,110.0	1.22	107.07	4,109.8	2,930.8	-27.2	4.8	-26.9	0.07	-0.02	-2.91
4,210.0	1.19	102.28	4,209.8	3,030.8	-27.8	6.8	-28.2	0.11	-0.03	-4.79
4,310.0	1.22	93.29	4,309.8	3,130.8	-28.1	8.9	-29.3	0.19	0.03	-8.99
4,410.0	1.31	81.00	4,409.8	3,230.8	-27.9	11.1	-30.0	0.29	0.09	-12.29
4,510.0	1.38	74.91	4,509.7	3,330.7	-27.4	13.4	-30.5	0.16	0.07	-6.09
4,610.0	1.37	73.41	4,609.7	3,430.7	-26.8	15.7	-30.8	0.04	-0.01	-1.50
4,710.0	1.34	66.36	4,709.7	3,530.7	-26.0	17.9	-30.9	0.17	-0.03	-7.05
4,810.0	1.17	63.39	4,809.6	3,630.6	-25.1	19.9	-30.9	0.18	-0.17	-2.97
4,910.0	0.98	73.52	4,909.6	3,730.6	-24.4	21.6	-30.9	0.27	-0.19	10.13





PHX  
Survey Report



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Well:	Well #514167	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514167 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,010.0	0.80	83.03	5,009.6	3,830.6	-24.0	23.1	-31.2	0.23	-0.16	9.51
5,110.0	0.64	88.00	5,109.6	3,930.6	-23.9	24.4	-31.6	0.17	-0.16	4.97
5,210.0	0.52	108.59	5,209.6	4,030.6	-24.0	25.3	-32.1	0.24	-0.12	20.59
5,310.0	0.45	120.42	5,309.6	4,130.6	-24.4	26.1	-32.7	0.12	-0.07	11.83
5,410.0	0.43	119.14	5,409.6	4,230.6	-24.8	26.8	-33.4	0.02	-0.02	-1.28
Gyro Tie in=5510' MD										
5,510.0	0.29	32.24	5,509.6	4,330.6	-24.7	27.2	-33.5	0.51	-0.14	-86.90
5,554.0	6.80	154.30	5,553.5	4,374.5	-27.0	28.4	-36.0	15.81	14.80	277.41
5,586.0	9.70	157.50	5,585.2	4,406.2	-31.2	30.3	-40.6	9.17	9.06	10.00
5,618.0	9.80	154.40	5,616.7	4,437.7	-36.1	32.5	-46.1	1.67	0.31	-9.69
5,649.0	11.50	152.70	5,647.2	4,468.2	-41.3	35.1	-51.8	5.58	5.48	-5.48
5,680.0	11.90	159.00	5,677.5	4,498.5	-47.0	37.6	-58.1	4.32	1.29	20.32
5,712.0	10.60	168.40	5,708.9	4,529.9	-53.0	39.4	-64.2	7.01	-4.06	29.38
5,744.0	8.40	168.10	5,740.5	4,561.5	-58.1	40.5	-69.4	6.88	-6.88	-0.94
5,775.0	7.60	160.30	5,771.2	4,592.2	-62.3	41.6	-73.7	4.34	-2.58	-25.16
5,807.0	7.30	157.60	5,802.9	4,623.9	-66.1	43.1	-77.8	1.44	-0.94	-8.44
5,839.0	8.80	156.80	5,834.6	4,655.6	-70.3	44.9	-82.3	4.70	4.69	-2.50
5,870.0	10.60	161.80	5,865.1	4,686.1	-75.2	46.7	-87.5	6.41	5.81	16.13
5,902.0	12.30	161.80	5,896.5	4,717.5	-81.2	48.7	-93.8	5.31	5.31	0.00
5,934.0	14.20	159.00	5,927.6	4,748.6	-88.1	51.1	-101.2	6.27	5.94	-8.75
5,965.0	16.40	158.60	5,957.5	4,778.5	-95.7	54.1	-109.3	7.10	7.10	-1.29
5,997.0	19.30	160.40	5,988.0	4,809.0	-104.9	57.5	-119.1	9.22	9.06	5.63
6,028.0	22.20	162.20	6,017.0	4,838.0	-115.3	61.0	-130.1	9.58	9.35	5.81
6,060.0	23.70	162.60	6,046.4	4,867.4	-127.2	64.8	-142.5	4.71	4.69	1.25
6,092.0	26.70	162.40	6,075.4	4,896.4	-140.2	68.9	-156.0	9.38	9.38	-0.63
6,123.0	28.70	163.00	6,102.8	4,923.8	-154.0	73.2	-170.4	6.51	6.45	1.94
6,155.0	31.30	164.00	6,130.6	4,951.6	-169.3	77.7	-186.2	8.27	8.13	3.13
6,187.0	33.70	165.10	6,157.5	4,978.5	-185.9	82.3	-203.3	7.72	7.50	3.44
6,218.0	35.60	164.10	6,183.0	5,004.0	-202.9	87.0	-220.7	6.40	6.13	-3.23
6,250.0	38.90	164.00	6,208.5	5,029.5	-221.5	92.3	-239.9	10.31	10.31	-0.31
6,281.0	43.30	164.30	6,231.9	5,052.9	-241.1	97.9	-260.1	14.21	14.19	0.97
6,313.0	44.90	164.20	6,254.8	5,075.8	-262.5	103.9	-282.2	5.00	5.00	-0.31
6,345.0	42.40	163.70	6,278.0	5,099.0	-283.7	110.0	-304.1	7.89	-7.81	-1.56
6,376.0	38.60	163.00	6,301.6	5,122.6	-303.0	115.8	-324.1	12.35	-12.26	-2.26
6,408.0	35.30	164.00	6,327.1	5,148.1	-321.5	121.2	-343.2	10.48	-10.31	3.13
6,439.0	32.00	163.90	6,352.9	5,173.9	-338.0	126.0	-360.2	10.65	-10.65	-0.32
6,471.0	28.30	163.30	6,380.6	5,201.6	-353.4	130.5	-376.2	11.60	-11.56	-1.88
6,503.0	24.10	163.40	6,409.3	5,230.3	-366.9	134.6	-390.2	13.13	-13.13	0.31
6,534.0	20.70	163.70	6,438.0	5,259.0	-378.3	137.9	-401.9	10.97	-10.97	0.97
6,566.0	17.60	165.20	6,466.2	5,289.2	-388.4	140.7	-412.3	9.81	-9.69	4.69
6,598.0	14.00	166.30	6,499.0	5,320.0	-396.8	142.9	-420.9	11.29	-11.25	3.44
6,629.0	10.70	167.00	6,529.3	5,350.3	-403.3	144.4	-427.5	10.66	-10.65	2.26
6,661.0	7.80	161.10	6,560.8	5,381.8	-408.2	145.8	-432.6	9.52	-9.06	-18.44



PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Lewis County 514167
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1179.0usft
Project:	Lewis County, WV	MD Reference:	KB@23 @ 1179.0usft
Site:	Lewis County 514167	North Reference:	Grid
Well:	Well #514167	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514167 As Drilled Surveys		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,693.0	5.80	148.30	6,592.6	5,413.6	-411.6	147.4	-436.3	7.81	-6.25	-40.00
6,724.0	3.30	139.80	6,623.5	5,444.5	-413.7	148.8	-438.7	8.33	-8.06	-27.42
6,756.0	1.60	128.80	6,655.5	5,476.5	-414.6	149.7	-440.0	5.49	-5.31	-34.38
6,788.0	1.20	329.10	6,687.5	5,508.5	-414.6	149.9	-440.1	8.62	-1.25	-499.06
6,819.0	4.40	328.10	6,718.4	5,539.4	-413.3	149.1	-438.6	10.32	10.32	-3.23
6,851.0	7.70	333.10	6,750.3	5,571.3	-410.4	147.5	-435.2	10.43	10.31	15.63
6,882.0	11.90	336.50	6,780.8	5,601.8	-405.6	145.2	-430.0	13.67	13.55	10.97
6,914.0	15.50	338.30	6,811.9	5,632.9	-398.6	142.3	-422.4	11.33	11.25	5.63
6,946.0	18.20	337.40	6,842.5	5,663.5	-390.0	138.8	-413.1	8.48	8.44	-2.81
6,977.0	21.10	335.30	6,871.7	5,692.7	-380.5	134.6	-402.7	9.63	9.35	-6.77
7,009.0	23.60	335.10	6,901.3	5,722.3	-369.4	129.5	-390.5	7.82	7.81	-0.63
7,040.0	27.30	336.20	6,929.3	5,750.3	-357.3	124.1	-377.2	12.03	11.94	3.55
7,072.0	30.50	337.40	6,957.3	5,778.3	-343.1	118.0	-361.7	10.16	10.00	3.75
7,104.0	33.40	337.70	6,984.4	5,805.4	-327.4	111.5	-344.8	9.08	9.06	0.94
7,135.0	36.30	336.80	7,009.9	5,830.9	-311.1	104.7	-327.1	9.50	9.35	-2.90
7,167.0	39.50	336.20	7,035.1	5,856.1	-293.1	96.8	-307.4	10.07	10.00	-1.88
7,198.0	43.20	335.60	7,058.4	5,879.4	-274.4	88.5	-287.0	12.00	11.94	-1.94
7,230.0	46.60	335.80	7,081.1	5,902.1	-253.8	79.2	-264.4	10.63	10.63	0.63
7,261.0	50.20	336.40	7,101.6	5,922.6	-232.6	69.8	-241.2	11.70	11.61	1.94
7,293.0	53.10	336.70	7,121.5	5,942.5	-209.6	59.8	-216.1	9.09	9.06	0.94
7,324.0	56.10	337.50	7,139.4	5,960.4	-186.3	50.0	-190.9	9.90	9.68	2.58
7,356.0	59.70	337.70	7,156.4	5,977.4	-161.2	39.6	-163.8	11.26	11.25	0.63
7,388.0	63.30	337.70	7,171.7	5,992.7	-135.2	29.0	-135.6	11.25	11.25	0.00
7,419.0	66.20	337.20	7,184.9	6,005.9	-109.3	18.2	-107.6	9.47	9.35	-1.61
7,451.0	69.10	336.20	7,197.1	6,018.1	-82.2	6.5	-78.0	9.51	9.06	-3.13
7,482.0	72.90	336.10	7,207.2	6,028.2	-55.4	-5.3	-48.7	12.26	12.26	-0.32
7,514.0	76.10	336.80	7,215.7	6,036.7	-27.1	-17.7	-17.9	10.22	10.00	2.19
7,527.0	77.00	337.30	7,218.8	6,039.8	-15.5	-22.6	-5.2	7.87	6.92	3.85
7,558.0	79.40	337.60	7,225.1	6,046.1	12.6	-34.2	25.1	7.80	7.74	0.97
7,590.0	80.70	338.20	7,230.6	6,051.6	41.8	-46.1	56.6	4.46	4.06	1.88
7,622.0	83.30	338.20	7,235.1	6,056.1	71.2	-57.9	88.3	8.13	8.13	0.00
7,653.0	89.00	338.40	7,237.2	6,058.2	99.9	-69.3	119.2	18.40	18.39	0.65
7,685.0	91.40	338.00	7,237.1	6,058.1	129.6	-81.2	151.2	7.60	7.50	-1.25
7,717.0	89.50	337.80	7,236.8	6,057.8	159.3	-93.2	183.2	5.97	-5.94	-0.63
7,748.0	87.30	337.60	7,237.7	6,058.7	187.9	-105.0	214.2	7.13	-7.10	-0.65
7,780.0	86.20	337.40	7,239.5	6,060.5	217.5	-117.2	246.1	3.49	-3.44	-0.63
7,811.0	85.90	337.60	7,241.6	6,062.6	246.0	-129.0	277.0	1.16	-0.97	0.65
7,843.0	84.40	337.30	7,244.3	6,065.3	275.5	-141.3	308.9	4.78	-4.69	-0.94
7,875.0	84.70	337.50	7,247.4	6,068.4	304.9	-153.5	340.8	1.13	0.94	0.63
7,906.0	85.00	337.50	7,250.1	6,071.1	333.4	-165.3	371.6	0.97	0.97	0.00
7,938.0	84.80	337.70	7,253.0	6,074.0	362.9	-177.5	403.5	0.88	-0.63	0.63
7,969.0	85.30	337.80	7,255.7	6,076.7	391.5	-189.2	434.4	1.64	1.61	0.32
8,032.0	86.10	338.00	7,260.4	6,081.4	449.7	-212.8	497.2	1.31	1.27	0.32





PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Lewis County 514167
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1179.0usft
Project:	Lewis County, WV	MD Reference:	KB@23 @ 1176.0usft
Site:	Lewis County 514167	North Reference:	Grid
Well:	Well #514167	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514167 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,064.0	86.00	337.90	7,262.6	6,083.6	479.3	-224.8	529.1	0.44	-0.31	-0.31
8,127.0	87.40	336.20	7,266.2	6,087.2	537.2	-249.3	592.0	3.49	2.22	-2.70
8,159.0	87.40	335.90	7,267.7	6,088.7	566.4	-262.3	624.0	0.94	0.00	-0.94
8,254.0	87.70	335.80	7,271.7	6,092.7	653.0	-301.1	718.9	0.33	0.32	-0.11
8,285.0	87.70	335.60	7,273.0	6,094.0	681.2	-313.9	749.8	0.64	0.00	-0.65
LP=8349' MD/ 7274' TVD										
8,349.0	89.70	335.40	7,274.4	6,095.4	739.4	-340.4	813.8	3.14	3.13	-0.31
8,444.0	89.90	334.60	7,274.8	6,095.8	825.5	-380.5	908.7	0.87	0.21	-0.84
8,539.0	89.90	335.70	7,274.9	6,095.9	911.7	-420.5	1,003.7	1.16	0.00	1.16
8,634.0	90.60	336.60	7,274.5	6,095.5	998.6	-458.9	1,098.7	1.20	0.74	0.95
8,728.0	90.20	337.30	7,273.9	6,094.9	1,085.1	-495.7	1,192.7	0.86	-0.43	0.74
8,823.0	89.30	337.90	7,274.3	6,095.3	1,173.0	-531.9	1,287.7	1.14	-0.95	0.63
8,918.0	87.40	338.00	7,277.0	6,098.0	1,261.0	-567.5	1,382.6	2.00	-2.00	0.11
9,013.0	87.60	337.40	7,281.2	6,102.2	1,348.8	-603.5	1,477.5	0.67	0.21	-0.63
9,108.0	88.00	337.10	7,284.8	6,105.8	1,436.3	-640.2	1,572.4	0.53	0.42	-0.32
9,202.0	88.50	336.50	7,287.7	6,108.7	1,522.7	-677.3	1,666.4	0.83	0.53	-0.64
9,297.0	88.90	335.70	7,289.8	6,110.8	1,609.5	-715.7	1,761.4	0.94	0.42	-0.84
9,392.0	88.90	335.30	7,291.6	6,112.6	1,695.9	-755.1	1,856.3	0.42	0.00	-0.42
Deepest Point of Well=9487' MD/ 7293' TVD										
9,487.0	89.80	337.20	7,292.7	6,113.7	1,782.9	-793.4	1,951.3	2.21	0.95	2.00
9,582.0	90.50	337.90	7,292.5	6,113.5	1,870.7	-829.7	2,046.3	1.04	0.74	0.74
9,677.0	90.80	337.30	7,291.4	6,112.4	1,958.5	-865.9	2,141.3	0.71	0.32	-0.63
9,772.0	91.10	336.90	7,289.8	6,110.8	2,046.0	-902.8	2,236.3	0.53	0.32	-0.42
9,867.0	91.50	336.50	7,287.7	6,108.7	2,133.2	-940.4	2,331.2	0.60	0.42	-0.42
9,961.0	90.20	337.50	7,286.3	6,107.3	2,219.8	-977.1	2,425.2	1.74	-1.38	1.06
10,056.0	91.30	337.40	7,285.0	6,106.0	2,307.5	-1,013.5	2,520.2	1.16	1.16	-0.11
10,151.0	92.10	337.30	7,282.2	6,103.2	2,395.1	-1,050.1	2,615.2	0.85	0.84	-0.11
10,246.0	91.00	337.40	7,279.6	6,100.6	2,482.8	-1,086.7	2,710.1	1.16	-1.16	0.11
10,341.0	89.80	337.40	7,279.0	6,100.0	2,570.5	-1,123.2	2,805.1	1.26	-1.26	0.00
10,436.0	89.80	337.50	7,279.3	6,100.3	2,658.2	-1,159.6	2,900.1	0.11	0.00	0.11
10,531.0	90.10	337.50	7,279.4	6,100.4	2,746.0	-1,196.0	2,995.1	0.32	0.32	0.00
10,626.0	90.70	336.60	7,278.7	6,099.7	2,833.4	-1,233.0	3,090.1	1.14	0.63	-0.95
10,721.0	89.70	337.80	7,278.4	6,099.4	2,921.0	-1,269.8	3,185.1	1.64	-1.05	1.26
10,816.0	90.60	337.10	7,278.2	6,099.2	3,008.7	-1,306.3	3,280.1	1.20	0.95	-0.74
10,911.0	91.10	337.10	7,276.7	6,097.7	3,096.2	-1,343.2	3,375.0	0.53	0.53	0.00
11,006.0	89.40	337.80	7,276.3	6,097.3	3,184.0	-1,379.6	3,470.0	1.94	-1.79	0.74
11,101.0	90.20	337.40	7,276.7	6,097.7	3,271.8	-1,415.8	3,565.0	0.94	0.84	-0.42
11,196.0	91.00	337.10	7,275.7	6,096.7	3,359.4	-1,452.6	3,660.0	0.90	0.84	-0.32
11,291.0	91.80	337.20	7,273.3	6,094.3	3,446.9	-1,489.5	3,755.0	0.85	0.84	0.11
11,386.0	92.50	336.40	7,269.8	6,090.8	3,534.2	-1,526.9	3,849.9	1.12	0.74	-0.84
11,481.0	91.00	337.30	7,266.9	6,087.9	3,621.5	-1,564.2	3,944.9	1.84	-1.58	0.95
11,576.0	91.70	337.00	7,264.6	6,085.6	3,709.0	-1,601.1	4,039.8	0.80	0.74	-0.32



PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Lewis County 514167
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1179.0usft
Project:	Lewis County, WV	MD Reference:	KB@23 @ 1179.0usft
Site:	Lewis County 514167	North Reference:	Grid
Well:	Well #514167	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514167 As Drilled Surveys		

Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,671.0	92.40	337.00	7,261.2	6,082.2	3,796.4	-1,638.2	4,134.8	0.74	0.74	0.00	
11,765.0	90.10	337.80	7,259.2	6,080.2	3,883.2	-1,674.3	4,228.7	2.59	-2.45	0.85	
11,860.0	90.20	337.50	7,258.9	6,079.9	3,971.0	-1,710.4	4,323.7	0.33	0.11	-0.32	
11,955.0	90.70	336.70	7,258.2	6,079.2	4,058.5	-1,747.4	4,418.7	0.99	0.53	-0.84	
12,050.0	91.30	336.50	7,256.5	6,077.5	4,145.7	-1,785.1	4,513.7	0.67	0.63	-0.21	
12,145.0	89.80	336.60	7,255.6	6,076.6	4,232.9	-1,822.9	4,608.7	1.58	-1.58	0.11	
12,240.0	90.40	336.30	7,255.5	6,076.5	4,319.9	-1,860.8	4,703.7	0.71	0.63	-0.32	
12,335.0	88.90	336.80	7,256.0	6,077.0	4,407.1	-1,898.6	4,798.7	1.66	-1.58	0.53	
12,430.0	89.90	336.70	7,257.0	6,078.0	4,494.4	-1,936.1	4,893.7	1.06	1.05	-0.11	
12,524.0	90.40	336.50	7,256.8	6,077.8	4,580.6	-1,973.5	4,987.7	0.57	0.53	-0.21	
12,619.0	90.90	336.80	7,255.7	6,076.7	4,667.8	-2,011.1	5,082.7	0.61	0.53	0.32	
12,714.0	91.20	336.10	7,254.0	6,075.0	4,754.9	-2,049.1	5,177.6	0.80	0.32	-0.74	
12,809.0	89.60	337.30	7,253.3	6,074.3	4,842.2	-2,086.7	5,272.6	2.11	-1.68	1.26	
12,904.0	90.10	336.80	7,253.6	6,074.6	4,929.6	-2,123.7	5,367.6	0.74	0.53	-0.53	
12,999.0	91.10	337.80	7,252.6	6,073.6	5,017.3	-2,160.4	5,462.6	1.49	1.05	1.05	
13,094.0	91.90	337.30	7,250.1	6,071.1	5,105.1	-2,196.6	5,557.6	0.99	0.84	-0.53	
13,189.0	92.50	337.20	7,246.4	6,067.4	5,192.6	-2,233.3	5,652.5	0.64	0.63	-0.11	
13,284.0	92.70	335.90	7,242.1	6,063.1	5,279.7	-2,271.1	5,747.4	1.38	0.21	-1.37	
13,379.0	93.80	336.10	7,236.7	6,057.7	5,366.3	-2,309.7	5,842.2	1.18	1.16	0.21	
13,474.0	94.50	336.10	7,229.9	6,050.9	5,452.9	-2,348.1	5,937.0	0.74	0.74	0.00	
13,569.0	92.60	336.10	7,224.0	6,045.0	5,539.6	-2,386.5	6,031.8	2.00	-2.00	0.00	
13,663.0	91.40	337.30	7,220.7	6,041.7	5,625.9	-2,423.6	6,125.7	1.80	-1.28	1.28	
13,758.0	90.70	339.40	7,219.0	6,040.0	5,714.2	-2,458.7	6,220.7	2.33	-0.74	2.21	
13,853.0	90.90	340.70	7,217.6	6,038.6	5,803.5	-2,491.1	6,315.5	1.38	0.21	1.37	
13,948.0	89.90	337.80	7,217.0	6,038.0	5,892.3	-2,524.7	6,410.4	3.23	-1.05	-3.05	
14,043.0	90.70	337.00	7,216.5	6,037.5	5,980.0	-2,561.2	6,505.4	1.19	0.84	-0.84	
14,138.0	88.40	337.10	7,217.2	6,038.2	6,067.5	-2,598.3	6,600.4	2.42	-2.42	0.11	
14,233.0	88.80	336.70	7,219.5	6,040.5	6,154.8	-2,635.5	6,695.3	0.60	0.42	-0.42	
14,328.0	89.30	336.60	7,221.1	6,042.1	6,242.0	-2,673.2	6,790.3	0.54	0.53	-0.11	
14,423.0	89.80	336.40	7,221.9	6,042.9	6,329.1	-2,711.1	6,885.3	0.57	0.53	-0.21	
14,518.0	90.30	336.30	7,221.8	6,042.8	6,416.2	-2,749.2	6,980.3	0.54	0.53	-0.11	
14,613.0	91.00	336.10	7,220.7	6,041.7	6,503.1	-2,787.5	7,075.3	0.77	0.74	-0.21	
14,708.0	91.90	335.80	7,218.3	6,039.3	6,589.8	-2,826.2	7,170.3	1.00	0.95	-0.32	
14,803.0	90.20	335.70	7,216.5	6,037.5	6,676.4	-2,865.2	7,265.2	1.79	-1.79	-0.11	
14,898.0	89.10	336.50	7,217.1	6,038.1	6,763.2	-2,903.7	7,360.2	1.43	-1.16	0.84	
14,993.0	87.70	335.10	7,219.8	6,040.8	6,849.9	-2,942.6	7,455.2	2.08	-1.47	-1.47	
15,087.0	88.20	334.70	7,223.1	6,044.1	6,934.9	-2,982.5	7,549.1	0.68	0.53	-0.43	
15,180.0	88.40	335.60	7,225.9	6,046.9	7,019.3	-3,021.5	7,642.0	0.99	0.22	0.97	
15,274.0	88.20	336.40	7,228.7	6,049.7	7,105.1	-3,059.8	7,735.9	0.88	-0.21	0.85	
15,368.0	88.70	335.70	7,231.2	6,052.2	7,191.0	-3,097.9	7,829.9	0.91	0.53	-0.74	
15,462.0	89.30	337.10	7,232.9	6,053.9	7,277.1	-3,135.5	7,923.9	1.62	0.64	1.49	
15,556.0	90.00	336.80	7,233.5	6,054.5	7,363.6	-3,172.3	8,017.9	0.81	0.74	-0.32	
15,650.0	90.90	336.60	7,232.7	6,053.7	7,449.9	-3,209.5	8,111.9	0.98	0.96	-0.21	



