

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513757

API: 47 - 085 - 10133

Submission: Initial Amended

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

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AUG 25 2016
NY Department of
Environmental Protection

APPROVED

NAME: *Michael Doff*

DATE: *12-21-2016*

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

API 47-085-10133 County RITCHIE District UNION
Quad OXFORD 7.5' Pad Name OXF163 Field/Pool Name _____
Farm name HAROLD K. PIERCE Well Number 513757
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 4,331,889.2 Easting 513,602.8
Landing Point of Curve Northing 4,331,706.4 Easting 513,425.5
Bottom Hole Northing 4,329,583.1 Easting 514,185.0

Elevation (ft) 1159 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

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

Mud Type(s) and Additive(s)
Water base Mud 12.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 9/22/2014 Date drilling commenced 12/03/2014 Date drilling ceased 6/13/2015
Date completion activities began 8/26/2015 Date completion activities ceased 9/10/2015
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 176',453',517' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1156' Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

API 47-085 - 10133 Farm name HAROLD K. PIERCE Well number 513757

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below ^o
Conductor	24"	20"	40'	NEW	A-500 78.7LB/FT	NONE	Y
Surface	17.5"	13.375"	1054'	NEW	J-55 54.5LB/FT	464'	Y
Coal							
Intermediate 1	12.375"	9.625"	3026'	NEW	A-500 40LB/FT	2093'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	14,597'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details N/A

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	890	15.6	1.18	1050.2	0	8
Coal							
Intermediate 1	CLASS A	1120	15.6	1.18	1321.6	0	8
Intermediate 2							
Intermediate 3							
Production	Class A / Class H	600/980	14.2 / 15.2	1.26 / 1.97	2686.6	3,950' MD	72
Tubing							

Drillers TD (ft) 14,606' MD Loggers TD (ft) N/A

Deepest formation penetrated Marcellus Plug back to (ft) 2489'

Plug back procedure Set cast Weatherford cast iron bridge plug at 2508'. Then set a Weatherford whipstock at 2489' and milled out of casing.

Kick off depth (ft) 5,312' MD

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

CONDUCTOR- NONE

SURFACE- JOINTS: 1,11, 21

INTERMEDIATE- RAN AT LEAST EVERY 500' FEET

PRODUCTION- 251 Composite Centralizers. One on every joint from TD to 4,000 MD

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WV Department of
Environmental Protection

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

API 47- 085 - 10133 Farm name HAROLD K. PIERCE Well number 513757

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

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Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus	6,533	TVD	6,961 MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1,688 psi Bottom Hole N/A psi DURATION OF TEST 139.00 hrs

OPEN FLOW Gas 10,429 mcfpd Oil N/A bpd NGL 485 bpd Water 787 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		

Please insert additional pages as applicable.

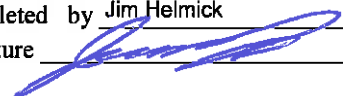
Drilling Contractor KEANE & SONS DRILLING (RIG 2143)
Address 14235 OLD ROUTE 6 City MANSFIELD State PA Zip 16933

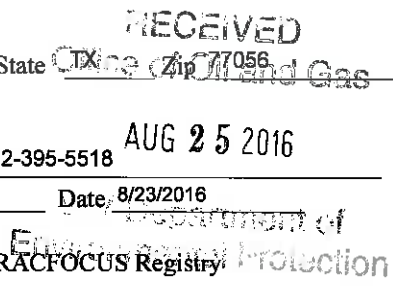
Logging Company Phoenix Technology Services
Address 1805 Brittmoore Road City HOUSTON State TX Zip 77043

Cementing Company ALLIED CEMENTING SERVICES
Address 333 Technology Drive, Suite 290 City Canonsburg State PA Zip 15317

Stimulating Company Keane
Address 2121 Sage Road City Houston State TX Zip 77056

Please insert additional pages as applicable.

Completed by Jim Helmick Telephone 412-395-5518
Signature  Title VP Completions Date 8/23/2016



API 47- 085 - 10133 Farm name HAROLD K. PIERCE Well number 513757

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

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

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company C&J Energy Services
Address 1650 Hackers Creek Rd City Jane Lew State WV Zip 26378

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API 47-085-10133

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	0	0	520	520
SAND/SHALE	520	520	1,774	1,774
MAXTON	1,774	1,774	1,955	1,955
BIG LIME	1,955	1,955	2,244	2,244
WEIR	2,244	2,244	2,472	2,472
GANTZ	2,472	2,472	2,567	2,567
50F	2,567	2,567	2,653	2,652
30F	2,653	2,652	2,715	2,713
GORDON	2,715	2,713	2,803	2,801
4TH	2,803	2,801	2,959	2,955
BAYARD	2,959	2,955	3,299	3,293
WARREN	3,299	3,293	3,352	3,346
SPEECHLEY	3,352	3,346	3,846	3,840
BALLTOWN A	3,846	3,840	4,430	4,424
RILEY	4,430	4,424	4,767	4,761
BENSON	4,767	4,761	5,100	5,093
ALEXANDER	5,100	5,093	6,407	6,216
SONYEA	6,407	6,216	6,587	6,349
MIDDLESEX	6,587	6,349	6,673	6,403
GENESSEE	6,673	6,403	6,790	6,469
GENESEO	6,790	6,469	6,894	6,513
TULLY	6,894	6,513	6,926	6,523
HAMILTON	6,926	6,523	6,961	6,533
MARCELLUS	6,961	6,533	14,606	6,565

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API 47-085-10133

PHOENIX
TECHNOLOGY SERVICES



EQT Production - Marcellus

Ritchie County, WV
Ritchie County 513757
Well #513757

513757 ST01

Design: 513757 ST01 As Drilled

Standard Survey Report

17 June, 2015





Database:	513757 PHX MWD (513757 ST01)	Local Co-ordinate Reference:	US State Plane 1927
Company:	EQT Production Services	TVD Reference:	US State Plane 1927
Project:	PHX MWD (513757 ST01)	MD Reference:	US State Plane 1927
Site:	PHX MWD (513757 ST01)	North Reference:	US State Plane 1927
Well:	513757 PHX MWD	Survey Calculation Method:	Minimum Curvature
Wellbore:	513757 PHX MWD		
Design:	513757 PHX MWD		

Project: 513757 PHX MWD

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: 513757 PHX MWD

Site Position: **Northing:** 234,487.90 usft **Latitude:** 39.14
From: Map **Easting:** 1,619,117.60 usft **Longitude:** -80.84
Position Uncertainty: 0.0 usft **Slot Radius:** 13-3/16" **Grid Convergence:** -0.86°

Well: 513757 PHX MWD

Well Position: **+N-S:** 0.0 usft **Northing:** 234,487.90 usft **Latitude:** 39° 8' 9.570 N
+E-W: 0.0 usft **Easting:** 1,619,117.60 usft **Longitude:** 80° 50' 34.007 W
Position Uncertainty: 0.0 usft **Wellhead Elevation:** usft **Ground Level:** 1,159.0 usft

Wellbore: 513757 PHX MWD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/18/2015	-7.72	66.56	52,072

Design: 513757 PHX MWD

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	166.90

Survey Program: Date 6/17/2015

From (')	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,028.0	Gyrodata Gyro KOP (513757 ST01)	GYD_DP_MS	Gyrodata gyro-compassing and drop
0.00	14,606.0	513757 PHX MWD (513757 ST01)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM

Survey: 513757 PHX MWD

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)
3.0	0.00	0.00	3.0	-1,172.0	0.0	0.0	0.0	0.00	0.00	0.00
103.0	0.22	73.11	103.0	-1,072.0	0.1	0.2	0.0	0.00	0.00	0.00
203.0	0.30	72.73	203.0	-972.0	0.2	0.6	0.0	0.08	0.08	0.38
303.0	0.37	75.51	303.0	-872.0	0.3	1.2	-0.1	-0.07	-0.07	2.78
403.0	0.36	76.77	403.0	-772.0	0.5	1.8	-0.1	-0.01	-0.01	1.66
503.0	0.30	97.15	503.0	-672.0	0.5	2.4	0.0	0.14	0.06	20.38
603.0	0.29	100.32	603.0	-572.0	0.5	2.9	0.2	0.02	-0.01	3.17
703.0	0.18	81.81	703.0	-472.0	0.4	3.3	0.3	0.13	0.01	18.51

ENVIRONMENTAL PROTECTION
 DATE: 6/17/2015
 TIME: 2:19:12 PM
 BY: [Signature]
 Environmental Protection

