

APPROVED

NAME: *[Signature]*
DATE: 9/15/14

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WV Department of
Environmental Protection

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514095

API: 47 - 017 - 06507

Submission: Initial Amended

Notes: -Revised Plat
-Revised "As Drilled" Coordinates

10/28/2016

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

API 47-017-06507 County DODDRIDGE District Southwest
Quad OXFORD 7.5' Pad Name OXFORD 159 Field/Pool Name _____
Farm name JUSTIN L. HENDERSON ET AL Well Number 514095
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 4,339,877.2 Easting 520,555.7
Landing Point of Curve Northing 4,340,520.1 Easting 520,910.9
Bottom Hole Northing 4,343,757.5 Easting 519,336.4

Elevation (ft) 1,252 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)
Synthetic Oil Base Mud 12.5ppg, aliphatic based non-aqueous drilling fluid, barium sulfate, calcium chloride, organophylic clay, quaternary ammonium clay, gilsonite, blended emulsifier, wetting agent, blended graphite, hydrated lime, calcium carbonate, ground walnut shells, fibrous cellulose

Date permit issued 7/30/2014 Date drilling commenced 2/10/2015 Date drilling ceased 3/21/2015
Date completion activities began 7/26/2015 Date completion activities ceased 8/19/2015
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 264, 325, 401 Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 1312, 1379 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 246, 313, 474, 616, 732, 735 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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API 47- 017 06507

Farm name JUSTIN L. HENDERSON ET AL Well number 514095

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 40LB/FT	NONE	Y
Surface	17.5"	13.375"	1,100'	NEW	J-55 54.5LB/FT	272	Y
Coal							
Intermediate 1	12.375"	9.625"	5,286'	NEW	P-110 40LB/FT	1,599', 3,142', 4,533'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	20,282'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details Cement on 8.5" production hole section brought inside 9 5/8" casing string and 1000' above KOP

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	44.84	0	8
Surface	CLASS A	835	15.6	1.20	1002	0	8
Coal							
Intermediate 1	CLASS A / A / A	381 / 354 / 1,089	14.2 / 15.6 / 15.6	1.24 / 1.18 / 1.18	2,175.18	0	8
Intermediate 2							
Intermediate 3							
Production	Class A 50/50 POZ / H	785 / 1560	14.2 / 15.2	1.26 / 1.96	989 / 3058	3,258'	8
Tubing							

Drillers TD (ft) 20,294' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,578'

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, 13, 25
 INTERMEDIATE- RAN AT LEAST EVERY 500' FEET JOINTS: 1, 13, 22, 34, 46, 57, 69, 81, 93, 105, 117
 PRODUCTION- RAN 1 CENTRALIZER ON EVERY JOINT FROM 45' TO 5254'

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- 017 - 06507 Farm name JUSTIN L. HENDERSON ET AL Well number 514095

PRODUCING FORMATION(S)

DEPTHS

MARCELLUS 6,765.60 TVD 8,400.00 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2,221 psi Bottom Hole N/A psi DURATION OF TEST 147.00 hrs

OPEN FLOW Gas 12,651 mcfpd Oil N/A bpd NGL 52.8 bpd Water 1078.1 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)
	0		0		

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 Vaughn Energy Services
Address P.O. Box 261021 City Corpus Christi State TX Zip 78246-1021

Cementing Company Allied Services
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company FTS International
Address 301 E. 18th Street City Cisco State TX Zip 76437

Please insert additional pages as applicable.

Completed by Jim Helmick Telephone (412) 395-5518
Signature  Title VP Completions

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API 47- 017 - 06507 Farm name JUSTIN L. HENDERSON ET AL Well number 514095

Drilling Contractor Patterson UTI (RIG 252)
Address 207 Carlton Drive City EIGHTY FOUR State PA Zip 15330

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

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company NABORS CEMENTING SERVICES
Address 2504 SMITH CREEK RD City WAYNESBURG State PA Zip 15370

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Well # 514095 Final Formations

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	411	411
SAND/SHALE	1	1	256	256
WASHINGTON COAL	256	256	258	258
SAND/SHALE	258	258	323	323
WAYNESBURG A COAL	323	323	325	325
SAND/SHALE	325	325	484	484
UNIONTOWN COAL	484	484	486	486
SAND/SHALE	486	486	626	626
SEWICKLEY	626	626	628	628
SAND/SHALE	628	628	742	742
REDSTONE COAL	742	742	743	743
SAND/SHALE	743	743	745	745
PITTSBURGH COAL	745	745	749	749
SAND/SHALE	749	749	2,030.00	2,029.80
BIG LIME	2,030.00	2,029.80	2,174.00	2,173.80
SAND/SHALE	2,174.00	2,173.80	2,323.00	2,322.80
WEIR	2,323.00	2,322.80	2,437.00	2,436.80
SAND/SHALE	2,437.00	2,436.80	2,531.00	2,530.70
GANTZ	2,531.00	2,530.70	2,608.00	2,607.70
50F	2,608.00	2,607.70	2,684.00	2,683.70
SAND/SHALE	2,684.00	2,683.70	2,730.00	2,729.70
30F	2,730.00	2,729.70	2,765.00	2,764.70
SAND/SHALE	2,765.00	2,764.70	2,779.00	2,778.70
GORDON	2,779.00	2,778.70	2,870.00	2,869.60
4TH SAND	2,870.00	2,869.60	3,051.00	3,050.50
BAYARD	3,051.00	3,050.50	3,151.00	3,150.50
SAND/SHALE	3,151.00	3,150.50	3,388.00	3,387.30
WARREN	3,388.00	3,387.30	3,447.00	3,446.30
SAND/SHALE	3,447.00	3,446.30	3,459.00	3,458.30
SPEECHLEY	3,459.00	3,458.30	3,703.00	3,702.10
SAND/SHALE	3,703.00	3,702.10	4,139.00	4,137.20
BALLTOWN A	4,139.00	4,137.20	4,253.00	4,250.60
SAND/SHALE	4,253.00	4,250.60	4,338.00	4,335.10
RILEY	4,338.00	4,335.10	4,484.00	4,480.10
SAND/SHALE	4,484.00	4,480.10	5,009.00	5,000.00
BENSON	5,009.00	5,000.00	5,049.00	5,039.60
SAND/SHALE	5,049.00	5,039.60	5,180.00	5,169.00
ALEXANDER	5,180.00	5,169.00	6,211.00	6,078.80
RHINESTREET UPPER	6,211.00	6,078.80	6,362.00	6,142.50
RHINESTREET	6,362.00	6,142.50	7,136.00	6,405.50
SONYEA	7,136.00	6,405.50	7,518.00	6,540.20
MIDDLESEX	7,518.00	6,540.20	7,690.00	6,600.60
GENESSEE	7,690.00	6,600.60	7,906.00	6,668.30
GENESEO	7,906.00	6,668.30	8,086.00	6,713.70
TULLY	8,086.00	6,713.70	8,204.00	6,737.30
HAMILTON	8,204.00	6,737.30	8,400.00	6,765.60
MARCELLUS	8,400.00	6,765.60		

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EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 514095

Well #514095

Main Wellbore

Design: 514095 As Drilled Surveys

Standard Survey Report

20 March, 2015





PHX
Survey Report



Where energy meets innovation.

Database:	PHX Survey Project Data US	Local Co-ordinate Reference:	Site Co-ordinate System: NAD 83
Company:	PHX Technology Services	TVD Reference:	Mean Sea Level
Project:	Comanche County, WV Drift	MD Reference:	Mean Sea Level
Site:	Comanche County, WV	North Reference:	Mean Sea Level
Well:	Well 4014095	Survey Calculation Method:	Minimum Squares
Wellbore:	Main Wellbore		
Design:	MEMOS AS 20150901		

Project: Comanche County, WV Drift			
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		Using geodetic scale factor

Site: Comanche County, WV					
Site Position:		Northing:	260,320.20 usft	Latitude:	39.21
From:	Map	Easting:	1,642,371.60 usft	Longitude:	-80.76
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.80 °

Well: Well 4014095						
Well Position	+N/-S	0.0 usft	Northing:	260,320.20 usft	Latitude:	39° 12' 28.207 N
	+E/-W	0.0 usft	Easting:	1,642,371.60 usft	Longitude:	80° 45' 43.522 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,252.0 usft

Wellbore: Main Wellbore					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/2/2015	-5.45	66.71	52,159

Design: MEMOS AS 20150901					
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	343.54	

Survey Program					
	From (°)	To (usft)	Survey (Wellbore)	Tool Name	Description
	0.00	5,231.0	514095 Gyrodatta Gyro (Main Wellbore)	GYD_DP_MS	Gyrodatta gyro-compassing and drop
	0.00	20,294.0	514095 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3: standard declination