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Lewis County 514167
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1179.0usft
Project:	Lewis County, WV	MD Reference:	KB@23 @ 1179.0usft
Site:	Lewis County 514167	North Reference:	Grid
Well:	Well #514167	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514167 As Drilled Surveys		

**Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Final Survey=15659' MD/ 7233' TVD										
15,659.0	90.90	336.80	7,232.6	6,053.6	7,458.2	-3,213.1	8,120.9	2.22	0.00	2.22
Projection to TD=15712' MD/ 7232' TVD										
15,712.0	90.90	336.80	7,231.7	6,052.7	7,506.9	-3,234.0	8,173.9	0.00	0.00	0.00

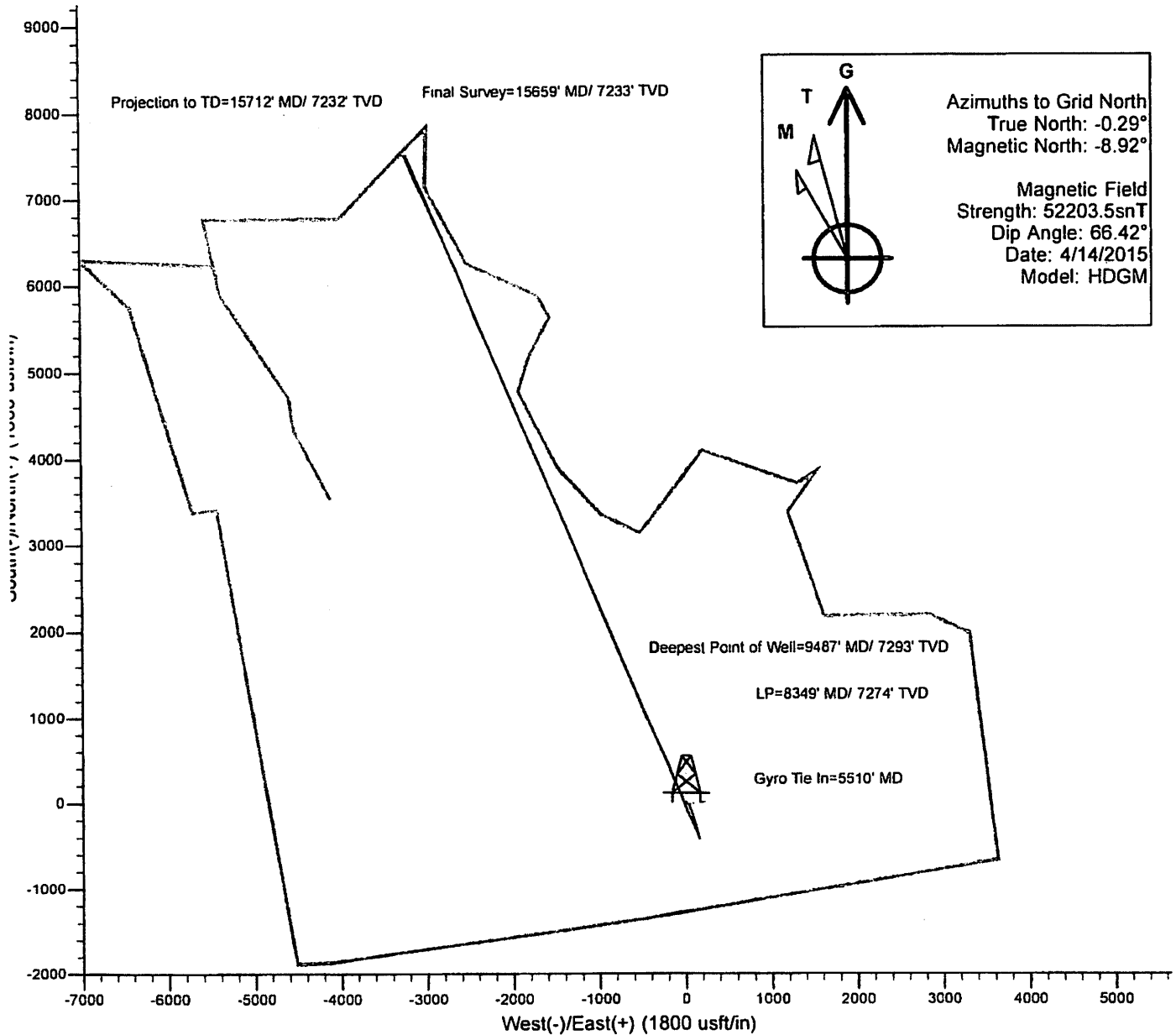
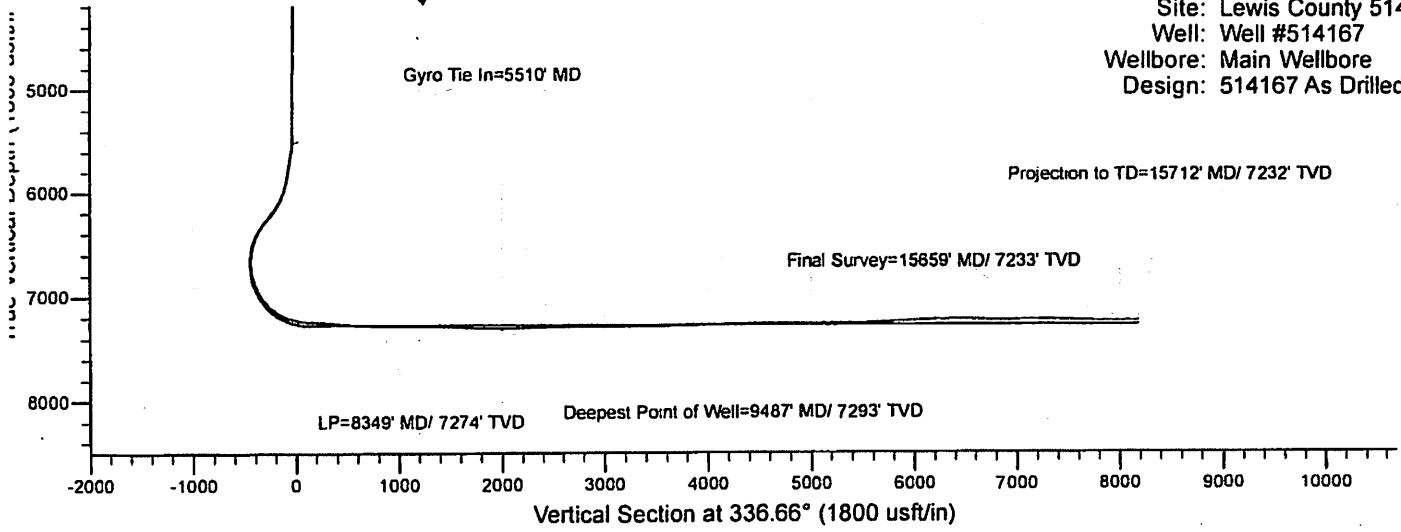
**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,510.0	5,509.6	-24.7	27.2	Gyro Tie In=5510' MD
8,349.0	7,274.4	739.4	-340.4	LP=8349' MD/ 7274' TVD
9,487.0	7,292.7	1,782.9	-793.4	Deepest Point of Well=9487' MD/ 7293' TVD
15,659.0	7,232.6	7,458.2	-3,213.1	Final Survey=15659' MD/ 7233' TVD
15,712.0	7,231.7	7,506.9	-3,234.0	Projection to TD=15712' MD/ 7232' TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



Project: Lewis County, WV  
 Site: Lewis County 514167  
 Well: Well #514167  
 Wellbore: Main Wellbore  
 Design: 514167 As Drilled Surveys





**514167- 47-041-05689-0000- 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>	5/16/2015	15,708.00	15,710.00	10	MARCELLUS
<b>1</b>	6/21/2015	15,443.00	15,623.00	32	MARCELLUS
<b>1.1</b>	6/21/2015	15,431.00	15,496.00	40	MARCELLUS
<b>2</b>	6/21/2015	15,131.00	15,373.00	40	MARCELLUS
<b>3</b>	6/22/2015	14,831.00	15,073.00	40	MARCELLUS