Database:	PHX Survey Data	Local Co-ordinate Reference:	WGS 84 (Datum: USNG) 21111
Company:	EQT Production & Marketing	TVD Reference:	PHX 11.0 1100usft
Project:	PHX County, WV	MD Reference:	00000000 1015 0000
Site:	PHX County, WV	North Reference:	PHX
Well:	WV #00000000	Survey Calculation Method:	Minimum Curvature
Wellbore:	PHX 11.0		
Design:	PHX 11.0		

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)
803.0	0.16	71.41	803.0	-372.0	0.5	3.6	0.3	0.04	-0.02	-10.40
903.0	0.17	68.11	903.0	-272.0	0.6	3.8	0.3	0.01	0.01	-3.30
1,003.0	0.18	70.14	1,003.0	-172.0	0.7	4.1	0.2	0.01	0.01	2.03
1,103.0	0.29	112.48	1,103.0	-72.0	0.7	4.5	0.4	0.20	0.11	42.34
1,203.0	0.44	134.40	1,203.0	28.0	0.3	5.0	0.8	0.20	0.15	21.92
1,303.0	0.48	130.85	1,303.0	128.0	-0.2	5.6	1.5	0.05	0.04	-3.55
1,403.0	0.46	133.16	1,403.0	228.0	-0.8	6.2	2.2	0.03	-0.02	2.31
1,503.0	0.47	132.61	1,503.0	328.0	-1.3	6.8	2.8	0.01	0.01	-0.55
1,603.0	0.49	132.13	1,603.0	428.0	-1.9	7.4	3.5	0.02	0.02	-0.48
1,703.0	0.83	129.11	1,703.0	528.0	-2.6	8.3	4.5	0.34	0.34	-3.02
1,803.0	0.88	130.39	1,803.0	628.0	-3.6	9.5	5.6	0.05	0.05	1.28
1,903.0	0.92	130.42	1,902.9	727.9	-4.6	10.6	6.9	0.04	0.04	0.03
2,003.0	0.75	138.17	2,002.9	827.9	-5.6	11.7	8.1	0.20	-0.17	7.75
2,103.0	0.64	142.61	2,102.9	927.9	-6.6	12.5	9.2	0.12	-0.11	4.44
2,203.0	0.63	147.51	2,202.9	1,027.9	-7.5	13.1	10.2	0.06	-0.01	4.90
2,303.0	0.54	156.93	2,302.9	1,127.9	-8.4	13.6	11.2	0.13	-0.09	9.42
2,403.0	0.55	157.38	2,402.9	1,227.9	-9.2	14.0	12.2	0.01	0.01	0.45
2,503.0	2.98	129.99	2,502.9	1,327.9	-11.4	16.1	14.7	2.50	2.43	-27.39
2,603.0	7.74	126.58	2,602.4	1,427.4	-17.0	23.5	21.9	4.77	4.76	-3.41
2,703.0	7.87	101.08	2,701.5	1,526.5	-22.4	35.7	29.9	3.44	0.13	-25.50
2,803.0	7.89	88.72	2,800.6	1,625.6	-23.5	49.2	34.1	1.69	0.02	-12.36
2,903.0	7.39	98.02	2,899.7	1,724.7	-24.3	62.5	37.8	1.33	-0.50	9.30
3,003.0	6.81	102.58	2,998.9	1,823.9	-26.5	74.6	42.7	0.81	-0.58	4.56
3,103.0	6.68	92.71	3,098.2	1,923.2	-28.0	86.2	46.8	1.17	-0.13	-9.87
3,203.0	7.46	95.69	3,197.5	2,022.5	-29.0	98.5	50.5	0.86	0.78	2.98
3,303.0	5.00	104.54	3,296.9	2,121.9	-30.7	109.2	54.6	2.63	-2.46	8.85
3,403.0	2.54	121.54	3,396.6	2,221.6	-32.9	115.3	58.2	2.68	-2.46	17.00
3,503.0	0.05	36.93	3,496.6	2,321.6	-34.1	117.2	59.7	2.54	-2.49	-84.61
3,603.0	0.07	54.18	3,596.6	2,421.6	-34.0	117.3	59.7	0.03	0.02	17.25
3,703.0	0.06	49.31	3,696.6	2,521.6	-33.9	117.4	59.6	0.01	-0.01	-4.87
3,803.0	0.07	95.96	3,796.6	2,621.6	-33.9	117.5	59.6	0.05	0.01	45.68
3,903.0	0.09	293.43	3,896.6	2,721.6	-33.9	117.5	59.6	0.16	0.02	162.55
4,003.0	0.21	311.79	3,996.6	2,821.6	-33.7	117.2	59.4	0.13	0.12	18.36
4,103.0	0.38	316.50	4,096.6	2,921.6	-33.4	116.9	59.0	0.17	0.16	18.36
4,203.0	0.54	327.37	4,196.6	3,021.6	-32.7	116.4	58.3	0.18	0.16	10.87
4,303.0	0.58	329.27	4,296.6	3,121.6	-31.9	115.9	57.3	0.04	0.04	1.90
4,403.0	0.70	324.15	4,396.6	3,221.6	-31.0	115.3	56.3	0.19	0.12	18.36
4,503.0	0.85	323.61	4,496.6	3,321.6	-29.9	114.5	55.0	0.15	0.15	-0.54
4,603.0	1.13	324.74	4,596.6	3,421.6	-28.5	113.5	53.4	0.28	0.28	1.13
4,703.0	1.42	325.23	4,696.5	3,521.5	-26.6	112.2	51.4	0.29	0.29	0.49
4,803.0	1.57	324.73	4,796.5	3,621.5	-24.5	110.7	49.0	0.15	0.15	-0.50
4,903.0	1.76	325.43	4,896.5	3,721.5	-22.1	109.0	46.3	0.19	0.19	0.70

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Database:	1017 Survey - Eagle Pass No. 1	Local Co-ordinate Reference:	1017 (Eagle County, CO) (NAD 83)
Company:	PHX Technology Services (Missouri)	TVD Reference:	1017 (Eagle County, CO) (NAD 83)
Project:	PHX Eagle Pass No. 1	MD Reference:	1017 (Eagle County, CO) (NAD 83)
Site:	1017 Eagle Pass No. 1	North Reference:	1017 (Eagle County, CO) (NAD 83)
Well:	1017 (Eagle Pass No. 1)	Survey Calculation Method:	Minimum Curvature
Wellbore:	1017 (Eagle Pass No. 1)		
Design:	1017 (Eagle Pass No. 1)		

