

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513343

API: 47 - 017 - 06323

Submission: Initial Amended

Notes: Re-perforated stages 9 (9.1), 16 (16.1), and 49 (49.1)

Combined stages: [9, 9.1, 10] - [16, 16.1, 17]

Correction to Production Cement Top (MD)

RECEIVED
Office of Oil and Gas

FEB 02 2016

WV Department of
Environmental Protection

AXWS
03/11/16

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

API 47-017-06323 County DODDRIDGE District WEST UNION
Quad WEST UNION 7.5' Pad Name WEU6 Field/Pool Name _____
Farm name BUTLER, FRANKIN & KEY OIL Well Number 513343
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 4349021.7 Easting 521246.9
Landing Point of Curve Northing 4348688.7 Easting 521086.6
Bottom Hole Northing 4346544.3 Easting 521699.8

Elevation (ft) 1260 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 13.5 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 11/14/2013 Date drilling commenced 4/15/2014 Date drilling ceased 5/31/2014
Date completion activities began 8/24/2014 Date completion activities ceased 9/9/2014
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 1034' 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 190' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

API 47-017 - 06323 Farm name BUTLER, FRANKIN & KEY OIL Well number 513343

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	NONE	Y
Surface	17-1/2"	13-3/8"	1125'	NEW	J-55	75', 274'	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	3115'	NEW	A-500	1464', 1170'	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	14715'	NEW	P-110	NONE	N
Tubing							
Packer type and depth set							

Comment Details NA

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ²)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	38	15.6	1.18	45	0	8
Surface	Class A	895	15.6	1.19	1065	0	8
Coal							
Intermediate 1	Class A	1080	15.6	1.18	1275	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	595/955	14.2/15.2	1.26/1.97	2631	3432	72
Tubing							

Drillers TD (ft) 14,717' Loggers TD (ft) N/A

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5404'

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- N/A	
Surface-Bowstring centralizer on shoe track and every 500' to surface	
Intermediate-Bowstring centralizer on shoe track and every 500' to surface	
Production- Composite bodied centralizers on every joint from TD up to 4,328'	

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 - 06323

Farm name BUTLER, FRANKIN & KEY OIL

Well number 513343

PERFORATION RECORD

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

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)
								See Attachment

Please insert additional pages as applicable.

API 47- 017 - 06323 Farm name BUTLER, FRANKIN & KEY OIL Well number 513343

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus	6,860.6	TVD	7,348 MD
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2,102 psi Bottom Hole NA psi DURATION OF TEST 55 hrs

OPEN FLOW Gas 10,471 mcfpd Oil 0 bpd NGL 83.28 bpd Water 1,608 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 Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company Hoss Co. Services LLC
Address 614 Trotters Lane City Charleston State WV Zip 25312

Cementing Company Nabors Completion & Production Services Co.
Address PO BOX 975682 City Dallas State TX Zip 75397-5682

Stimulating Company Stingray Pressure Pumping, LLC
Address 66680 Executive Drive City St. Clairsville State OH Zip 43950

Please insert additional pages as applicable.

Completed by Brad Maddox Telephone 412-395-7053
Signature [Signature] Title Director of Drilling Date 1/20/2016

513343 Final Formations API#47-01706323

Formation Name	Top MD (ftGL) (ft)	Top TVD (ft)	Btm MD (ftGL) (ft)	Btm TVD (ft)
SAND / SHALE	1	1	191	191
COAL	191	191	194	194
FRESH WATER ZONE	1	1	1,034.00	1,034.00
SAND / SHALE	194	194	2,307.00	2,306.90
BEREA	2,307.00	2,306.90	2,575.00	2,574.90
GANTZ	2,575.00	2,574.90	2,665.00	2,664.90
50F	2,665.00	2,664.90	2,763.00	2,762.90
30F	2,763.00	2,762.90	2,830.00	2,829.90
GORDON	2,830.00	2,829.90	2,899.00	2,898.90
4TH	2,899.00	2,898.90	3,051.00	3,050.90
5TH	3,051.00	3,050.90	3,441.00	3,440.90
WARREN	3,441.00	3,440.90	3,507.00	3,506.90
SPEECHLEY	3,507.00	3,506.90	4,371.00	4,370.80
BRADFORD	4,371.00	4,370.80	4,659.00	4,658.80
RILEY	4,659.00	4,658.80	5,116.00	5,115.80
BENSON	5,116.00	5,115.80	5,362.00	5,361.70
ALEXANDER	5,362.00	5,361.70	6,484.00	6,301.30
RHINESTREET	6,484.00	6,301.30	6,735.00	6,492.50
SONYEA	6,735.00	6,492.50	6,923.00	6,634.50
MIDDLESEX	6,923.00	6,634.50	7,010.00	6,694.00
GENESSEE	7,010.00	6,694.00	7,132.00	6,767.00
GENESE0	7,132.00	6,767.00	7,202.00	6,803.60
TULLY	7,202.00	6,803.60	7,262.00	6,830.90
HAMILTON	7,262.00	6,830.90	7,348.00	6,860.60
MARCELLUS	7,348.00	6,860.60	14,717.00	6,836.50



EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 513343

Well #513343

API #47-01706323

Main Wellbore

Design: As Drilled Surveys

Standard Survey Report

02 June, 2014



Where energy meets innovation.