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	-1,275.0	0.0	0.0	0.0	0.00	0.00	0.00	
23.0	0.00	0.00	23.0	-1,252.0	0.0	0.0	0.0	0.00	0.00	0.00	
123.0	0.59	249.48	123.0	-1,152.0	-0.2	-0.5	0.0	0.59	0.59	0.00	
223.0	0.25	235.52	223.0	-1,052.0	-0.5	-1.1	-0.1	0.35	-0.34	13.98	
323.0	0.20	245.43	323.0	-952.0	-0.7	-1.5	-0.2	0.06	-0.05	9.91	
423.0	0.16	231.02	423.0	-852.0	-0.8	-1.8	-0.3	0.06	-0.04	-14.41	
523.0	0.29	268.43	523.0	-752.0	-0.9	-2.1	-0.3	0.19	0.37	41.37	
623.0	0.30	266.13	623.0	-652.0	-1.0	-2.6	-0.2	0.02	0.01	-2.30	

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Database:	PHX Survey Data	Local Co-ordinate Reference:	PHX Co-ordinate System
Company:	PHX Technology Services	TVD Reference:	NAVD83
Project:	PHX Survey	MD Reference:	NAVD83
Site:	PHX Survey	North Reference:	True
Well:	PHX Survey	Survey Calculation Method:	Minimum Curvature
Wellbore:	PHX Survey		
Design:	PHX 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)
723.0	0.29	265.23	723.0	-552.0	-1.0	-3.1	-0.1	0.01	-0.01	-0.90
823.0	0.28	276.13	823.0	-452.0	-1.0	-3.6	0.1	0.06	-0.01	10.90
923.0	0.14	253.61	923.0	-352.0	-1.0	-4.0	0.2	0.16	-0.14	-22.52
1,023.0	0.48	272.18	1,023.0	-252.0	-1.0	-4.5	0.3	0.35	0.34	18.57
1,123.0	0.44	272.01	1,123.0	-152.0	-1.0	-5.3	0.6	0.04	-0.04	-0.17
1,223.0	0.59	264.60	1,223.0	-52.0	-1.0	-6.2	0.8	0.16	0.15	-7.41
1,323.0	0.92	277.27	1,323.0	48.0	-1.0	-7.5	1.2	0.37	0.33	12.67
1,423.0	1.12	276.49	1,423.0	148.0	-0.8	-9.3	1.9	0.20	0.20	-0.78
1,523.0	1.22	269.04	1,522.9	247.9	-0.7	-11.3	2.6	0.18	0.10	-7.45
1,623.0	1.06	262.26	1,622.9	347.9	-0.8	-13.3	3.0	0.21	-0.16	-6.78
1,723.0	1.00	264.96	1,722.9	447.9	-1.0	-15.1	3.3	0.08	-0.06	2.70
1,823.0	1.06	272.59	1,822.9	547.9	-1.0	-16.9	3.8	0.15	0.06	7.63
1,923.0	1.10	276.26	1,922.9	647.9	-0.9	-18.8	4.5	0.08	0.04	3.67
2,023.0	1.10	275.89	2,022.8	747.8	-0.7	-20.7	5.2	0.01	0.00	-0.37
2,123.0	1.14	288.44	2,122.8	847.8	-0.3	-22.6	6.1	0.25	0.04	12.55
2,223.0	1.14	295.70	2,222.8	947.8	0.5	-24.4	7.4	0.14	0.00	7.26
2,323.0	1.14	293.50	2,322.8	1,047.8	1.3	-26.2	8.7	0.04	0.00	-2.20
2,423.0	1.23	291.81	2,422.8	1,147.8	2.1	-28.1	10.0	0.10	0.09	-1.69
2,523.0	1.29	300.70	2,522.7	1,247.7	3.1	-30.1	11.5	0.20	0.06	8.89
2,623.0	1.51	298.74	2,622.7	1,347.7	4.3	-32.2	13.2	0.23	0.22	-1.96
2,723.0	1.57	298.10	2,722.7	1,447.7	5.5	-34.6	15.1	0.06	0.06	-0.64
2,823.0	1.64	296.92	2,822.6	1,547.6	6.8	-37.1	17.1	0.08	0.07	-1.18
2,923.0	1.79	293.71	2,922.6	1,647.6	8.1	-39.8	19.1	0.18	0.15	-3.21
3,023.0	1.93	296.18	3,022.5	1,747.5	9.5	-42.7	21.2	0.16	0.14	2.47
3,123.0	1.88	295.71	3,122.5	1,847.5	10.9	-45.7	23.4	0.05	-0.05	-0.47
3,223.0	2.11	292.41	3,222.4	1,947.4	12.4	-48.9	25.7	0.26	0.23	-3.30
3,323.0	2.17	295.97	3,322.4	2,047.4	13.9	-52.3	28.1	0.15	0.06	3.56
3,423.0	1.99	291.59	3,422.3	2,147.3	15.4	-55.6	30.5	0.24	-0.18	-4.38
3,523.0	2.16	297.30	3,522.2	2,247.2	16.9	-58.9	32.9	0.27	0.17	5.71
3,623.0	2.06	293.21	3,622.2	2,347.2	18.4	-62.2	35.3	0.18	-0.10	-4.09
3,723.0	2.10	303.59	3,722.1	2,447.1	20.2	-65.4	37.9	0.38	0.04	10.38
3,823.0	2.57	300.33	3,822.0	2,547.0	22.3	-68.9	40.9	0.49	0.47	-3.26
3,923.0	3.27	299.22	3,921.9	2,646.9	24.8	-73.3	44.6	0.70	0.70	-1.11
4,023.0	4.54	301.51	4,021.6	2,746.6	28.3	-79.2	49.6	1.28	1.27	2.29
4,123.0	5.50	300.91	4,121.3	2,846.3	32.8	-86.6	56.0	0.96	0.96	-0.60
4,223.0	6.06	300.90	4,220.7	2,945.7	38.0	-95.3	63.4	0.56	0.56	-0.01
4,323.0	6.23	301.46	4,320.2	3,045.2	43.5	-104.4	71.3	0.18	0.17	0.56
4,423.0	6.66	302.96	4,419.5	3,144.5	49.5	-113.9	79.8	0.46	0.43	1.50
4,523.0	7.15	303.41	4,518.8	3,243.8	56.1	-124.0	88.9	0.49	0.49	0.45
4,623.0	7.67	307.74	4,618.0	3,343.0	63.6	-134.5	99.1	0.76	0.52	4.33
4,723.0	8.05	310.69	4,717.0	3,442.0	72.3	-145.1	110.4	0.55	0.38	2.95
4,823.0	8.15	313.62	4,816.0	3,541.0	81.7	-155.5	122.4	0.42	0.16	0.16

PHOENIX
TECHNOLOGY SERVICES
COMPASS 5000.1 Build 73
10/28/2016



PHX
Survey Report



Where Energy Meets Innovation

Database:	PHOENIX Technology Services	Local Co-ordinate Reference:	US DYNALOG COUNTY #11000
Company:	EQT Production - Midland	TVD Reference:	US DYNALOG COUNTY #11000
Project:	Midland County, TX (US)	MD Reference:	US DYNALOG COUNTY #11000
Site:	Midland County, Midland	North Reference:	US DYNALOG COUNTY #11000
Well:	Midland	Survey Calculation Method:	Minimum Curvature
Wellbore:	Midland		
Design:	Midland		