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)
5,003.0	1.54	330.29	4,996.4	3,821.4	-19.7	107.5	43.5	0.26	-0.22	4.86
5,028.0	1.67	328.50	5,021.4	3,846.4	-19.1	107.1	42.9	0.56	0.52	-7.16
5,061.0	1.70	333.00	5,054.4	3,879.4	-18.2	106.7	41.9	0.41	0.09	13.64
5,123.0	1.80	328.10	5,116.4	3,941.4	-16.6	105.7	40.1	0.29	0.16	-7.90
5,186.0	1.80	327.50	5,179.3	4,004.3	-15.0	104.7	38.4	0.32	-0.32	-0.95
5,249.0	1.80	326.90	5,242.3	4,067.3	-13.4	103.7	36.6	0.32	0.32	-0.95
5,280.0	1.50	328.30	5,273.3	4,098.3	-12.7	103.2	35.8	0.98	-0.97	4.52
5,312.0	1.80	318.50	5,305.3	4,130.3	-12.0	102.7	34.9	1.28	0.94	-30.63
5,343.0	4.20	297.00	5,336.2	4,161.2	-11.1	101.4	33.8	8.42	7.74	-69.35
5,375.0	7.40	292.70	5,368.1	4,193.1	-9.7	98.4	31.8	10.08	10.00	-13.44
5,407.0	10.50	290.40	5,399.7	4,224.7	-7.9	93.8	29.0	9.75	9.69	-7.19
5,438.0	12.70	288.70	5,430.0	4,255.0	-5.9	87.9	25.6	7.18	7.10	-5.48
5,469.0	14.10	288.20	5,460.2	4,285.2	-3.6	81.1	21.9	4.53	4.52	-1.61
5,501.0	16.50	285.50	5,491.1	4,316.1	-1.2	73.0	17.7	7.82	7.50	-8.44
5,532.0	19.20	284.30	5,520.8	4,345.6	1.3	63.8	13.2	8.79	8.71	-3.87
5,564.0	22.00	283.60	5,550.5	4,375.5	4.0	52.9	8.1	8.78	8.75	-2.19
5,595.0	24.80	283.90	5,579.0	4,404.0	6.9	40.9	2.5	9.04	9.03	0.97
5,626.0	27.70	283.80	5,606.8	4,431.8	10.2	27.6	-3.7	9.36	9.35	-0.32
5,658.0	30.70	284.30	5,634.7	4,459.7	14.0	12.5	-10.8	9.41	9.38	1.56
5,690.0	33.50	284.80	5,661.8	4,486.8	18.3	-4.0	-18.7	8.79	8.75	1.56
5,721.0	36.50	285.80	5,687.2	4,512.2	22.9	-21.1	-27.1	9.79	9.68	2.58
5,753.0	39.40	285.40	5,712.4	4,537.4	28.2	-40.1	-36.5	9.07	9.06	-0.63
5,784.0	42.60	285.30	5,735.8	4,560.8	33.6	-59.7	-46.2	10.32	10.32	-0.32
5,816.0	43.60	285.30	5,759.2	4,584.2	39.3	-80.8	-56.6	3.13	3.13	0.00
5,878.0	43.50	287.00	5,804.1	4,629.1	51.2	-121.8	-77.5	1.90	-0.16	2.74
5,941.0	43.30	287.10	5,849.9	4,674.9	63.9	-163.2	-99.2	0.34	-0.32	0.16
6,004.0	43.40	286.00	5,895.7	4,720.7	76.2	-204.7	-120.6	1.21	0.16	-1.75
6,067.0	42.10	283.40	5,942.0	4,767.0	87.1	-246.0	-140.6	3.48	-2.06	-4.13
6,099.0	40.00	278.30	5,966.1	4,791.1	91.1	-266.6	-149.1	12.35	-6.56	-15.94
6,130.0	38.10	272.50	5,990.2	4,815.2	92.9	-286.1	-155.4	13.28	-6.13	-18.71
6,161.0	36.20	267.10	6,014.9	4,839.9	92.9	-304.8	-159.5	12.17	-6.13	-17.42
6,193.0	34.90	262.70	6,040.9	4,865.9	91.2	-323.3	-162.1	8.97	-4.06	-13.75
6,224.0	33.90	259.00	6,066.5	4,891.5	88.5	-340.6	-163.4	7.47	-3.23	-11.94
6,256.0	33.70	253.50	6,093.1	4,918.1	84.2	-357.8	-163.2	9.58	-0.63	-17.19
6,287.0	35.00	249.30	6,118.7	4,943.7	78.6	-374.4	-161.5	8.72	4.19	-13.55
6,319.0	35.90	245.50	6,144.8	4,969.8	71.5	-391.5	-158.4	7.44	2.81	-11.89
6,350.0	36.00	240.00	6,169.9	4,994.9	63.2	-407.7	-154.0	10.42	0.32	-17.74
6,381.0	36.30	235.00	6,194.9	5,019.9	53.4	-423.1	-147.9	9.56	0.97	-16.13
6,413.0	37.60	230.40	6,220.5	5,045.5	41.7	-438.4	-140.0	9.55	4.06	-14.38
6,444.0	39.10	227.50	6,244.8	5,069.8	29.1	-452.9	-131.0	7.56	4.84	-9.95
6,476.0	40.90	223.80	6,269.3	5,094.3	14.7	-467.6	-120.3	9.32	5.63	-11.56

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Missouri Department of
Environmental Protection

Database:	EQT EQT Survey	Local Co-ordinate Reference:	WGS 1984 UTM Zone 18N
Company:	EQT Production - Alabama	TVD Reference:	2021.000 110' Spot
Project:	Wilcox County, GA	MD Reference:	10216.12 1175' Datum
Site:	Wilcox County, GA	North Reference:	110'
Well:	662 453317	Survey Calculation Method:	Minimum Curvature
Wellbore:	WELLS 570		
Design:	WELLS 570 As Contd.		

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)
6,507.0	42.70	220.10	6,292.5	5,117.5	-0.7	-481.4	-108.5	9.85	5.81	-11.94
6,539.0	44.70	216.50	6,315.6	5,140.6	-18.0	-495.1	-94.7	9.97	6.25	-11.25
6,570.0	46.40	212.30	6,337.3	5,162.3	-36.3	-507.6	-79.7	11.12	5.48	-13.55
6,602.0	48.60	209.20	6,358.9	5,183.9	-56.6	-519.6	-62.7	9.91	6.88	-9.69
6,634.0	51.30	207.20	6,379.5	5,204.5	-78.2	-531.2	-44.3	9.70	8.44	-6.25
6,665.0	52.90	204.20	6,398.6	5,223.6	-100.2	-541.8	-25.2	9.22	5.16	-9.68
6,697.0	53.50	200.20	6,417.7	5,242.7	-123.9	-551.4	-4.3	10.18	1.88	-12.50
6,728.0	55.30	197.40	6,435.8	5,260.8	-147.8	-559.6	17.1	9.36	5.81	-9.03
6,760.0	57.50	195.10	6,453.5	5,278.5	-173.4	-567.0	40.3	9.12	6.88	-7.19
6,791.0	60.10	192.40	6,469.5	5,294.5	-199.1	-573.3	64.0	11.22	8.39	-8.71
6,822.0	63.10	191.20	6,484.3	5,309.3	-225.8	-578.9	88.7	10.26	9.68	-3.87
6,854.0	66.20	190.70	6,498.0	5,323.0	-254.2	-584.4	115.1	9.79	9.69	-1.56
6,886.0	69.50	191.10	6,510.1	5,335.1	-283.3	-590.0	142.2	10.38	10.31	1.25
6,917.0	72.20	188.90	6,520.2	5,345.2	-312.1	-595.1	169.1	10.99	8.71	-7.10
6,949.0	74.10	187.00	6,529.5	5,354.5	-342.4	-599.3	197.7	8.22	5.94	-5.94
6,980.0	75.30	184.40	6,537.7	5,362.7	-372.2	-602.3	226.0	8.97	3.87	-8.39
7,012.0	77.00	181.80	6,545.3	5,370.3	-403.2	-603.9	255.8	9.51	5.31	-8.13
7,043.0	79.60	180.20	6,551.6	5,376.6	-433.6	-604.5	285.3	9.79	8.39	-5.16
7,075.0	82.00	178.50	6,556.7	5,381.7	-465.2	-604.1	316.1	9.15	7.50	-5.31
7,106.0	84.40	176.30	6,560.4	5,385.4	-495.9	-602.7	346.4	10.47	7.74	-7.10
7,138.0	86.50	174.60	6,563.0	5,388.0	-527.7	-600.2	377.9	8.43	6.56	-5.31
7,169.0	88.90	172.80	6,564.2	5,389.2	-558.5	-596.8	408.7	9.67	7.74	-5.81
7,184.7	89.34	171.43	6,564.4	5,389.4	-574.0	-594.6	424.3	9.19	2.81	-8.75
7,201.0	89.80	170.00	6,564.6	5,389.6	-590.1	-592.0	440.5	9.19	2.81	-8.75
7,232.0	90.00	168.40	6,564.6	5,389.6	-620.5	-585.6	471.5	11.63	0.65	-11.81
7,264.0	90.50	163.10	6,564.5	5,389.5	-651.3	-577.2	503.5	10.43	1.56	-10.31
7,293.5	90.97	161.55	6,564.1	5,389.1	-679.5	-568.3	532.9	5.47	1.59	-5.24
7,327.0	91.50	159.80	6,563.4	5,388.4	-711.0	-557.2	566.2	5.47	1.59	-5.24
7,390.0	91.80	159.20	6,561.6	5,386.6	-770.0	-535.1	628.7	1.06	0.48	-0.95
7,453.0	92.00	159.20	6,559.5	5,384.5	-828.9	-512.8	691.1	0.32	0.32	0.00
7,516.0	90.20	159.20	6,558.3	5,383.3	-887.8	-490.4	753.5	2.88	2.88	0.00
7,580.0	90.70	159.10	6,557.8	5,382.8	-947.6	-467.6	816.9	0.80	0.78	-0.16
7,643.0	90.70	158.50	6,557.0	5,382.0	-1,006.3	-444.9	879.2	0.95	0.00	-0.95
7,706.0	90.40	158.20	6,556.4	5,381.4	-1,064.8	-421.6	941.5	0.87	-0.48	-0.48
7,769.0	89.10	158.60	6,556.7	5,381.7	-1,123.4	-398.4	1,003.9	2.16	-2.06	0.63
7,833.0	89.10	158.50	6,557.7	5,382.7	-1,183.0	-375.0	1,067.2	0.16	0.00	-0.16
7,896.0	89.30	157.90	6,558.5	5,383.5	-1,241.5	-351.6	1,129.4	1.00	0.32	-0.95
7,958.0	89.80	158.40	6,559.0	5,384.0	-1,299.0	-328.6	1,190.7	1.14	0.81	0.81
8,021.0	89.70	161.00	6,559.3	5,384.3	-1,358.1	-306.7	1,253.2	4.13	-0.16	4.13
8,084.0	90.00	161.10	6,559.5	5,384.5	-1,417.7	-286.2	1,315.9	0.50	0.48	0.16