<b>4</b>	6/22/2015	14,531.00	14,773.00	40	MARCELLUS
<b>5</b>	6/22/2015	14,231.00	14,473.00	40	MARCELLUS
<b>6</b>	6/22/2015	13,931.00	14,173.00	40	MARCELLUS
<b>7</b>	6/23/2015	13,631.00	13,873.00	40	MARCELLUS
<b>8</b>	6/23/2015	13,331.00	13,573.00	40	MARCELLUS
<b>9</b>	6/23/2015	13,031.00	13,273.00	40	MARCELLUS
<b>10</b>	6/24/2015	12,731.00	12,973.00	40	MARCELLUS
<b>11</b>	6/24/2015	12,431.00	12,673.00	40	MARCELLUS
<b>12</b>	6/24/2015	12,131.00	12,373.00	40	MARCELLUS
<b>13</b>	6/24/2015	11,831.00	12,073.00	40	MARCELLUS
<b>14</b>	6/24/2015	11,531.00	11,773.00	40	MARCELLUS
<b>15</b>	6/25/2015	11,231.00	11,473.00	40	MARCELLUS
<b>16</b>	6/25/2015	10,931.00	11,175.00	40	MARCELLUS
<b>17</b>	6/25/2015	10,631.00	10,873.00	40	MARCELLUS
<b>18</b>	6/25/2015	10,331.00	10,573.00	40	MARCELLUS
<b>19</b>	6/26/2015	10,031.00	10,273.00	40	MARCELLUS
<b>20</b>	6/26/2015	9,731.00	9,973.00	40	MARCELLUS
<b>21</b>	6/26/2015	9,431.00	9,673.00	40	MARCELLUS
<b>22</b>	6/26/2015	9,131.00	9,373.00	40	MARCELLUS
<b>23</b>	6/26/2015	8,831.00	9,073.00	40	MARCELLUS
<b>24</b>	6/27/2015	8,531.00	8,773.00	40	MARCELLUS
<b>25</b>	6/27/2015	8,231.00	8,473.00	40	MARCELLUS
<b>26</b>	6/27/2015	7,931.00	8,173.00	40	MARCELLUS
<b>27</b>	6/27/2015	7,631.00	7,873.00	40	MARCELLUS

**514167-47-041-05689-0000- 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	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

# 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



## 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 polymine, compd. w/ substituted amine	Proprietary	15.00000	0.00366	None
			Ammonium chloride	12125-02-9	2.50000	0.00061	None

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.