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)
4,923.0	8.56	316.01	4,915.0	3,640.0	92.0	-165.8	135.2	0.54	0.41	2.39
5,023.0	8.54	317.77	5,013.9	3,738.9	102.8	-176.0	148.5	0.26	-0.02	1.76
5,123.0	8.89	320.58	5,112.7	3,837.7	114.3	-185.9	162.3	0.55	0.35	2.81
5,223.0	9.20	322.91	5,211.5	3,936.5	126.6	-195.6	176.9	0.48	0.31	2.33
5,231.1	9.21	323.24	5,219.5	3,944.5	127.7	-196.4	178.1	0.67	0.11	4.10
5,296.0	9.29	325.88	5,283.5	4,008.5	136.2	-202.4	187.9	0.67	0.13	4.06
5,389.0	8.60	332.60	5,375.4	4,100.4	148.5	-209.8	201.9	1.35	-0.74	7.23
5,421.0	8.10	343.00	5,407.1	4,132.1	152.8	-211.6	206.5	4.96	-1.56	32.50
5,452.0	8.40	354.60	5,437.7	4,162.7	157.2	-212.4	210.9	5.45	0.97	37.42
5,484.0	8.40	5.20	5,469.4	4,194.4	161.8	-212.4	215.4	4.83	0.00	33.13
5,515.0	9.00	13.40	5,500.0	4,225.0	166.4	-211.7	219.6	4.44	1.94	26.45
5,546.0	9.30	21.10	5,530.7	4,255.7	171.1	-210.2	223.7	4.06	0.97	24.84
5,578.0	11.30	33.00	5,562.1	4,287.1	176.2	-207.6	227.8	9.09	6.25	37.19
5,609.0	14.40	37.70	5,592.4	4,317.4	181.8	-203.6	232.0	10.55	10.00	15.16
5,641.0	17.10	40.50	5,623.2	4,348.2	188.5	-198.1	236.9	8.76	8.44	8.75
5,672.0	18.30	41.40	5,652.7	4,377.7	195.6	-191.9	242.0	3.97	3.87	2.90
5,704.0	20.00	42.90	5,682.9	4,407.9	203.4	-184.8	247.4	5.53	5.31	4.69
5,735.0	21.00	43.50	5,712.0	4,437.0	211.3	-177.4	252.9	3.30	3.23	1.94
5,767.0	23.50	43.90	5,741.6	4,466.6	220.1	-169.0	258.9	7.83	7.81	1.25
5,798.0	26.40	42.40	5,769.7	4,494.7	229.6	-160.1	265.6	9.57	9.35	-4.84
5,830.0	29.50	42.50	5,797.9	4,522.9	240.7	-150.0	273.3	9.69	9.69	0.31
5,861.0	31.30	42.50	5,824.7	4,549.7	252.2	-139.4	281.4	5.81	5.81	0.00
5,892.0	31.10	41.90	5,851.2	4,576.2	264.1	-128.6	289.7	1.19	-0.65	-1.94
5,924.0	33.10	43.40	5,878.3	4,603.3	276.6	-117.1	298.5	6.73	6.25	4.69
5,955.0	34.90	45.40	5,904.0	4,629.0	289.0	-104.9	306.9	6.84	5.81	6.45
5,987.0	37.00	47.10	5,929.9	4,654.9	302.0	-91.4	315.5	7.27	6.56	5.31
6,019.0	39.40	47.80	5,955.0	4,680.0	315.4	-76.8	324.2	7.62	7.50	2.19
6,050.0	43.30	47.80	5,978.3	4,703.3	329.1	-61.6	333.1	12.58	12.58	0.00
6,082.0	46.60	48.90	6,001.0	4,726.0	344.1	-44.7	342.7	10.59	10.31	3.44
6,113.0	49.90	48.00	6,021.6	4,746.6	359.5	-27.4	352.5	10.86	10.65	-2.90
6,145.0	52.50	46.30	6,041.6	4,766.6	376.5	-9.1	363.6	9.12	8.13	-5.31
6,176.0	55.70	45.20	6,059.8	4,784.8	394.0	8.8	375.3	10.72	10.32	-3.55
6,208.0	58.50	45.30	6,077.2	4,802.2	412.9	27.9	388.1	8.75	8.75	0.31
6,239.0	61.80	45.50	6,092.6	4,817.6	431.8	47.1	400.7	10.66	10.65	0.65
6,271.0	64.50	46.10	6,107.1	4,832.1	451.7	67.5	414.0	8.60	8.44	1.88
6,302.0	66.70	47.20	6,119.9	4,844.9	471.0	88.1	426.8	7.80	7.10	3.55
6,396.0	70.40	46.30	6,154.3	4,879.3	531.0	151.8	466.2	4.04	3.94	-0.96
6,490.0	71.60	46.40	6,184.9	4,909.9	592.3	216.1	506.8	1.28	1.28	0.11
6,584.0	71.50	45.70	6,214.6	4,939.6	654.2	280.3	548.0	0.71	-0.11	0.07
6,678.0	69.70	45.40	6,245.8	4,970.8	716.3	343.6	589.6	1.94	-1.91	-0.32
6,773.0	70.80	45.80	6,277.9	5,002.9	778.9	407.4	631.5	1.22	1.16	0.06
6,868.0	69.20	43.30	6,310.4	5,035.4	842.5	470.1	674.7	2.99	-1.68	-2.63

OFFICE OF ENVIRONMENTAL AFFAIRS
 SEP 06 2015
 10/28/2016

Database:	Oil Survey - Survey Data	Local Co-ordinate Reference:	WGS 84 - NAD 83
Company:	EQT Production - Midwest	TVD Reference:	NAVD 83 - Mean Sea Level
Project:	Woodbury County - 100-000	MD Reference:	NAVD 83 - Mean Sea Level
Site:	Woodbury County - 100-000	North Reference:	NAVD 83 - Mean Sea Level
Well:	100-000-001	Survey Calculation Method:	Minimum Curvature
Wellbore:	NAVD 83 - Mean Sea Level		
Design:	100-000-001-001		

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)
6,962.0	70.30	43.90	6,343.0	5,068.0	906.3	530.9	718.7	1.31	1.17	0.64
7,056.0	68.20	44.10	6,376.3	5,101.3	969.6	591.9	762.1	2.24	-2.23	0.21
7,151.0	69.10	44.30	6,410.8	5,135.8	1,033.0	653.6	805.4	0.97	0.95	0.21
7,245.0	68.40	45.20	6,444.9	5,169.9	1,095.2	715.3	847.6	1.16	-0.74	0.96
7,340.0	70.10	45.20	6,478.6	5,203.6	1,157.8	778.3	889.8	1.79	1.79	0.00
7,434.0	69.20	45.70	6,511.3	5,236.3	1,219.6	841.1	931.3	1.08	-0.96	0.53
7,529.0	70.70	45.90	6,543.8	5,268.8	1,281.8	905.1	972.8	1.59	1.58	0.21
7,623.0	68.70	47.10	6,576.4	5,301.4	1,342.5	969.1	1,012.9	2.44	-2.13	1.28
7,655.0	68.80	47.30	6,588.0	5,313.0	1,362.8	990.9	1,026.1	0.66	0.31	0.63
7,686.0	69.00	47.30	6,599.2	5,324.2	1,382.4	1,012.2	1,038.9	0.65	0.65	0.00
7,718.0	69.10	45.40	6,610.6	5,335.6	1,403.0	1,033.8	1,052.6	5.55	0.31	-5.94
7,749.0	70.20	40.90	6,621.4	5,346.4	1,424.2	1,053.7	1,067.3	14.06	3.55	-14.52
7,780.0	71.10	37.10	6,631.7	5,356.7	1,447.0	1,072.1	1,083.9	11.92	2.90	-12.26
7,812.0	72.00	34.90	6,641.8	5,366.8	1,471.5	1,089.9	1,102.4	7.10	2.81	-6.88
7,843.0	73.00	32.20	6,651.2	5,376.2	1,496.2	1,106.3	1,121.4	8.91	3.23	-8.71
7,875.0	74.40	29.10	6,660.1	5,385.1	1,522.6	1,121.9	1,142.3	10.28	4.38	-9.69
7,906.0	75.10	26.50	6,668.3	5,393.3	1,549.0	1,135.9	1,163.7	8.40	2.26	-8.39
7,937.0	75.20	23.80	6,676.2	5,401.2	1,576.1	1,148.6	1,186.1	8.42	0.32	-8.71
7,969.0	74.40	21.60	6,684.6	5,409.6	1,604.6	1,160.5	1,210.0	7.09	-2.50	-8.88
8,000.0	74.60	19.50	6,692.9	5,417.9	1,632.6	1,171.0	1,233.9	6.56	0.65	-8.77
8,032.0	75.80	18.20	6,701.1	5,426.1	1,661.9	1,181.0	1,259.1	5.43	3.75	-4.06
8,063.0	76.70	16.30	6,708.5	5,433.5	1,690.6	1,189.9	1,284.2	6.62	2.90	-6.13
8,095.0	77.20	14.40	6,715.7	5,440.7	1,720.7	1,198.2	1,310.7	5.99	1.56	-5.94
8,127.0	78.00	12.00	6,722.6	5,447.6	1,751.1	1,205.3	1,337.8	7.74	2.50	-7.50
8,158.0	79.00	10.10	6,728.7	5,453.7	1,780.9	1,211.1	1,364.8	6.82	3.23	-6.13
8,190.0	79.30	7.70	6,734.8	5,459.8	1,812.0	1,216.0	1,393.2	7.43	0.94	-7.50
8,221.0	80.10	5.00	6,740.3	5,465.3	1,842.3	1,219.4	1,421.3	8.95	2.56	-8.71
8,252.0	81.10	2.70	6,745.4	5,470.4	1,872.8	1,221.4	1,450.0	8.00	3.23	-7.42
8,284.0	81.80	0.50	6,750.1	5,475.1	1,904.4	1,222.3	1,480.0	7.14	2.19	-6.88
8,316.0	81.50	358.20	6,754.8	5,479.8	1,936.1	1,221.9	1,510.5	7.17	-0.94	-7.19
8,338.2	81.78	356.48	6,758.0	5,483.0	1,958.0	1,220.9	1,531.8	7.77	1.28	-7.74
8,347.0	81.90	355.80	6,759.3	5,484.3	1,966.7	1,220.3	1,540.3	7.77	1.31	-7.74
8,379.0	83.30	353.60	6,763.4	5,488.4	1,998.3	1,217.4	1,571.5	8.10	4.38	-6.88
8,410.0	84.80	350.50	6,766.6	5,491.6	2,028.8	1,213.1	1,602.0	11.06	4.84	-10.00
8,442.0	86.10	348.80	6,769.1	5,494.1	2,060.2	1,207.4	1,633.7	6.67	4.06	-5.31
8,473.0	87.00	346.90	6,771.0	5,496.0	2,090.5	1,200.9	1,664.5	6.77	2.90	-6.13
8,504.0	87.50	343.70	6,772.5	5,497.5	2,120.4	1,193.0	1,695.5	10.44	1.61	-10.32
8,536.0	87.70	340.50	6,773.8	5,498.8	2,150.8	1,183.2	1,727.4	10.01	0.63	-10.00
8,568.0	87.10	337.90	6,775.3	5,500.3	2,180.7	1,171.9	1,759.3	8.33	-1.88	-8.13
8,599.0	85.80	335.00	6,777.2	5,502.2	2,209.1	1,159.5	1,790.0	10.24	-4.19	-9.35
8,662.0	86.00	335.00	6,781.7	5,506.7	2,266.0	1,132.9	1,852.1	0.32	0.32	
8,756.0	90.60	336.40	6,784.5	5,509.5	2,351.6	1,094.3	1,945.2	5.11	4.89	1.49