Environmental Protection
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Database:	PHOENIX SURVEY SYSTEM	Local Co-ordinate Reference:	North American Datum 1983
Company:	PHOENIX SURVEY SYSTEM	TVD Reference:	Sea Level
Project:	PHOENIX SURVEY SYSTEM	MD Reference:	Sea Level
Site:	PHOENIX SURVEY SYSTEM	North Reference:	True North
Well:	PHOENIX SURVEY SYSTEM	Survey Calculation Method:	Least Squares
Wellbore:	PHOENIX SURVEY SYSTEM		
Design:	PHOENIX SURVEY SYSTEM		

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)
8,147.0	90.20	160.80	6,559.4	5,384.4	-1,477.2	-265.7	1,378.5	0.57	0.32	-0.48
8,210.0	90.30	161.00	6,559.1	5,384.1	-1,536.8	-245.1	1,441.2	0.35	0.16	0.32
8,273.0	90.20	160.40	6,558.8	5,383.8	-1,596.2	-224.2	1,503.8	0.97	-0.16	-0.95
8,335.0	90.70	159.50	6,558.3	5,383.3	-1,654.5	-203.0	1,565.4	1.66	0.81	-1.45
8,398.0	90.70	160.50	6,557.6	5,382.6	-1,713.7	-181.4	1,627.9	1.59	0.00	1.59
8,465.0	90.90	161.00	6,556.6	5,381.6	-1,776.9	-159.4	1,694.5	0.80	0.30	0.75
8,528.0	91.90	160.00	6,555.1	5,380.1	-1,836.3	-138.3	1,757.1	2.24	1.59	-1.59
8,591.0	92.70	160.20	6,552.6	5,377.6	-1,895.5	-116.9	1,819.6	1.31	1.27	0.32
8,654.0	89.80	158.60	6,551.2	5,376.2	-1,954.4	-94.7	1,882.0	5.26	-4.60	-2.54
8,717.0	89.30	158.10	6,551.7	5,376.7	-2,013.0	-71.5	1,944.3	1.12	-0.79	-0.79
8,779.0	89.90	158.30	6,552.1	5,377.1	-2,070.5	-48.5	2,005.6	1.02	0.97	0.32
8,842.0	90.70	158.50	6,551.8	5,376.8	-2,129.1	-25.3	2,067.9	1.31	1.27	0.32
8,905.0	91.30	158.60	6,550.7	5,375.7	-2,187.7	-2.3	2,130.3	0.97	0.95	0.16
8,968.0	90.70	159.10	6,549.6	5,374.6	-2,246.5	20.5	2,192.6	1.24	-0.95	0.79
9,031.0	90.50	159.20	6,548.9	5,373.9	-2,305.3	42.9	2,255.1	0.35	-0.32	0.16
9,094.0	90.50	159.90	6,548.4	5,373.4	-2,364.4	64.9	2,317.5	1.11	0.00	1.11
9,157.0	91.20	159.50	6,547.4	5,372.4	-2,423.5	86.8	2,380.0	1.28	1.11	-0.63
9,219.0	91.80	160.00	6,545.9	5,370.9	-2,481.6	108.2	2,441.5	1.03	0.65	0.81
9,282.0	90.40	160.10	6,544.8	5,369.8	-2,540.8	129.7	2,504.1	1.91	-1.90	0.16
9,345.0	90.50	159.60	6,544.3	5,369.3	-2,600.0	151.4	2,566.6	0.81	0.16	-0.79
9,408.0	89.00	160.30	6,544.6	5,369.6	-2,659.1	173.0	2,629.1	2.63	-2.38	1.11
9,471.0	89.80	160.70	6,545.3	5,370.3	-2,718.5	194.0	2,691.7	1.42	1.27	0.63
9,534.0	90.10	162.20	6,545.3	5,370.3	-2,778.2	214.1	2,754.4	2.43	0.48	2.38
9,597.0	90.70	163.60	6,544.9	5,369.9	-2,838.5	232.6	2,817.3	2.42	0.95	2.22
9,660.0	90.70	164.40	6,544.1	5,369.1	-2,899.0	250.0	2,880.2	1.27	0.00	1.27
9,723.0	91.40	164.50	6,543.0	5,368.0	-2,959.7	266.8	2,943.1	1.12	1.11	0.16
9,786.0	91.90	164.50	6,541.1	5,366.1	-3,020.4	283.7	3,006.1	0.79	0.79	0.00
9,849.0	90.90	163.60	6,539.6	5,364.6	-3,080.9	301.0	3,069.0	2.14	-1.59	-1.43
9,912.0	91.30	163.60	6,538.4	5,363.4	-3,141.4	318.8	3,131.8	0.63	0.63	0.00
9,975.0	90.90	162.20	6,537.2	5,362.2	-3,201.6	337.3	3,194.7	2.31	-0.63	-2.22
10,038.0	91.20	161.80	6,536.0	5,361.0	-3,261.4	356.9	3,257.4	1.06	0.48	-0.95
10,101.0	89.30	161.10	6,535.7	5,360.7	-3,321.1	377.0	3,320.1	3.12	-3.02	-0.79
10,164.0	89.90	161.30	6,536.2	5,361.2	-3,380.8	397.3	3,382.8	1.00	0.95	0.32
10,226.0	90.40	161.40	6,536.0	5,361.0	-3,439.5	417.1	3,444.5	0.82	0.81	0.16
10,289.0	91.10	161.70	6,535.2	5,360.2	-3,499.3	437.1	3,507.2	1.21	1.11	0.48
10,352.0	90.40	162.60	6,534.4	5,359.4	-3,559.2	456.4	3,570.0	1.81	-1.11	1.43
10,415.0	90.00	162.40	6,534.2	5,359.2	-3,619.3	475.3	3,632.8	0.71	-0.63	-0.32
10,478.0	90.30	162.00	6,534.0	5,359.0	-3,679.3	494.6	3,695.6	0.79	0.48	-0.63
10,541.0	89.10	161.50	6,534.3	5,359.3	-3,739.1	514.3	3,758.4	2.06	-1.90	-0.79
10,604.0	88.20	162.00	6,535.8	5,360.8	-3,798.9	534.0	3,821.1	1.63	-1.43	0.79
10,667.0	88.50	161.70	6,537.6	5,362.6	-3,858.8	553.6	3,883.8	0.67	0.48	-0.48
10,731.0	89.30	161.60	6,538.8	5,363.8	-3,919.5	573.8	3,947.5	1.26	1.25	-0.16
10,793.0	91.00	162.60	6,538.7	5,363.7	-3,978.5	592.8	4,009.3	3.18	2.74	1.61

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Database:	EQM - EQT - PHX - 111313	Local Co-ordinate Reference:	North American Datum 1983
Company:	EQT Production Services	TVD Reference:	PHX - 111313
Project:	PHX - Check, W	MD Reference:	PHX - 111313
Site:	PHX - Check - 111313	North Reference:	PHX
Well:	PHX - 111313	Survey Calculation Method:	Minimum Curvature
Wellbore:	PHX - 111313		
Design:	PHX - 111313		