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513343
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513343	North Reference:	Grid
Well:	Well #513343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Project	Doddridge County, WV Grid		
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	Doddridge County 513343				
Site Position:	From: Map	Northing:	290,290.70 usft	Latitude:	39.29
		Easting:	1,645,140.60 usft	Longitude:	-80.75
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.80 "

Well	Well #513343					
Well Position	+N-S	0.0 usft	Northing:	290,290.70 usft	Latitude:	39° 17' 24.795 N
	+E-W	0.0 usft	Easting:	1,645,140.60 usft	Longitude:	80° 45' 13.661 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,260.0 usft	

Wellbore	Main Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	5/21/2014	-8.49	66.82	52,299

Design	As Drilled Surveys				
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	171.71	

Survey Program	Date	6/2/2014			
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5,357.0	513343 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
0.00	14,717.0	513343 PHX MWD (Main Wellbore)	MWD	MWD - Standard	

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	-1,276.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.28	299.19	100.0	-1,176.0	0.1	-0.2	-0.1	0.28	0.28	0.00	
200.0	0.23	346.12	200.0	-1,076.0	0.4	-0.5	-0.5	0.21	-0.05	46.93	
300.0	0.26	346.82	300.0	-976.0	0.8	-0.6	-0.9	0.03	0.03	0.70	
400.0	0.23	343.52	400.0	-876.0	1.3	-0.7	-1.3	0.03	-0.03	-3.30	
500.0	0.09	286.50	500.0	-776.0	1.5	-0.8	-1.6	0.20	-0.14	-57.02	
600.0	0.05	348.98	600.0	-676.0	1.5	-0.9	-1.7	0.08	-0.04	62.48	
700.0	0.03	4.27	700.0	-576.0	1.6	-0.9	-1.7	0.02	-0.02	15.29	