Office of Oil and Gas
SEP 06 2016



PHX
Survey Report



Database:	010001 Survey	Local Co-ordinate Reference:	NA 83 (NAD 83)
Company:	OT Production - Missouri	TVD Reference:	NA 83 (NAD 83)
Project:	Oilfield Survey - NY 010	MD Reference:	NA 83 (NAD 83)
Site:	Oilfield Survey - NY 010	North Reference:	NA 83 (NAD 83)
Well:	Well 010001	Survey Calculation Method:	Minimum Curvature
Wellbore:	Well Trajectory		
Design:	NA 83 (NAD 83)		

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)
8,844.0	90.90	334.40	6,783.3	5,508.3	2,431.6	1,057.7	2,032.3	2.30	0.34	-2.27
8,938.0	90.90	334.50	6,781.9	5,506.9	2,516.4	1,017.1	2,125.1	0.11	0.00	0.11
9,033.0	90.90	334.53	6,780.4	5,505.4	2,602.2	976.3	2,218.9	0.03	0.00	0.03
9,127.0	90.81	334.27	6,779.0	5,504.0	2,687.0	935.6	2,311.7	0.29	-0.10	-0.28
9,221.0	90.90	335.06	6,777.6	5,502.6	2,771.9	895.4	2,404.6	0.85	0.10	0.84
9,316.0	90.82	334.84	6,776.1	5,501.1	2,856.0	855.2	2,498.5	0.25	-0.08	-0.23
9,412.0	90.90	335.77	6,774.7	5,499.7	2,945.2	815.1	2,593.5	0.97	0.08	0.97
9,506.0	90.72	333.56	6,773.4	5,498.4	3,030.1	774.9	2,686.4	2.36	-0.19	-2.35
9,600.0	90.54	334.84	6,772.3	5,497.3	3,114.7	734.0	2,779.1	1.38	-0.19	1.36
9,695.0	90.81	334.84	6,771.2	5,496.2	3,200.7	693.6	2,873.0	0.28	0.28	0.00
9,789.0	90.90	334.45	6,769.8	5,494.8	3,285.7	653.3	2,965.9	0.43	0.10	-0.41
9,884.0	90.81	334.75	6,768.4	5,493.4	3,371.5	612.6	3,059.7	0.33	-0.09	0.32
9,978.0	90.81	335.37	6,767.1	5,492.1	3,456.7	573.0	3,152.7	0.66	0.00	0.66
10,072.0	90.81	334.67	6,765.7	5,490.7	3,541.9	533.3	3,245.6	0.74	0.00	-0.74
10,167.0	90.81	334.75	6,764.4	5,489.4	3,627.8	492.7	3,339.5	0.08	0.00	0.08
10,262.0	90.90	334.53	6,763.0	5,488.0	3,713.6	452.0	3,433.3	0.25	0.09	-0.23
10,356.0	90.72	334.45	6,761.6	5,486.6	3,798.4	411.5	3,526.1	0.21	-0.19	-0.09
10,450.0	90.99	336.16	6,760.2	5,485.2	3,883.8	372.3	3,619.2	1.84	0.29	1.82
10,545.0	91.12	334.36	6,758.5	5,483.5	3,970.1	332.5	3,713.2	1.90	0.14	-1.89
10,639.0	91.60	336.03	6,756.3	5,481.3	4,055.4	293.1	3,806.1	1.85	0.51	1.78
10,734.0	91.78	334.67	6,753.5	5,478.5	4,141.7	253.5	3,900.1	1.44	0.19	-1.43
10,828.0	91.91	335.86	6,750.4	5,475.4	4,227.0	214.2	3,993.1	1.27	0.14	1.27
10,923.0	91.78	335.15	6,747.4	5,472.4	4,313.4	174.8	4,087.1	0.76	-0.14	-0.75
11,017.0	91.30	335.46	6,744.8	5,469.8	4,398.8	135.6	4,180.1	0.61	-0.51	0.33
11,112.0	91.30	335.15	6,742.7	5,467.7	4,485.1	95.9	4,274.1	0.33	0.00	-0.33
11,206.0	91.30	335.06	6,740.6	5,465.6	4,570.3	56.3	4,367.1	0.10	0.00	-0.10
11,300.0	91.38	335.15	6,738.4	5,463.4	4,655.6	16.8	4,460.0	0.13	0.09	0.10
11,395.0	91.78	334.75	6,735.7	5,460.7	4,741.6	-23.5	4,553.9	0.60	0.42	-0.42
11,489.0	91.91	335.63	6,732.7	5,457.7	4,826.9	-62.9	4,646.9	0.95	0.14	0.94
11,583.0	91.91	334.93	6,729.6	5,454.6	4,912.2	-102.2	4,739.8	0.74	0.00	-0.74
11,678.0	91.69	335.06	6,726.6	5,451.6	4,998.3	-142.3	4,833.7	0.27	-0.23	0.14
11,772.0	91.30	334.53	6,724.1	5,449.1	5,083.3	-182.3	4,926.6	0.70	-0.41	-0.56
11,866.0	91.38	335.94	6,721.9	5,446.9	5,168.6	-221.7	5,019.6	1.50	0.09	1.50
11,961.0	91.38	336.25	6,719.7	5,444.7	5,255.4	-260.2	5,113.8	0.33	0.00	0.33
12,055.0	91.38	334.93	6,717.4	5,442.4	5,341.0	-299.0	5,206.8	1.40	0.00	-1.40
12,149.0	91.30	335.55	6,715.2	5,440.2	5,426.4	-338.4	5,299.8	0.66	-0.09	0.66
12,243.0	91.38	335.15	6,713.0	5,438.0	5,511.8	-377.6	5,392.8	0.43	0.09	-0.43
12,337.0	91.30	335.15	6,710.8	5,435.8	5,597.0	-417.0	5,485.8	0.09	-0.09	0.00
12,431.0	91.38	336.43	6,708.6	5,433.6	5,682.7	-455.6	5,578.9	1.36	0.09	1.36
12,525.0	91.38	335.94	6,706.3	5,431.3	5,768.7	-493.5	5,672.1	0.52	0.00	-0.52
12,619.0	91.38	334.75	6,704.1	5,429.1	5,854.1	-532.7	5,765.1	1.27	0.00	-1.27
12,713.0	91.52	335.37	6,701.7	5,426.7	5,939.3	-572.3	5,858.1	0.68	0.15	0.68

RECORDED
Office of Oil and Gas
SEP 06 2016

Database:	PHX Survey	Local Co-ordinate Reference:	North American Datum 83
Company:	EQT Production Services	TVD Reference:	True Vertical Depth
Project:	Wichita County, TX	MD Reference:	MD Reference
Site:	Wichita County, TX	North Reference:	North Reference
Well:	Wichita County	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wichita County		
Design:	Wichita County		