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)
10,856.0	91.60	162.60	6,537.3	5,362.3	-4,038.6	611.7	4,072.1	0.95	0.95	0.00
10,919.0	90.30	162.20	6,536.2	5,361.2	-4,098.6	630.7	4,134.9	2.16	-2.06	-0.63
10,982.0	90.70	161.80	6,535.7	5,360.7	-4,158.6	650.2	4,197.7	0.90	0.63	-0.63
11,045.0	91.00	161.30	6,534.7	5,359.7	-4,218.3	670.1	4,260.4	0.93	0.48	-0.79
11,108.0	91.70	161.30	6,533.2	5,358.2	-4,278.0	690.3	4,323.1	1.11	1.11	0.00
11,171.0	91.10	161.90	6,531.7	5,356.7	-4,337.7	710.2	4,385.8	1.35	-0.95	0.95
11,234.0	91.30	161.50	6,530.4	5,355.4	-4,397.5	730.0	4,448.5	0.71	0.32	-0.63
11,297.0	90.70	161.90	6,529.3	5,354.3	-4,457.3	749.8	4,511.3	1.14	-0.95	0.63
11,359.0	90.70	160.80	6,528.5	5,353.5	-4,516.1	769.6	4,573.0	1.77	0.00	-1.77
11,423.0	88.90	159.70	6,528.8	5,353.8	-4,576.3	791.2	4,636.5	3.30	-2.81	-1.72
11,486.0	89.80	160.70	6,529.5	5,354.5	-4,635.6	812.5	4,699.1	2.14	1.43	1.59
11,549.0	90.40	161.50	6,529.4	5,354.4	-4,695.2	833.0	4,761.8	1.59	0.95	1.27
11,612.0	90.90	162.10	6,528.6	5,353.6	-4,755.0	852.6	4,824.5	1.24	0.79	0.95
11,675.0	89.60	161.50	6,528.4	5,353.4	-4,814.9	872.3	4,887.3	2.27	-2.06	-0.95
11,738.0	90.20	161.10	6,528.5	5,353.5	-4,874.5	892.5	4,950.0	1.14	0.95	-0.63
11,801.0	89.70	160.00	6,528.5	5,353.5	-4,933.9	913.5	5,012.6	1.92	-0.79	-1.75
11,864.0	89.20	160.80	6,529.1	5,354.1	-4,993.3	934.6	5,075.2	1.63	-0.79	1.43
11,927.0	90.30	162.80	6,529.4	5,354.4	-5,053.2	954.2	5,137.9	3.48	1.75	3.02
11,990.0	90.60	164.40	6,528.9	5,353.9	-5,113.6	972.0	5,200.8	2.58	0.48	2.54
12,053.0	89.20	162.90	6,529.0	5,354.0	-5,174.1	989.7	5,263.7	3.26	-2.22	-2.38
12,116.0	87.80	162.30	6,530.7	5,355.7	-5,234.1	1,008.5	5,326.5	2.42	-2.22	-0.95
12,178.0	88.40	162.50	6,532.7	5,357.7	-5,293.2	1,027.3	5,388.3	1.02	0.97	0.32
12,241.0	88.80	162.70	6,534.3	5,359.3	-5,353.3	1,046.1	5,451.1	0.71	0.63	0.32
12,305.0	89.20	162.30	6,535.4	5,360.4	-5,414.3	1,065.4	5,514.9	0.88	0.63	-0.63
12,368.0	90.00	162.00	6,535.8	5,360.8	-5,474.3	1,084.7	5,577.7	1.36	1.27	-0.48
12,431.0	90.40	161.50	6,535.6	5,360.6	-5,534.1	1,104.4	5,640.4	1.02	0.63	-0.79
12,493.0	90.90	161.80	6,534.9	5,358.9	-5,593.0	1,123.9	5,702.2	0.94	0.81	0.48
12,557.0	90.10	162.30	6,534.3	5,359.3	-5,653.9	1,143.6	5,765.9	1.47	-1.25	0.78
12,620.0	90.60	161.80	6,534.0	5,359.0	-5,713.8	1,163.2	5,828.7	1.37	0.79	-1.11
12,683.0	90.10	161.80	6,533.6	5,358.6	-5,773.5	1,183.0	5,891.4	0.79	-0.79	0.00
12,746.0	90.10	162.30	6,533.5	5,358.5	-5,833.4	1,202.6	5,954.2	1.11	0.00	1.11
12,809.0	90.70	162.50	6,533.0	5,358.0	-5,893.5	1,221.6	6,017.0	1.00	0.95	0.32
12,872.0	89.40	162.70	6,533.0	5,358.0	-5,953.6	1,240.4	6,079.8	2.09	-2.06	0.32
12,935.0	90.10	162.80	6,533.2	5,358.2	-6,013.7	1,259.2	6,142.6	1.12	1.11	-0.16
12,998.0	90.50	162.80	6,532.9	5,357.9	-6,073.8	1,278.1	6,205.5	0.63	0.63	0.00
13,061.0	89.40	162.20	6,533.0	5,358.0	-6,133.9	1,297.1	6,268.3	1.86	-1.75	-0.63
13,124.0	90.00	162.80	6,533.3	5,358.3	-6,194.0	1,316.1	6,331.1	1.35	0.95	0.95
13,187.0	89.10	162.40	6,533.8	5,358.8	-6,254.1	1,334.9	6,393.9	1.56	-1.43	-0.63
13,250.0	89.50	162.10	6,534.6	5,359.6	-6,314.1	1,354.1	6,456.7	0.79	0.63	-0.48
13,313.0	90.00	161.60	6,534.8	5,359.8	-6,374.0	1,373.7	6,519.4	1.12	0.79	-0.79
13,376.0	90.40	161.50	6,534.6	5,359.6	-6,433.7	1,393.7	6,582.2	0.65	0.63	-0.16
13,439.0	89.10	161.60	6,534.9	5,359.9	-6,493.5	1,413.6	6,644.9	2.07	-2.06	0.16