\* 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)

Welcome Michelle N., Operator - OpNo. E1210363 [ Log Out ]



Submission to FracFocus using Excel Spreadsheets has been turned off.

FIND A WELL BY STATE

ABOUT PROJECT PARTNERS

(Note: Clicking the FracFocus, FIND A WELL links will open a new window.)

Prepare Disclosure for FracFocus Submission

Disclosure Lists | Dashboard

**i** Disclosure has been submitted.

Note: This window expires with 10 minutes of inactivity. After that you will be taken back to the dashboard.

Preview Disclosure PDF Validate Disclosure Submit To FracFocus

Hydraulic Fracturing Data

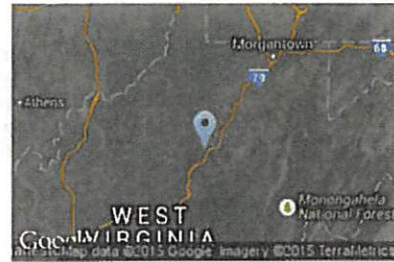
Edit

Job Start Date 6/21/2015 Job End Date 6/27/2015 API Number 47-041-05689-00-00 State & County West Virginia --- Lewis

Well Name 514167

Longitude -80.533338 Latitude 38.981317 Datum NAD83 Federal/Tribal Well?

True Vertical Depth (ft) 7207 Total Water Vol (gal) 14040936 Total Non Water Vol 0 Total Mass (lbs) 131086937



MSDS Chemical Ingredients

New Additive Select Additive Add Additive

Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
<b>Edit</b> Water	Stingray Pressure Pumping, LLC	Carrier/Base Fluid	Water	7732-18-5	100%	89.3846586332%	None	117171610.92
<b>Edit</b> Sand (Proppant)	Stingray Pressure Pumping, LLC	Proppant	Silica Substrate	14808-60-7	100%	10.2902244382%	None	13489140
<b>Edit</b> MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0571122085%	None	74866.645
<b>Edit</b> FRA-405	Stingray Pressure Pumping, LLC	Friction reducer	Petroleum distillates	64742-47-8	40%	.0345627433%	None	45307.241
			Sodium chloride	7647-14-5	10%	.0086406858%	None	11326.81
			Alcohols, C12-16, Ethoxylated	68551-12-2	7%	.0060484801%	None	7928.767
			Ammonium chloride	12125-02-9	7%	.0060484801%	None	7928.767
<b>Edit</b> Hydrochloric Acid (15%)	Stingray Pressure Pumping, LLC	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0177631162%	None	23285.125