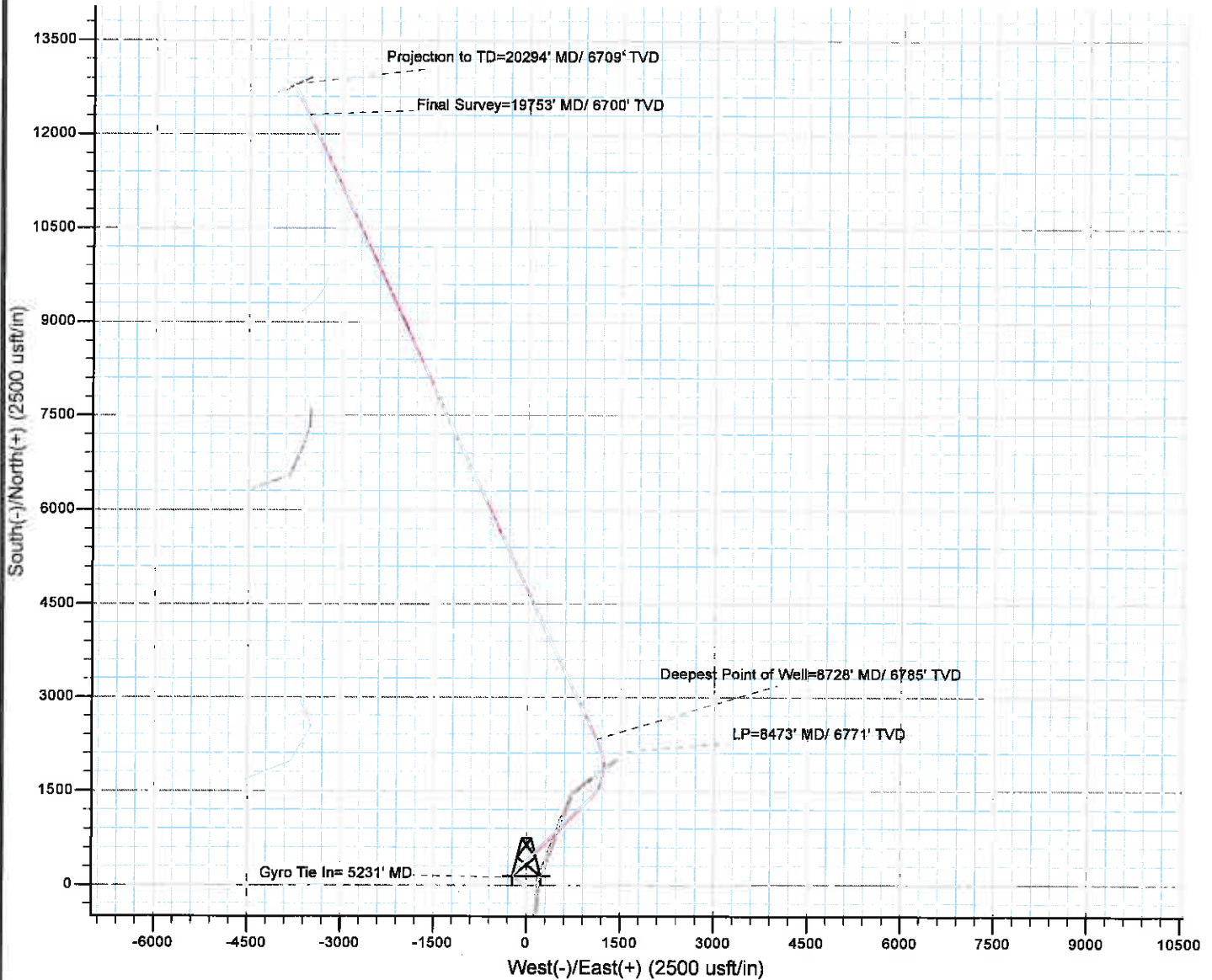
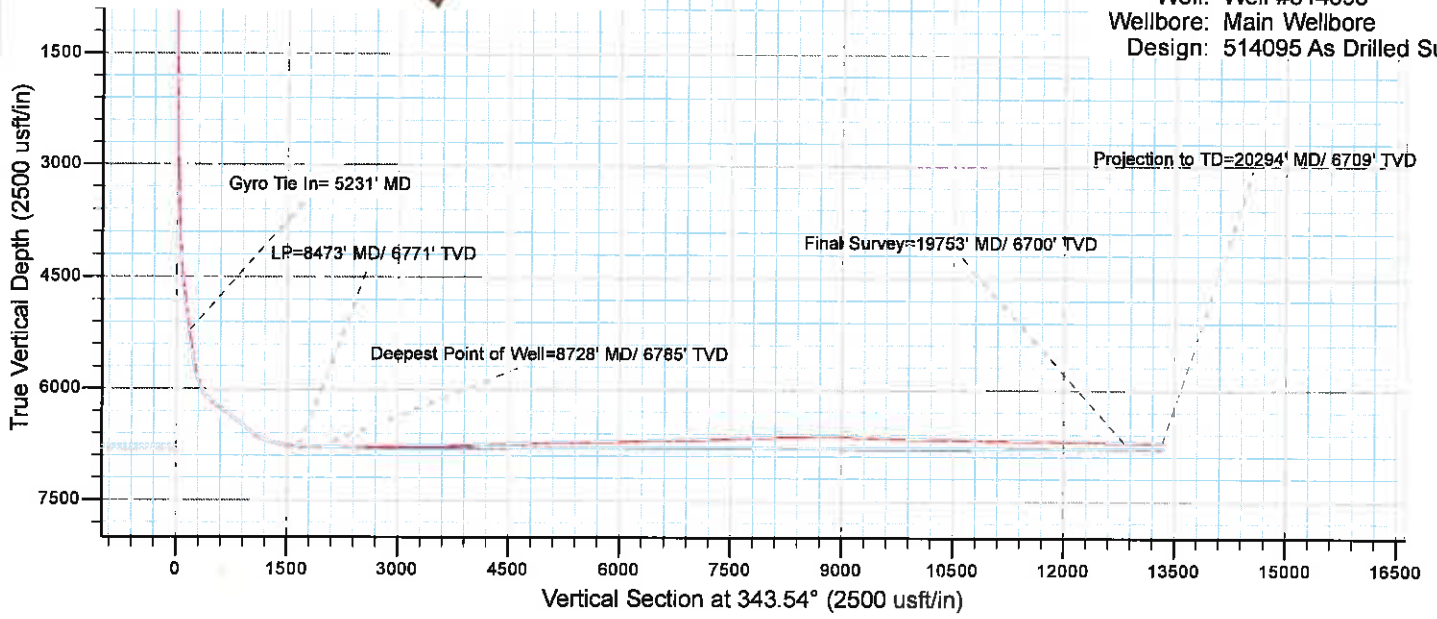
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,808.0	91.38	334.36	6,699.3	5,424.3	6,025.3	-612.7	5,952.0	1.07	-0.15	-1.06
12,902.0	91.30	334.14	6,697.1	5,422.1	6,109.9	-653.5	6,044.7	0.25	-0.09	-0.23
12,997.0	91.38	333.83	6,694.9	5,419.9	6,195.3	-695.2	6,138.4	0.34	0.08	-0.33
13,092.0	91.30	334.75	6,692.6	5,417.6	6,280.9	-736.4	6,232.1	0.97	-0.08	0.97
13,186.0	91.38	333.83	6,690.5	5,415.5	6,365.5	-777.1	6,324.9	0.98	0.09	-0.98
13,280.0	91.30	332.95	6,688.3	5,413.3	6,449.6	-819.2	6,417.4	0.94	-0.09	-0.94
13,375.0	91.20	333.96	6,686.2	5,411.2	6,534.5	-861.7	6,510.9	1.07	-0.11	1.06
13,469.0	91.20	333.83	6,684.2	5,409.2	6,618.9	-903.0	6,603.5	0.14	0.00	-0.14
13,564.0	91.30	334.36	6,682.1	5,407.1	6,704.3	-944.5	6,697.2	0.57	0.11	0.56
13,658.0	91.38	335.77	6,679.9	5,404.9	6,789.6	-984.1	6,790.1	1.50	0.09	1.50
13,752.0	91.52	335.55	6,677.6	5,402.6	6,875.2	-1,022.9	6,883.2	0.28	0.15	-0.23
13,847.0	91.30	335.37	6,675.2	5,400.2	6,961.6	-1,062.3	6,977.3	0.30	-0.23	-0.19
13,942.0	91.52	335.55	6,672.9	5,397.9	7,048.0	-1,101.8	7,071.3	0.30	0.23	0.19
14,036.0	91.78	334.45	6,670.2	5,395.2	7,133.1	-1,141.5	7,164.2	1.20	0.28	-1.17
14,130.0	91.78	335.86	6,667.3	5,392.3	7,218.4	-1,180.9	7,257.2	1.50	0.00	1.50
14,224.0	91.91	335.46	6,664.2	5,389.2	7,304.0	-1,219.7	7,350.2	0.45	0.14	-0.43
14,318.0	90.99	333.74	6,661.9	5,386.9	7,388.9	-1,260.0	7,443.0	2.07	-0.98	-1.83
14,413.0	92.09	333.56	6,659.3	5,384.3	7,474.0	-1,302.1	7,536.6	1.17	1.16	-0.19
14,507.0	92.49	334.53	6,655.5	5,380.5	7,558.4	-1,343.2	7,629.2	1.12	0.43	1.03
14,601.0	92.89	336.03	6,651.1	5,376.1	7,643.7	-1,382.5	7,722.2	1.65	0.43	1.60
14,696.0	92.89	336.34	6,646.3	5,371.3	7,730.5	-1,420.8	7,816.3	0.33	0.00	0.33
14,790.0	92.89	336.56	6,641.6	5,366.6	7,816.6	-1,458.3	7,909.4	0.23	0.00	0.23
14,885.0	92.62	335.06	6,637.0	5,362.0	7,903.1	-1,497.2	8,003.4	1.60	-0.28	-1.58
14,980.0	92.31	336.16	6,633.0	5,358.0	7,989.5	-1,536.4	8,097.4	1.20	-0.33	1.16
15,074.0	91.12	335.21	6,630.1	5,355.1	8,075.2	-1,575.1	8,190.5	1.62	-1.27	-1.01
15,169.0	90.41	335.46	6,628.9	5,353.9	8,161.5	-1,614.7	8,284.5	0.79	-0.75	0.26
15,264.0	90.01	335.06	6,628.5	5,353.5	8,247.8	-1,654.5	8,378.5	0.60	-0.42	-0.42
15,359.0	89.79	335.77	6,628.7	5,353.7	8,334.2	-1,694.0	8,472.6	0.78	-0.23	0.75
15,454.0	89.31	335.46	6,629.4	5,354.4	8,420.7	-1,733.2	8,566.7	0.60	-0.51	-0.33
15,548.0	89.88	335.63	6,630.1	5,355.1	8,506.2	-1,772.1	8,659.8	0.63	0.61	0.18
15,643.0	89.88	336.74	6,630.3	5,355.3	8,593.2	-1,810.5	8,754.0	1.17	0.00	1.17
15,738.0	90.01	336.25	6,630.4	5,355.4	8,680.3	-1,848.4	8,848.3	0.53	0.14	-0.52
15,833.0	90.10	336.43	6,630.3	5,355.3	8,767.3	-1,886.5	8,942.5	0.21	0.09	0.19
15,927.0	90.50	337.13	6,629.8	5,354.8	8,853.7	-1,923.6	9,035.9	0.86	0.43	0.74
16,023.0	88.82	334.75	6,630.4	5,355.4	8,941.3	-1,962.7	9,131.0	3.03	-1.75	-2.48
16,118.0	86.48	334.75	6,634.3	5,359.3	9,027.2	-2,003.2	9,224.8	2.46	-2.46	0.00
16,213.0	87.80	334.45	6,639.0	5,364.0	9,112.9	-2,043.9	9,318.5	1.42	1.39	-0.32
16,307.0	87.98	334.84	6,642.5	5,367.5	9,197.8	-2,084.1	9,411.3	0.46	0.19	0.41
16,402.0	87.40	335.15	6,646.3	5,371.3	9,283.8	-2,124.2	9,505.2	0.69	-0.61	0.33
16,496.0	87.72	335.63	6,650.3	5,375.3	9,369.2	-2,163.3	9,598.2	0.61	0.34	0.51
16,592.0	88.69	335.15	6,653.3	5,378.3	9,456.4	-2,203.3	9,693.2	1.13	1.01	-0.50
16,687.0	89.40	335.55	6,654.9	5,379.9	9,542.7	-2,242.9	9,787.2	0.66	0.75	0.42
16,782.0	89.48	334.35	6,655.8	5,380.8	9,628.8	-2,283.1	9,881.1	1.26	0.06	-1.25