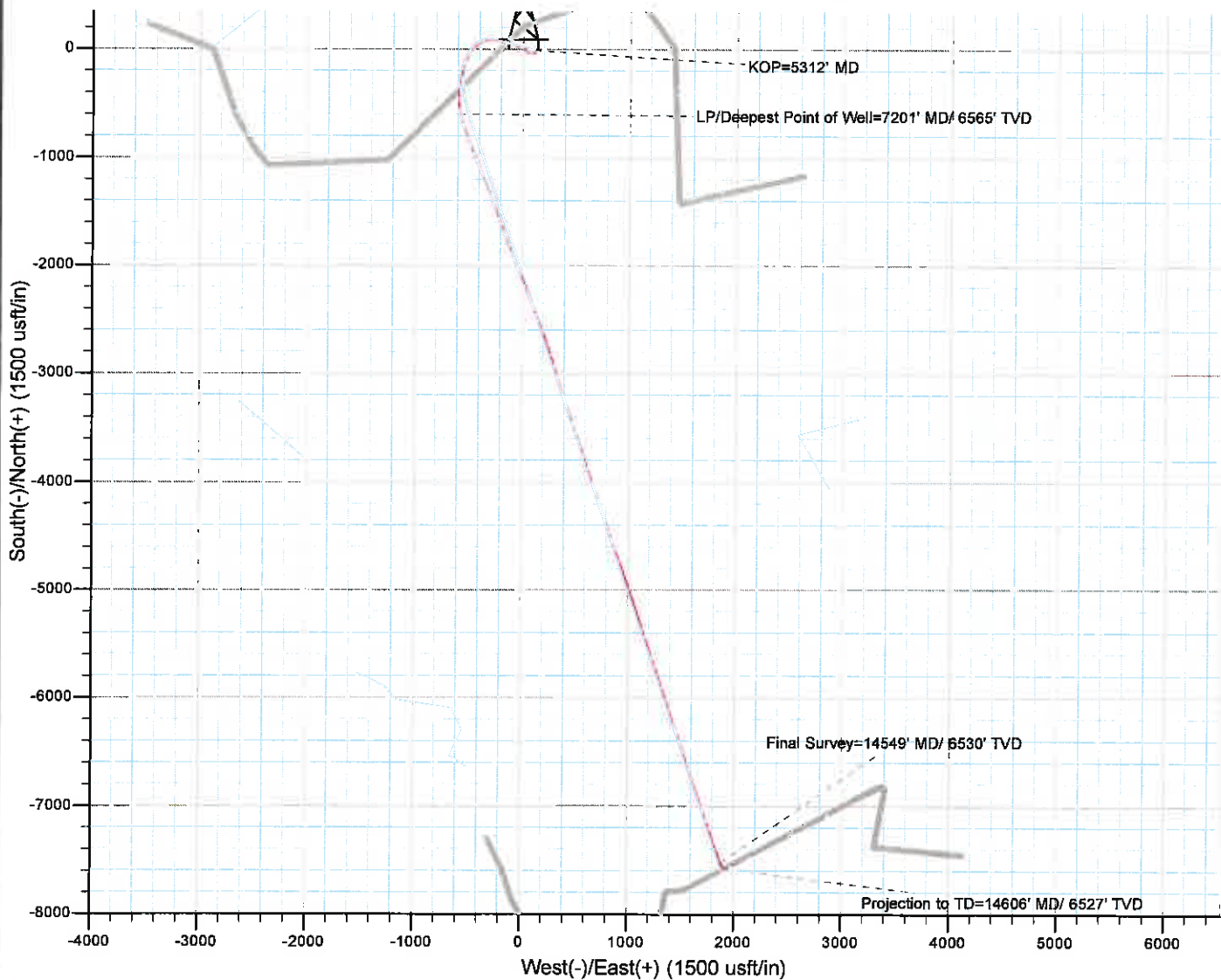
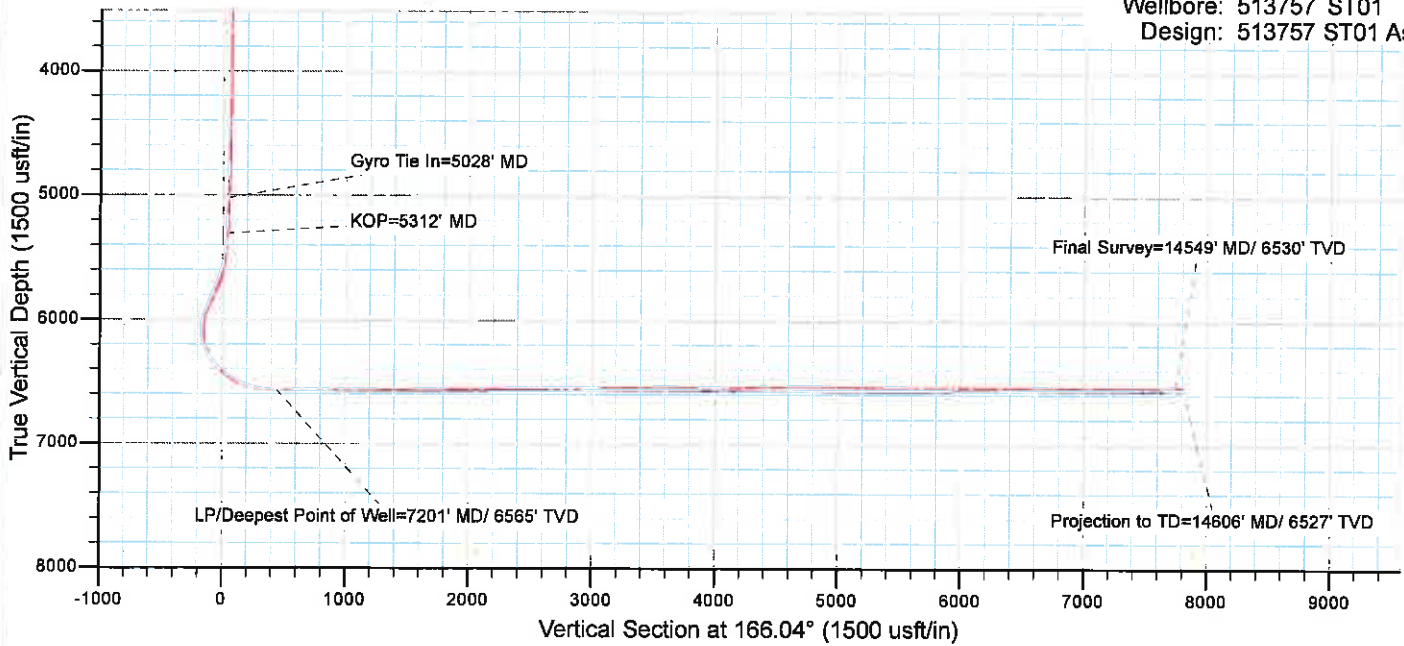
Database:	EQM 5028' Final Wellbore	Local Co-ordinate Reference:	Wellbore Locality: 5028' MD
Company:	EQM Production - Missouri	TVD Reference:	5028' MD / 5028' MD
Project:	Wichita County, WY	MD Reference:	5028' MD / 5028' MD
Site:	Wichita County, WY	North Reference:	5028' MD
Well:	5028' MD	Survey Calculation Method:	Minimum Curvature
Wellbore:	5028' MD		
Design:	5028' MD / 5028' MD		

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)
13,502.0	89.90	161.50	6,535.4	5,360.4	-6,553.2	1,433.5	6,707.6	1.28	1.27	-0.16
13,565.0	90.60	161.80	6,535.2	5,360.2	-6,613.0	1,453.4	6,770.3	1.21	1.11	0.48
13,628.0	89.90	162.50	6,534.9	5,359.9	-6,673.0	1,472.7	6,833.1	1.57	-1.11	1.11
13,691.0	90.20	162.50	6,534.8	5,359.8	-6,733.1	1,491.6	6,895.9	0.48	0.48	0.00
13,754.0	89.00	162.40	6,535.3	5,360.3	-6,793.1	1,510.6	6,958.7	1.91	-1.90	-0.16
13,818.0	89.50	161.50	6,536.1	5,361.1	-6,854.0	1,530.5	7,022.5	1.61	0.78	-1.41
13,880.0	90.20	161.10	6,536.3	5,361.3	-6,912.7	1,550.3	7,084.2	1.30	1.13	-0.65
13,944.0	90.60	161.40	6,535.8	5,360.8	-6,973.3	1,570.9	7,147.9	0.78	0.63	0.47
14,006.0	89.70	161.40	6,535.7	5,360.7	-7,032.1	1,590.7	7,209.6	1.45	-1.45	0.00
14,069.0	90.30	161.70	6,535.7	5,360.7	-7,091.8	1,610.6	7,272.3	1.06	0.95	0.48
14,132.0	88.70	161.80	6,536.2	5,361.2	-7,151.7	1,630.3	7,335.1	2.54	-2.54	0.16
14,195.0	89.30	161.90	6,537.3	5,362.3	-7,211.5	1,650.0	7,397.8	0.97	0.95	0.16
14,258.0	89.80	161.70	6,537.8	5,362.8	-7,271.4	1,669.6	7,460.6	0.85	0.79	-0.32
14,320.0	90.60	161.20	6,537.6	5,362.6	-7,330.1	1,689.4	7,522.3	1.52	1.29	-0.81
14,383.0	91.40	161.20	6,536.5	5,361.5	-7,389.8	1,709.7	7,585.0	1.27	1.27	0.00
14,446.0	92.00	160.60	6,534.6	5,359.6	-7,449.3	1,730.3	7,647.6	1.35	0.95	-0.95
14,508.0	92.80	160.50	6,532.0	5,357.0	-7,507.7	1,750.9	7,709.2	1.30	1.29	-0.16
14,549.0	93.10	160.00	6,529.9	5,354.9	-7,546.2	1,764.7	7,749.8	1.42	0.73	-1.22
14,604.3	93.10	160.00	6,526.9	5,351.9	-7,598.1	1,783.8	7,804.6	0.00	0.00	0.00
14,606.0	93.10	160.00	6,526.8	5,351.8	-7,599.7	1,784.2	7,806.3	0.00	0.00	0.00

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
5,028.0	5,021.4	-19.1	107.1	Gyro Tie In=5028' MD
5,312.0	5,305.3	-12.0	102.7	KOP=5312' MD
7,201.0	6,564.6	-590.1	-592.0	LP/Deepest Point of Well=7201' MD/ 6565' TVD
14,549.0	6,529.9	-7,546.2	1,764.7	Final Survey=14549' MD/ 6530' TVD
14,606.0	6,526.8	-7,599.7	1,784.2	Projection to TD=14606' MD/ 6527' TVD

Checked By: _____ Approved By: _____ Date: _____

Project: Ritchie County, WV
Site: Ritchie County 513757
Well: Well #513757
Wellbore: 513757 ST01
Design: 513757 ST01 As Drilled