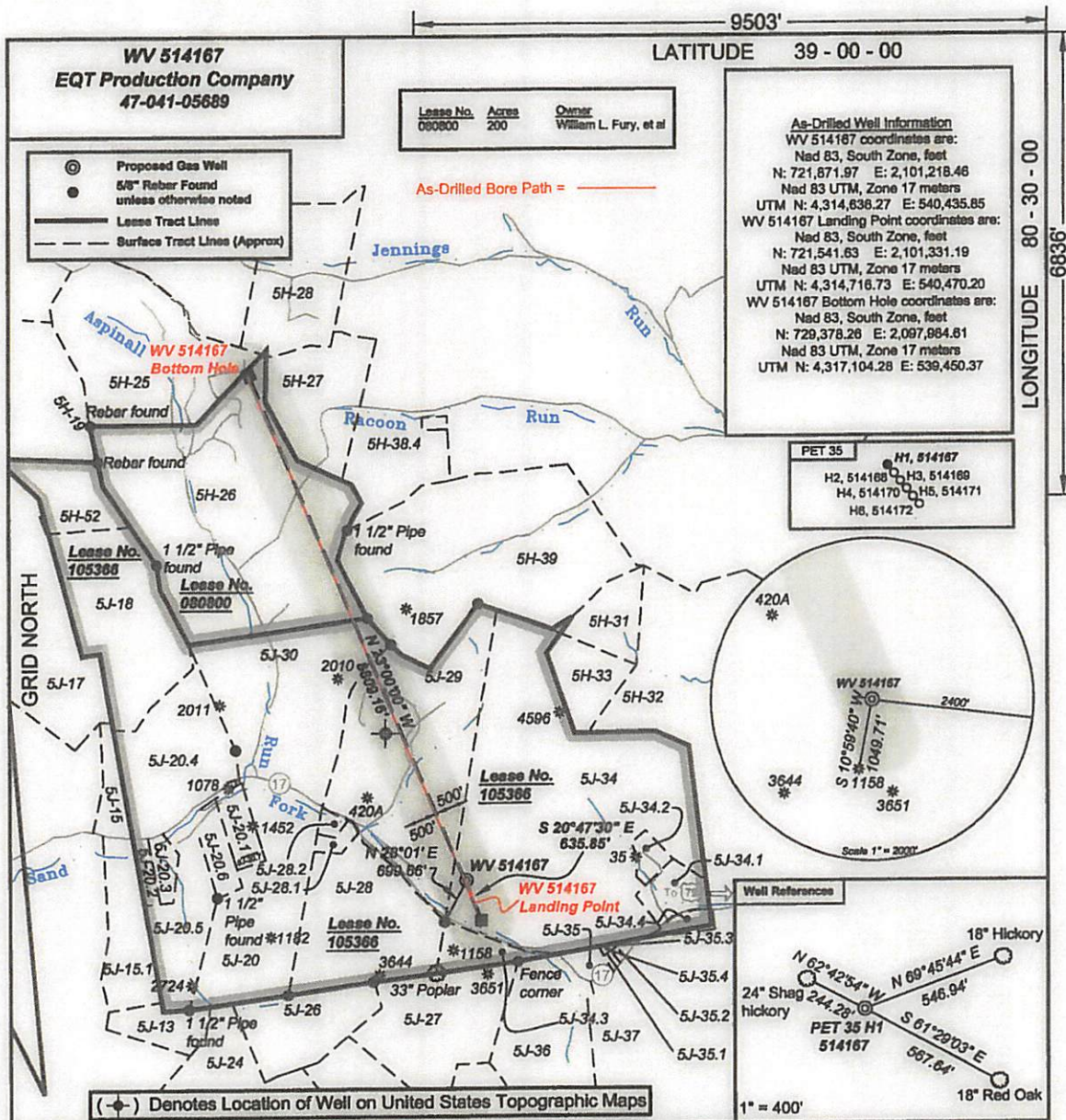
<input type="button" value="Edit"/>	ScaleClear 125	Stingray Pressure Pumping, LLC	Scale inhibitor	Phosphonomethylated polymine, compd. w/ substituted amine	Proprietary	15%	.0036627124%	None	4801.337
				Ammonium chloride	12125-02-9	2.5%	.0006104521%	None	800.223
<input type="button" value="Edit"/>	AI 600	Stingray Pressure Pumping, LLC	Acid corrosion inhibitor	Ethylene glycol	107-21-1	40%	.0002493055%	None	326.807
				N,N-Dimethylformamide	68-12-2	20%	.0001246527%	None	163.403
				2-Butoxyethanol	111-76-2	15%	.0000934895%	None	122.553
				Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15%	.0000934895%	None	122.553
				Cinnamaldehyde	104-55-2	15%	.0000934895%	None	122.553
				1-Decanol	112-30-1	5%	.0000311632%	None	40.851
				Poly(oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl) -.omega.-hydroxy-, branched	127087-87-0	5%	.0000311632%	None	40.851
				1-Octanol	111-87-5	2.5%	.0000155816%	None	20.425
				Triethyl phosphate	78-40-0	2.5%	.0000155816%	None	20.425
				Isopropanol	67-63-0	2.5%	.0000155816%	None	20.425
<input type="button" value="Edit"/>	Plexgel 907L-EB	Stingray Pressure Pumping, LLC	Slurried Guar	Distillates, hydrotreated light	64742-47-8	50%	.0000241654%	None	31.678
				Organophylic clay	Proprietary	2%	.0000009666%	None	1.267
				Alcohol ethoxylate	34398-01-1	1%	.0000004833%	None	0.634
				Cyrstalline silica	14808-60-7	.1%	.0000000483%	None	0.063
<input type="button" value="Edit"/>	AP 1	Stingray Pressure Pumping, LLC	Gel Breaker	Ammonium Persulfate	7727-54-0	100%	.0000126047%	None	16.523


**Non-MSDS Chemical Ingredients**

Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
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*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



SEAL

<p>FILE NO: 371-12-C-13</p> <p>DRAWING NO: 514167 As Drilled</p> <p>SCALE: 1" = 2000'</p> <p>MINIMUM DEGREE OF ACCURACY: 1:2500</p> <p>PROVEN SOURCE OF ELEVATION: NGS CORS Station</p>	<p><b>STATE OF WEST VIRGINIA</b>  DEPARTMENT OF ENVIRONMENTAL PROTECTION  <b>OIL AND GAS DIVISION</b></p>	<p>DATE: June 3 20 15</p> <p>OPERATOR'S WELL NO. WV 514167</p> <p>API WELL NO  47 - 41 - 05689  STATE COUNTY PERMIT</p>
<p>WELL TYPE: <input type="checkbox"/> OIL <input checked="" type="checkbox"/> GAS <input type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> WASTE DISPOSAL</p> <p>(IF GAS) PRODUCTION: <input type="checkbox"/> STORAGE <input type="checkbox"/> DEEP <input checked="" type="checkbox"/> SHALLOW</p> <p>LOCATION: ELEVATION: <span style="font-size: small;">1181.00' Existing 1155.75' Proposed</span> WATERSHED Sand Fork QUADRANGLE: Peterson</p> <p>DISTRICT: Court House COUNTY: Lewis</p> <p>SURFACE OWNER: William &amp; Mary Homer, et al ACREAGE: 292.94</p> <p>ROYALTY OWNER: Weston Creek, LLC et. al. LEASE NO: 105366 ACREAGE: 1100</p> <p>PROPOSED WORK: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> CONVERT <input type="checkbox"/> DRILL DEEPER <input checked="" type="checkbox"/> FRACTURE OR STIMULATE <input type="checkbox"/> PLUG OFF OLD FORMATION</p> <p><input type="checkbox"/> PERFORATE NEW FORMATION <input type="checkbox"/> OTHER PHYSICAL CHANGE IN WELL (SPECIFY)</p> <p><input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus ESTIMATED DEPTH: TVD 7,417'</p>		
<p>WELL OPERATOR: EQT Production Company DESIGNATED AGENT: Rex C. Ray</p> <p>ADDRESS: 115 Professional Place PO Box 280 ADDRESS: 115 Professional Place PO Box 280</p> <p style="text-align: center;">Bridgeport, WV 26330 Bridgeport, WV 26330</p>		

04/28/2017