Database:	Oil Field 1 Survey (2015)	Local Co-ordinate Reference:	N/A (Gyro Tie to 5231' MD)
Company:	Oil Field 1 Survey - Missouri	TVD Reference:	6700' MD @ 1275' TVD
Project:	Deer Creek Survey, Oil Field	MD Reference:	6700' MD @ 1275' TVD
Site:	Deer Creek Survey, Missouri	North Reference:	N/A
Well:	Well #114689	Survey Calculation Method:	Minimum Curvature
Wellbore:	Well #114689		
Design:	Survey to 20294' TVD		

Design Annotations:

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,231.1	5,219.5	127.7	-196.4	Gyro Tie In= 5231' MD
19,753.0	6,699.9	12,314.5	-3,552.1	Final Survey=19753' MD/ 6700' TVD
20,294.0	6,709.3	12,800.9	-3,788.8	Projection to TD=20294' MD/ 6709' TVD

Checked By: _____ Approved By: _____ Date: _____



514095 - 47-017-06507-0000- Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	7/25/2015	20,278.43	20,280.00	10	MARCELLUS
1	7/29/2015	20,133.00	20,256.00	42	MARCELLUS
2	7/29/2015	19,953.00	20,075.00	42	MARCELLUS
2.1	7/30/2015	19,980.00	20,032.00	28	MARCELLUS
3	7/30/2015	19,773.00	19,893.00	42	MARCELLUS
4	7/30/2015	19,593.00	19,715.00	42	MARCELLUS
5	7/30/2015	19,413.00	19,535.00	42	MARCELLUS
6	7/31/2015	19,233.00	19,355.00	42	MARCELLUS
7	7/31/2015	19,053.00	19,175.00	42	MARCELLUS
8	7/31/2015	18,873.00	18,995.00	42	MARCELLUS
9	8/1/2015	18,693.00	18,815.00	42	MARCELLUS
10	8/1/2015	18,513.00	18,635.00	42	MARCELLUS
11	8/1/2015	18,333.00	18,455.00	42	MARCELLUS
12	8/2/2015	18,153.00	18,275.00	42	MARCELLUS
13	8/2/2015	17,973.00	18,095.00	42	MARCELLUS
14	8/2/2015	17,793.00	17,915.00	42	MARCELLUS
15	8/2/2015	17,613.00	17,735.00	42	MARCELLUS
16	8/2/2015	17,433.00	17,555.00	42	MARCELLUS
17	8/3/2015	17,253.00	17,375.00	42	MARCELLUS
18	8/3/2015	17,073.00	17,193.00	42	MARCELLUS
19	8/3/2015	16,893.00	17,015.00	42	MARCELLUS
20	8/4/2015	16,713.00	16,835.00	42	MARCELLUS
21	8/4/2015	16,533.00	16,655.00	42	MARCELLUS
22	8/4/2015	16,353.00	16,475.00	42	MARCELLUS
23	8/4/2015	16,173.00	16,295.00	42	MARCELLUS
24	8/5/2015	15,993.00	16,115.00	42	MARCELLUS
25	8/5/2015	15,813.00	15,935.00	42	MARCELLUS
26	8/5/2015	15,633.00	15,755.00	42	MARCELLUS
27	8/5/2015	15,453.00	15,573.00	42	MARCELLUS
28	8/6/2015	15,273.00	15,395.00	42	MARCELLUS
29	8/6/2015	15,093.00	15,215.00	42	MARCELLUS
30	8/6/2015	14,913.00	15,035.00	42	MARCELLUS
31	8/7/2015	14,733.00	14,855.00	42	MARCELLUS
31.1	8/7/2015	14,703.00	14,763.00	28	MARCELLUS
32	8/7/2015	14,523.00	14,645.00	42	MARCELLUS
33	8/7/2015	14,343.00	14,465.00	42	MARCELLUS
34	8/8/2015	14,163.00	14,285.00	42	MARCELLUS
35	8/8/2015	13,983.00	14,105.00	42	MARCELLUS
36	8/8/2015	13,803.00	13,925.00	42	MARCELLUS
37	8/8/2015	13,623.00	13,745.00	42	MARCELLUS
38	8/9/2015	13,443.00	13,565.00	42	MARCELLUS
39	8/9/2015	13,263.00	13,388.00	42	MARCELLUS
40	8/9/2015	13,083.00	13,205.00	42	MARCELLUS
41	8/10/2015	12,903.00	13,025.00	42	MARCELLUS
42	8/10/2015	12,723.00	12,845.00	42	MARCELLUS
43	8/10/2015	12,543.00	12,665.00	42	MARCELLUS
43.1	8/11/2015	12,503.00	12,536.60	28	MARCELLUS
44	8/11/2015	12,363.00	12,470.00	42	MARCELLUS
45	8/11/2015	12,183.00	12,305.00	42	MARCELLUS
46	8/12/2015	12,004.00	12,125.00	42	MARCELLUS
47	8/12/2015	11,823.00	11,943.00	42	MARCELLUS
48	8/13/2015	11,643.00	11,765.00	42	MARCELLUS
49	8/13/2015	11,463.00	11,585.00	42	MARCELLUS
50	8/13/2015	11,283.00	11,405.00	42	MARCELLUS
51	8/14/2015	11,103.00	11,223.00	42	MARCELLUS
52	8/15/2015	10,923.00	11,043.00	42	MARCELLUS
53	8/15/2015	10,743.00	10,863.00	42	MARCELLUS
54	8/15/2015	10,563.00	10,683.00	42	MARCELLUS
55	8/15/2015	10,383.00	10,505.00	42	MARCELLUS
56	8/15/2015	10,203.00	10,327.00	42	MARCELLUS
57	8/16/2015	10,023.00	10,145.00	42	MARCELLUS
58	8/16/2015	9,843.00	9,965.00	42	MARCELLUS
59	8/16/2015	9,663.00	9,783.00	42	MARCELLUS
60	8/16/2015	9,483.00	9,603.00	42	MARCELLUS
61	8/16/2015	9,303.00	9,425.00	42	MARCELLUS
61.01	8/17/2015	9,273.00	9,335.00	42	MARCELLUS
62	8/17/2015	9,123.00	9,245.00	42	MARCELLUS
63	8/17/2015	8,943.00	9,065.00	42	MARCELLUS
64	8/17/2015	8,763.00	8,883.00	42	MARCELLUS
65	8/17/2015	8,583.00	8,703.00	42	MARCELLUS
65.1	8/18/2015	8,613.00	8,673.00	42	MARCELLUS
66	8/18/2015	8,403.00	8,523.00	42	MARCELLUS
67	8/19/2015	8,223.00	8,345.00	42	MARCELLUS