513757- 47-085-10133-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	8/26/2015	14,555	14,557	10	MARCELLUS
1	8/26/2015	14,410	14,531	32	MARCELLUS
2	8/27/2015	14,260	14,382	40	MARCELLUS
3	8/27/2015	14,110	14,232	40	MARCELLUS
4	8/27/2015	13,960	14,082	40	MARCELLUS
5	8/28/2015	13,810	13,932	40	MARCELLUS
6	8/28/2015	13,660	13,779	40	MARCELLUS
7	8/30/2015	13,510	13,632	40	MARCELLUS
8	8/30/2015	13,360	13,482	40	MARCELLUS
9	8/31/2015	13,208	13,332	40	MARCELLUS
10	9/1/2015	13,060	13,182	40	MARCELLUS
11	9/1/2015	12,910	13,030	40	MARCELLUS
12	9/1/2015	12,760	12,878	40	MARCELLUS
13	9/1/2015	12,610	12,730	40	MARCELLUS
14	9/2/2015	12,460	12,582	40	MARCELLUS
15	9/2/2015	12,310	12,432	40	MARCELLUS
16	9/2/2015	12,158	12,282	40	MARCELLUS
17	9/2/2015	12,010	12,132	40	MARCELLUS
18	9/3/2015	11,861	11,982	40	MARCELLUS
19	9/3/2015	11,710	11,832	40	MARCELLUS
20	9/3/2015	11,560	11,682	40	MARCELLUS
21	9/3/2015	11,410	11,532	40	MARCELLUS
22	9/4/2015	11,260	11,378	40	MARCELLUS
23	9/4/2015	11,110	11,230	40	MARCELLUS
24	9/4/2015	10,960	11,082	40	MARCELLUS
25	9/4/2015	10,810	10,929	40	MARCELLUS
26	9/4/2015	10,660	10,780	40	MARCELLUS
27	9/5/2015	10,510	10,632	40	MARCELLUS
28	9/5/2015	10,360	10,482	40	MARCELLUS
29	9/5/2015	10,210	10,332	40	MARCELLUS
30	9/5/2015	10,060	10,182	40	MARCELLUS
31	9/6/2015	9,910	10,032	40	MARCELLUS
32	9/6/2015	9,760	9,877	40	MARCELLUS
33	9/6/2015	9,610	9,732	40	MARCELLUS
34	9/6/2015	9,460	9,582	40	MARCELLUS
35	9/6/2015	9,310	9,432	40	MARCELLUS
36	9/7/2015	9,160	9,280	40	MARCELLUS
37	9/7/2015	9,010	9,132	40	MARCELLUS
38	9/7/2015	8,860	8,982	40	MARCELLUS
39	9/8/2015	8,710	8,832	40	MARCELLUS
40	9/8/2015	8,560	8,682	40	MARCELLUS
41	9/8/2015	8,414	8,532	40	MARCELLUS
42	9/8/2015	8,260	8,382	40	MARCELLUS
43	9/8/2015	8,110	8,232	40	MARCELLUS
44	9/9/2015	7,960	8,082	40	MARCELLUS
45	9/9/2015	7,810	7,932	40	MARCELLUS
46	9/9/2015	7,660	7,782	40	MARCELLUS
47	9/9/2015	7,510	7,632	40	MARCELLUS
48	9/10/2015	7,360	7,482	40	MARCELLUS
49	9/10/2015	7,210	7,332	40	MARCELLUS
50	9/10/2015	7,060	7,182	40	MARCELLUS

erox WC 7535 513757 Perf and Stim.xlsx Tue Aug 23 10:30:48 2016 Media Type: Default Color: Automatic Office: Display-sRGB Press: SWOP-Coated Print Quality: Standard
 Color Adjustments: Customized Automatic Setup

513757- 47-085-10133-0000 - 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	8/26/2015	24.9	6,970	7,640	4,605	0	1,268	0
1	8/27/2015	90.2	8,934	9,189	2,947	250,117.00	6,226	0
2	8/27/2015	94.9	8,730	9,156	4,065	249,220.00	6,637	0
3	8/27/2015	101.5	8,734	9,043	3,958	250,036.00	6,613	0
4	8/28/2015	101.2	8,688	9,085	3,769	250,076.00	6,644	0
5	8/30/2015	97.3	8,561	8,857	4,113	250,045.00	6,782	0
6	8/30/2015	96.5	8,597	10,276	9,408	251,866.00	6,233	0
7 01	8/30/2015	9.9	6,456	8,043	5,176	0.00	1,625	0
7	8/31/2015	87.3	8,664	9,070	4,446	225,154.00	8,249	0
8	8/31/2015	88.3	8,817	9,169	4,243	250,652.00	7,272	0
9	9/1/2015	100.5	8,686	8,968	5,180	249,560.00	6,534	0
10	9/1/2015	96.6	8,078	8,351	4,548	225,453.00	6,896	0
11	9/1/2015	99.6	7,975	8,174	3,812	251,770.00	6,528	0
12	9/1/2015	101	7,920	8,103	4,365	250,760.00	6,471	0
13	9/1/2015	100.7	7,956	8,175	3,760	249,160.00	6,411	0
14	9/2/2015	100.3	8,324	9,028	5,571	251,320.00	6,895	0
15	9/2/2015	100.3	7,827	8,375	5,260	250,680.00	6,645	0
16	9/2/2015	101.3	7,903	8,331	4,108	250,740.00	6,586	0
17	9/3/2015	100	8,311	8,977	3,794	248,260.00	6,378	0
18	9/3/2015	99.7	7,765	7,969	4,469	249,340.00	6,482	0
19	9/3/2015	98.9	7,882	8,175	4,491	250,550.00	6,514	0
20	9/3/2015	96.8	8,206	8,653	3,497	250,800.00	6,577	0
21	9/3/2015	97	8,180	8,968	3,480	250,860.00	6,352	0
22	9/4/2015	97.2	8,200	8,747	3,387	249,840.00	6,184	0
23	9/4/2015	99.2	7,839	8,992	4,368	248,840.00	6,360	0
24	9/4/2015	100.9	7,841	8,195	4,207	255,850.00	6,438	0
25	9/4/2015	100.9	7,731	8,142	3,906	249,190.00	4,115	0
26	9/5/2015	100.6	7,987	8,232	3,602	249,120.00	6,182	0
27	9/5/2015	100.5	7,465	7,718	4,187	250,100.00	6,261	0
28	9/5/2015	101	7,819	9,168	4,703	251,300.00	6,095	0
29	9/5/2015	101.7	7,631	8,039	3,699	252,170.00	5,898	0
30	9/6/2015	101.3	7,741	8,214	3,802	249,900.00	6,027	0
31	9/6/2015	84.1	7,939	8,655	3,797	248,120.00	8,258	0
32	9/6/2015	100.3	7,503	7,716	4,133	251,110.00	6,131	0
33	9/6/2015	101.1	7,554	8,230	4,312	250,630.00	6,074	0
34	9/6/2015	101.4	7,843	8,144	3,225	251,020.00	6,094	0
35	9/7/2015	99.7	7,937	9,216	3,240	250,800.00	6,164	0
36	9/7/2015	94.1	8,001	9,046	3,182	248,518.00	6,717	0
37	9/7/2015	100.1	7,534	8,734	3,078	250,640.00	6,060	0
38	9/7/2015	101.6	7,280	8,306	3,091	251,730.00	6,096	0
39	9/8/2015	102.8	7,325	8,692	3,173	249,720.00	5,937	0
40	9/8/2015	102.6	7,326	7,853	3,356	255,324.00	6,121	0
41	9/8/2015	101.9	7,185	7,322	3,555	249,938.00	5,955	0
42	9/8/2015	100.8	7,188	7,645	3,017	249,964.00	6,227	0
43	9/9/2015	100	7,330	8,480	3,095	249,700.00	5,961	0
44	9/9/2015	101.6	7,234	7,886	3,124	250,111.00	6,104	0
45	9/9/2015	98.2	7,383	8,756	3,332	249,645.00	6,382	0
46	9/9/2015	89.4	7,717	9,355	3,484	252,704.00	8,742	0
47	9/10/2015	97	7,351	8,493	3,394	251,880.00	6,177	0
48	9/10/2015	99.5	7,021	7,331	3,999	250,710.00	5,793	0
49	9/10/2015	101.1	7,104	7,480	4,193	249,828.00	5,743	0
50	9/10/2015	101.4	6,979	7,135	4,402	253,459.00	5,681	0

Gerrox WC 7535 513757 Perf and Stim.xlsx Tue Aug 23 10:30:55 2016 Media Type: Default Color: Automatic Office: Display-sRGB Press: SWOP-Coated Print Quality: Standard
 Color Adjustments: Customized Automatic Setup

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	8/26/2015
Job End Date	9/10/2015
State	West Virginia
County	Ritchie
API Number	47-085-10133-00-00
Operator Name	EQT Production
Well Name and Number	513757
Longitude	-80.84278000
Latitude	39 13599200
Datum	NAD83
Federal/Tribal Well	NO
True Vertical Depth	6,533
Total Base Water Volume (gal)	13,557,352
Total Base Non Water Volume	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.69580	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	9.89294	None
MC MX 437-5	Multichem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05765	None
Hydrochloric Acid 15%	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03278	None
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00000	0.02121	None
			Alkyl Alcohol	Proprietary	10.00000	0.00707	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00354	None
EC6330A	Keane Group	Scale Inhibitor	Ethylene Glycol	107-21-1	5.00000	0.00127	None
			Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00127	None
AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.00021	None
			Dimethylformamide	68-12-2	20.00000	0.00011	None

				Pyridine, alkyl, derivatives, quaternized with benzyl chloride	68909-18-2	15.00000	0.00008	None
				Cinnamaldehyde	104-55-2	15.00000	0.00008	None
				Nonyl Phenol Ethoxylate, Branched	127067-87-0	5.00000	0.00003	None
				2-Butoxyethanol	111-76-2	5.00000	0.00003	None
				1-Octanol	111-87-5	5.00000	0.00003	None
				1-Decanol	112-30-1	5.00000	0.00003	None
				Methanol	67-56-1	2.50000	0.00001	None
				Triethyl Phosphate	78-40-0	2.50000	0.00001	None
				Alkyl Pyridine	66391-11-7	1.00000	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)



4708510133

July 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 47-085-10133

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 L'.