11/25/2016

514095 - 47-017-06507-0000- 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)
1	7/29/2015	76.4	8,632.00	8,913.00	4,258.00	300,940	10303	0
2	7/29/2015	0	0.00	0.00	0.00	2,047	4185	0
2.1	7/30/2015	0	0.00	0.00	0.00	0	772	0
3	7/30/2015	80.7	8,249.00	8,804.00	3,658.00	500,422	12058	0
4	7/31/2015	75.6	8,231.00	8,977.00	4,566.00	298,542	8546	0
5	7/31/2015	80.5	8,164.00	8,359.00	3,893.00	303,298	8306	0
6	7/31/2015	83	8,308.00	8,734.00	4,428.00	303,113	7872	0
7	7/31/2015	84.6	8,226.00	9,856.00	3,980.00	300,641	7502	0
8 01	8/1/2015	0	0.00	0.00	0.00	0	3625	0
8	8/1/2015	84.7	8,299.00	8,544.00	4,488.00	301,822	7885	0
9	8/1/2015	84.5	8,277.00	8,836.00	4,279.00	300,507	7771	0
10	8/1/2015	87.5	8,363.00	8,768.00	3,871.00	299,217	7954	0
11	8/2/2015	91.6	8,316.00	8,619.00	4,743.00	299,496	8433	0
12	8/2/2015	88.5	8,025.00	8,563.00	4,990.00	300,737	7819	0
13	8/2/2015	90.7	8,281.00	8,988.00	4,932.00	360,291	9026	0
14	8/2/2015	91.4	8,270.00	8,931.00	5,137.00	357,692	8680	0
15	8/3/2015	88.1	8,270.00	8,641.00	4,176.00	359,366	9008	0
16	8/3/2015	88.3	8,087.00	8,397.00	4,423.00	358,796	8998	0
17	8/3/2015	93.2	8,416.00	8,747.00	5,210.00	360,612	8767	0
18	8/3/2015	91.5	8,237.00	8,609.00	4,501.00	358,086	8722	0
19	8/4/2015	88.9	8,335.00	8,652.00	4,562.00	358,483	8895	0
20	8/4/2015	92.10	8,402.00	8,655.00	5,073	361,159	8,488	0
21	8/4/2015	88.30	8,252.00	8,923.00	5,208	360,002	8,751	0
22	8/5/2015	93.70	8,465.00	8,914.00	4,678	359,769	8,971	0
23	8/5/2015	92.90	8,429.00	8,774.00	4,628	360,231	8,478	0
24	8/5/2015	95.30	8,748.00	9,354.00	4,131	350,268	8,618	0
25	8/5/2015	95.40	8,705.00	9,143.00	3,821	357,433	8,541	0
26	8/5/2015	99.30	8,509.00	8,813.00	3,793	356,280	8,745	0
27	8/5/2015	83.6	8,571.00	9,681.00	7,078.00	359,337	8821	0
28	8/6/2015	90.5	8,719.00	9,228.00	5,097.00	359,111	8967	0
29	8/6/2015	94.9	8,595.00	8,876.00	4,510.00	352,206	8780	0
30	8/7/2015	95.3	8,476.00	8,838.00	4,438.00	360,867	8826	0
31	8/7/2015	91.40	8,635.00	9,121.00	5,028	189,797	7,413	0
31.1	8/7/2015	0.00	0.00	0.00	0	179,877	8,701	0
32	8/7/2015	100.80	8,317.00	8,548.00	5,085	359,060	8,714	0
33	8/8/2015	98.60	8,465.00	8,782.00	5,325	358,619	8,636	0
34	8/8/2015	100.90	8,347.00	9,076.00	5,269	348,307	8,222	0
35	8/8/2015	100.50	8,118.00	9,237.00	4,793	358,331	8,423	0
36	8/8/2015	97.60	8,436.00	9,185.00	4,881	340,302	8,467	0
37	8/8/2015	99.30	8,195.00	8,502.00	4,821	360,376	9,259	0
38	8/9/2015	91.80	8,643.00	9,160.00	5,045	320,152	7,788	0
39	8/9/2015	97.10	8,201.00	8,711.00	4,166	358,602	8,710	0
40	8/10/2015	98.10	8,216.00	8,583.00	4,565	361,813	8,706	0
41	8/10/2015	100.50	8,322.00	8,868.00	4,522	359,332	8,816	0
42	8/10/2015	92.10	8,356.00	9,229.00	5,420	341,904	10,612	0
43	8/10/2015	87.70	8,535.00	9,160.00	5,097	83,960	6,724	0
43.1	8/11/2015	0.00	0.00	0.00	0	109,274	5,034	0
44	8/11/2015	96.30	8,578.00	9,232.00	4,570	361,696	9,555	0
45	8/11/2015	89.10	8,176.00	8,858.00	5,351	364,751	8,741	0
46	8/12/2015	91.80	8,106.00	9,263.00	5,008	359,420	9,442	0
47	8/12/2015	91.40	8,583.00	9,273.00	4,984	344,646	8,590	0
48	8/13/2015	91.30	8,235.00	9,022.00	5,040	353,228	8,619	0
49	8/13/2015	90.80	8,212.00	9,545.00	4,887	312,803	8,505	0
50	8/13/2015	89.90	8,142.00	9,703.00	6,097	322,277	9,854	0
51	8/15/2015	91.40	8,089.00	8,731.00	5,243	346,546	8,163	0
52	8/15/2015	97.30	8,243.00	8,496.00	4,968	358,985	8,466	0
53	8/15/2015	95.80	8,315.00	8,644.00	4,803	358,090	8,436	0
54	8/15/2015	95.50	8,316.00	8,750.00	4,579	361,895	8,471	0
55	8/15/2015	93.70	8,023.00	9,039.00	4,827	295,787	9,255	0
56	8/16/2015	99.70	8,212.00	8,380.00	4,868	361,067	8,381	0
57	8/16/2015	99.50	8,180.00	8,658.00	4,679	361,435	8,563	0
58	8/16/2015	96.90	8,219.00	8,882.00	5,172	358,411	8,493	0
59	8/16/2015	97.00	8,164.00	9,018.00	5,206	335,297	7,837	0
60	8/16/2015	96.40	7,955.00	8,744.00	4,971	360,363	8,131	0
61	8/16/2015	0.00	0.00	0	0	501,565	14,265	0
61 01	8/17/2015	0.00	0.00	0.00	0	0	200	0
62	8/17/2015	99.50	8,208.00	9,205.00	4,609	0	0	0
63	8/17/2015	94.90	8,130.00	8,446.00	4,284	360,576	7,840	0
64	8/17/2015	98.60	7,863.00	8,679.00	4,778	360,839	8,270	0
65	8/17/2015	95.10	7,723.00	9,900.00	5,044	361,954	1,346	0
65 01	8/17/2015	0.00	0.00	0.00	0	0	1,331	0
65.1	8/18/2015	0.00	0.00	0.00	0	0	8,609	0
66 01	8/18/2015	0.00	0.00	0.00	0	0	2,857	0
66	8/19/2015	99.30	7,516.00	7,892.00	5,778	364,729	8,153	0
67	8/19/2015	100.30	7,277.00	8,692.00	5,023	359,070	8,019	0

10/28/2016

Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date	7/25/2015
Job End Date	8/19/2015
State	West Virginia
County	Doddridge
API Number	47-017-06507-00-00
Operator Name	EQT Production
Well Name and Number	514095
Longitude	-80.75208900
Latitude	39.20783500
Datum	NAD83
Federal/Tribal Well	NC
True Vertical Depth	6,766
Total Base Water Volume (gal)	24,936,660
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	FTS International	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.85999	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	9.76598	None
MC MX 437-5	Multi-Chem Group LLC	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05831	None
FRW-930	FTS International	Friction reducer	Hydrotreated light distillate	84742-47-8	30.00000	0.02421	None
			Alkyl Alcohol	Proprietary	10.00000	0.00807	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00404	None
Hydrochloric Acid (1.5%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02516	None
CS-500-SI	FTS International	Scale inhibitor	Ethylene glycol	107-21-1	10.00000	0.00254	None
HVG-1	FTS International	Water Gelling agent	Petroleum distillate	84742-47-8	55.00000	0.00076	None
			Guar gum	9000-30-0	50.00000	0.00069	None
			Clay	14808-60-7	2.00000	0.00003	None

FE-100L	FTS International	Iron control	Surfactant	68439-51-0	2.00000	0.00000	None
CI-150	FTS International	Acid Corrosion Inhibitor	Citric acid	77-92-9	55.00000	0.00056	None
			Ethylene glycol	107-21-1	39.00000	0.00000	None
			Organic amine resin salt	Proprietary	30.00000	0.00000	None
			sopropanol	67-63-0	30.00000	0.00000	None
			Dimethylformamide	68-12-2	10.00000	0.00000	None
			Aromatic aldehyde	Proprietary	10.00000	0.00000	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00000	None
NE-100	FTS international	Non-emulsifier					
			2-Butoxyethanol	111-76-2	10.00000	0.00000	None
			2-Propanol	67-63-0	10.00000	0.00000	None
APB-1	FTS International	Gel Breaker	Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00000	None
			Ammonium persulfate	7727-54-0	95.00000	0.00000	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)



June 8, 2016

Mr. Gene Smith
West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304

Re: Modification of 47-017-06507

Dear Mr. Smith,

Please accept the attached updates for the above referenced permit. Upon inspection of our as-drilled plat, we noted the curve geometry crossed into an additional tract, for which EQT had acquired a subsurface agreement. Enclosed is an updated WW-6A1, WW-6B, mylar plat and rec plan reflecting corrections to update the permit file to be consistent with the as-drilled well bore.

If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Vicki Roark'.

Vicki Roark
Permitting Supervisor-WV

Enc.

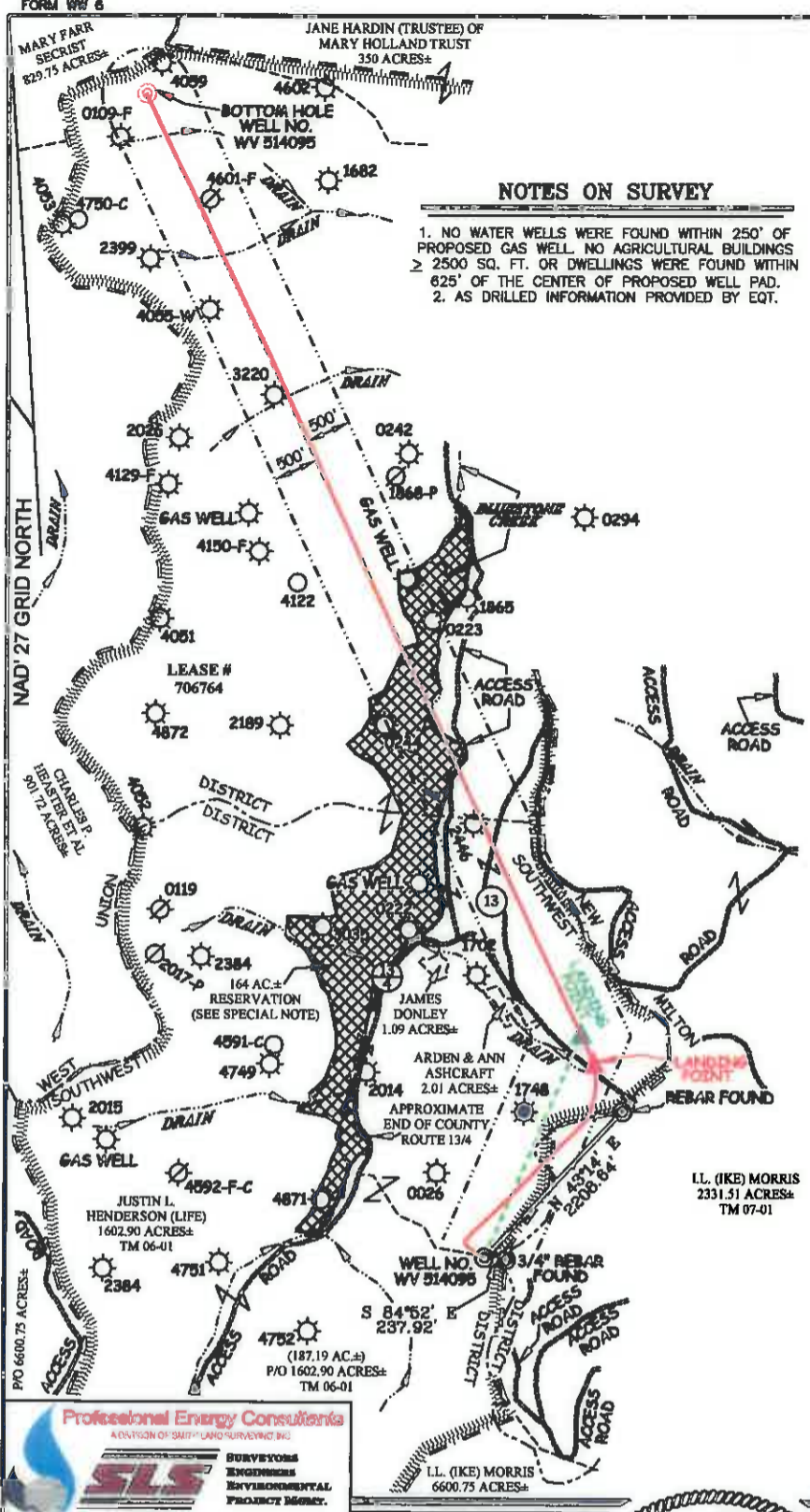
**EQT PRODUCTION COMPANY
LEEMAN MAXWELL LEASE
2,164 ACRES±
WELL NO. WV 514095
(OXF159 H6)
AS DRILLED COORDINATES**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 260,320.2	E. 1,642,371.6
NAD'27 GEO.	LAT-(N) 39.207835	LONG-(W) 80.762089
NAD'83 UTM (M)	N. 4,339,877.2	E. 520,555.7
<u>LANDING POINT</u>		
NAD'27 S.P.C.(FT)	N. 262,410.6	E. 1,643,572.5
NAD'27 GEO.	LAT-(N) 39.213620	LONG-(W) 80.757955
NAD'83 UTM (M)	N. 4,340,520.1	E. 520,910.9
<u>BOTTOM HOLE</u>		
NAD'27 S.P.C.(FT)	N. 273,120.7	E. 1,638,582.9
NAD'27 GEO.	LAT-(N) 39.242830	LONG-(W) 80.776100
NAD'83 UTM (M)	N. 4,343,757.5	E. 519,336.4

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.



SPECIAL NOTE

THERE IS NO SURVEY OR LEGAL DESCRIPTION DEFINING THE ACTUAL LOCATION OF THE 164 ACRE MEADOWLAND RESERVATION. DUE TO THE PASSAGE OF TIME SINCE THE RESERVATION WAS CREATED IT APPEARS THERE IS NO LIVING PERSON(S) WITH KNOWLEDGE OF ITS TRUE LOCATION. LOCATION OF RESERVATION SHOWN HEREON COMPILED FROM: "A" A MAP TITLED "CARNAGIE NATURAL GAS CO. LEEMAN MAXWELL LEASES, DODDRIDGE COUNTY, WEST VA" "B" PERIMETER OF RESERVATION AS SHOWN BY GLENN TRADER "CARETAKER OF HENDERSONS" PORTION OF MAXWELL LANDS" WHICH WAS LOCATED USING A MAPPING GRADE GPS RECEIVER "C" DETAILS SHOWN ON 1939 USDA AERIAL PHOTOGRAPHY OBTAINED FROM THE WV GEOLOGICAL SURVEY. SLS RECOMMENDS THAT PROPER LEGAL STEPS BE TAKEN TO CONFIRM CONCURRENCE OF ALL APPROPRIATE PARTIES RELATIVE TO THE RESERVATION AS SHOWN HEREON. THIS PLAT IS SUBJECT TO ANY ADDITIONAL INFORMATION (UNDISCOVERED TO DATE) WHICH MAY CHANGE THE LOCATION AND/OR CONFIGURATION OF THE RESERVATION AS SHOWN HEREON.

LEGEND

AS DRILLED	—
PROPOSED	---

SUBSURFACE AGREEMENT		
LL. (IKE) MORRIS	2331.51 AC.±	TM 7-1

Professional Energy Consultants
A DIVISION OF SURVEY AND LAND SURVEYING INC.
SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.
(304) 482-6804 WWW.SLSURVEYS.COM

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 06, 20 14
REVISED 03/24/14, 04/01/15, 05/26/16 & 06/03/16
OPERATORS WELL NO. WV 514095
API WELL NO. 47 - 017 - 06507
STATE COUNTY PERMIT



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. Earl N. Thompson
2288

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7889AD514095R2
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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: PAD ELEVATION 1,252.2' WATERSHED BLUESTONE CREEK
DISTRICT SOUTHWEST COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'
SURFACE OWNER JUSTIN L. HENDERSON (LIFE) ACREAGE 187.19 OF 1,602.90±
ROYALTY OWNER LEEMAN MAXWELL HRS ACREAGE 2,164±
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 6,663'

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

COUNTY NAME PERMIT