Vicki Roark
Permitting Supervisor-WV

RECEIVED
Office of Oil and Gas

AUG 25 2016

WV Department of
Environmental Protection

Enc.

ROYALTY OWNERS		
B.M. PIERCE ET UX	84.80 AC±	LEASE NO. 118210
J.P. SMITH ET UX	130 AC±	LEASE NO. 107887
SHIRLEY & RUTH RIDDLE HEIRS AND/OR ASSIGNS	272 AC±	LEASE NO. 986181

NOTES ON SURVEY

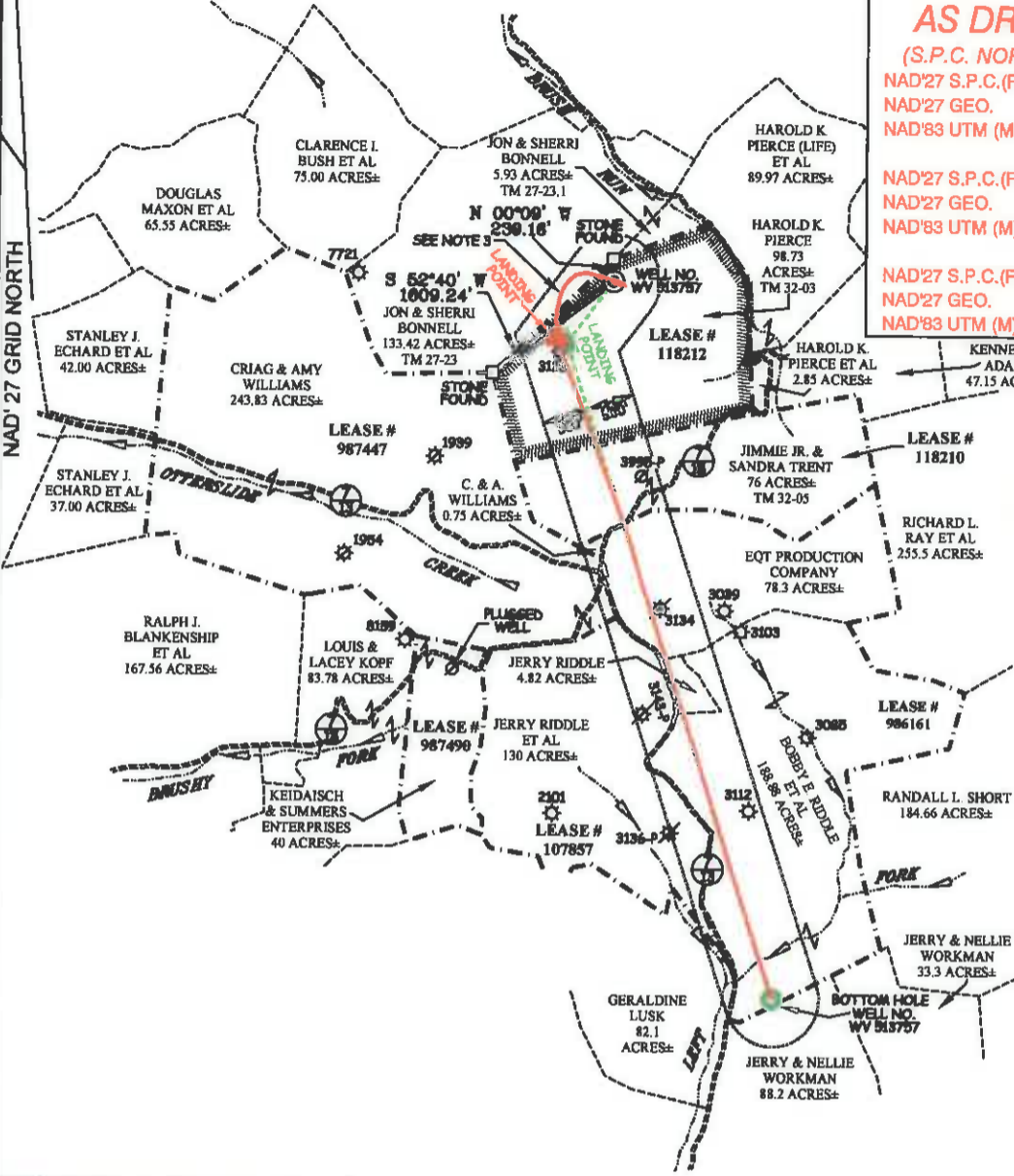
1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.
3. NONPRODUCTIVE SUBSURFACE RIGHT OF WAY

EQT PRODUCTION COMPANY
J.E. PIERCE ET AL LEASE
108 (98.73±) ACRES±
WELL NO. WV 513757
(OXF163 H2)

AS DRILLED COORDINATES

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

NAD'27 S.P.C.(FT)	N. 234,487.9	E. 1,619,117.6
NAD'27 GEO.	LAT-(N) 39.135992	LONG-(W) 80.842780
NAD'83 UTM (M)	N. 4,331,889.2	E. 513,602.8
LANDING POINT		
NAD'27 S.P.C.(FT)	N. 233,897.8	E. 1,618,525.6
NAD'27 GEO.	LAT-(N) 39.134347	LONG-(W) 80.844835
NAD'83 UTM (M)	N. 4,331,706.4	E. 513,425.5
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 226,888.4	E. 1,620,901.8
NAD'27 GEO.	LAT-(N) 39.115201	LONG-(W) 80.836092
NAD'83 UTM (M)	N. 4,329,583.1	E. 514,185.0



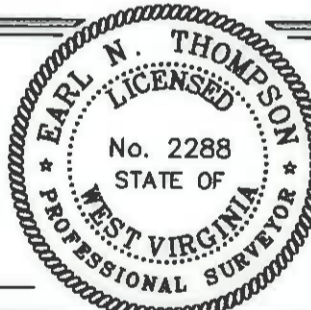
SUBSURFACE AGREEMENT
 JOHN M. & SHERRI L. BONNELL 133.42 AC± TM 27-23

LEGEND:

LEASE LINE	---
SURFACE LINE	---
PROPOSED PATH	---
AS DRILLED PATH	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
FENCE LINE	---
COUNTY ROUTE	---
PROPOSED WELL	⊙
EXISTING WELL	⊙
PLUGGED WELL	⊙
TAX MAP-PARCEL	00-00

Professional Energy Consultants
 A DIVISION OF SMITH LAND SURVEYING, INC.
SLS
 SURVEYORS
 ENGINEERS
 ENVIRONMENTAL
 PROJECT MGMT.
 (204) 482-8824 WWW.SLSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE MAY 27, 20 14
 REVISED 08/22/14, 10/27/14, 12/03/15, 05/16/16 & 08/08/16
 OPERATORS WELL NO. WV 513757
 API WELL NO. 47 - 085 - 10133H
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7698AD513757R2
 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 INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: PAD ELEVATION 1,158.4' WATERSHED BRUSH RUN OF MIDDLE FORK
 DISTRICT UNION COUNTY RITCHIE QUADRANGLE OXFORD 7.5'
 SURFACE OWNER HAROLD K. PIERCE ACREAGE 98.73±
 ROYALTY OWNER J.E. PIERCE ET AL ACREAGE 108± (98.73±)
 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 6495'

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