Phoenix Technology Services
Survey Report



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Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513343	North Reference:	Grid
Well:	Well #513343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
800.0	0.05	148.54	800.0	-476.0	1.6	-0.9	-1.7	0.06	0.02	144.27
900.0	0.07	122.95	900.0	-376.0	1.5	-0.8	-1.6	0.03	0.02	-25.59
1,000.0	0.09	103.68	1,000.0	-276.0	1.5	-0.7	-1.6	0.03	0.02	-19.27
1,100.0	0.23	112.56	1,100.0	-176.0	1.4	-0.4	-1.4	0.14	0.14	8.88
1,200.0	0.27	132.25	1,200.0	-76.0	1.1	-0.1	-1.1	0.09	0.04	19.69
1,300.0	0.26	149.78	1,300.0	24.0	0.8	0.2	-0.8	0.08	-0.01	17.53
1,400.0	0.31	173.13	1,400.0	124.0	0.3	0.4	-0.3	0.13	0.05	23.35
1,500.0	0.51	151.71	1,500.0	224.0	-0.3	0.6	0.4	0.25	0.20	-21.42
1,600.0	0.57	150.11	1,600.0	324.0	-1.2	1.1	1.3	0.06	0.06	-1.60
1,700.0	0.74	141.56	1,700.0	424.0	-2.1	1.7	2.3	0.20	0.17	-8.55
1,800.0	0.79	138.92	1,800.0	524.0	-3.1	2.6	3.5	0.06	0.05	-2.64
1,900.0	0.72	132.67	1,900.0	624.0	-4.1	3.5	4.5	0.11	-0.07	-6.25
2,000.0	0.68	121.22	2,000.0	724.0	-4.8	4.5	5.4	0.15	-0.04	-11.45
2,100.0	0.47	121.12	2,099.9	823.9	-5.3	5.3	6.0	0.21	-0.21	-0.10
2,200.0	0.49	130.36	2,199.9	923.9	-5.8	6.0	6.6	0.08	0.02	9.24
2,300.0	0.53	129.90	2,299.9	1,023.9	-6.4	6.7	7.3	0.04	0.04	-0.46
2,400.0	0.52	133.96	2,399.9	1,123.9	-7.0	7.4	8.0	0.04	-0.01	4.06
2,500.0	0.40	157.64	2,499.9	1,223.9	-7.6	7.8	8.7	0.22	-0.12	23.68
2,600.0	0.37	160.59	2,599.9	1,323.9	-8.3	8.1	9.3	0.04	-0.03	2.95
2,700.0	0.42	148.11	2,699.9	1,423.9	-8.9	8.4	10.0	0.10	0.05	-12.48
2,800.0	0.49	168.00	2,799.9	1,523.9	-9.6	8.6	10.7	0.17	0.07	19.89
2,900.0	0.54	169.09	2,899.9	1,623.9	-10.5	8.8	11.6	0.05	0.05	1.09
3,000.0	0.46	165.14	2,999.9	1,723.9	-11.3	9.0	12.5	0.09	-0.08	-3.95
3,100.0	0.43	171.07	3,099.9	1,823.9	-12.1	9.2	13.3	0.05	-0.03	5.93
3,200.0	0.68	167.83	3,199.9	1,923.9	-13.0	9.4	14.3	0.25	0.25	-3.24
3,300.0	0.88	164.75	3,299.9	2,023.9	-14.4	9.7	15.6	0.20	0.20	-3.08
3,400.0	0.78	142.43	3,399.9	2,123.9	-15.6	10.3	17.0	0.34	-0.10	-22.32
3,500.0	0.51	155.51	3,499.9	2,223.9	-16.6	10.9	18.0	0.31	-0.27	13.08
3,600.0	0.44	161.78	3,599.9	2,323.9	-17.4	11.2	18.8	0.09	-0.07	6.27
3,700.0	0.52	176.81	3,699.9	2,423.9	-18.2	11.4	19.6	0.15	0.08	15.03
3,800.0	0.55	180.84	3,799.9	2,523.9	-19.1	11.4	20.5	0.05	0.03	4.03
3,900.0	0.73	170.54	3,899.9	2,623.9	-20.2	11.5	21.7	0.21	0.18	-10.30
4,000.0	0.74	216.28	3,999.9	2,723.9	-21.4	11.2	22.8	0.57	0.01	45.74
4,100.0	0.50	184.30	4,099.9	2,823.9	-22.3	10.8	23.6	0.41	-0.24	-31.98
4,200.0	0.51	157.74	4,199.9	2,923.9	-23.2	10.9	24.5	0.23	0.01	-26.56
4,300.0	0.52	135.61	4,299.8	3,023.8	-23.9	11.4	25.3	0.20	0.01	-22.13
4,400.0	0.57	134.62	4,399.8	3,123.8	-24.6	12.1	26.1	0.05	0.05	-0.99
4,500.0	0.90	111.08	4,499.8	3,223.8	-25.2	13.2	26.8	0.44	0.33	-23.54
4,600.0	0.80	97.33	4,599.8	3,323.8	-25.6	14.6	27.4	0.23	-0.10	-13.75
4,700.0	0.63	85.00	4,699.8	3,423.8	-25.6	15.8	27.6	0.23	-0.17	-12.33
4,800.0	0.68	90.10	4,799.8	3,523.8	-25.6	17.0	27.8	0.08	0.05	5.10
4,900.0	0.79	107.86	4,899.8	3,623.8	-25.8	18.2	28.1	0.25	0.11	17.76



Phoenix Technology Services
Survey Report



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Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513343	North Reference:	Gnd
Well:	Well #513343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
5,000.0	0.86	101.53	4,999.8	3,723.8	-26.2	19.6	28.7	0.11	0.07	-6.33
5,100.0	0.96	100.01	5,099.8	3,823.8	-26.4	21.2	29.2	0.10	0.10	-1.52
5,200.0	0.88	93.93	5,199.8	3,923.8	-26.6	22.8	29.6	0.13	-0.08	-6.08
5,300.0	0.87	89.22	5,299.8	4,023.8	-26.7	24.3	29.9	0.07	-0.01	-4.71
Gyro Tie In=5357' MD										
5,357.0	1.08	80.29	5,356.7	4,080.7	-26.6	25.2	30.0	0.45	0.37	-15.67
KOP=5404' MD										
5,404.0	0.40	131.50	5,403.7	4,127.7	-26.6	25.8	30.1	1.89	-1.45	108.96
5,436.0	4.20	205.40	5,435.7	4,159.7	-27.8	25.4	31.1	12.83	11.88	230.94
5,467.0	8.30	212.10	5,466.5	4,190.5	-30.7	23.7	33.8	13.41	13.23	21.61
5,499.0	11.10	215.90	5,498.1	4,222.1	-35.1	20.7	37.7	8.97	8.75	11.88
5,531.0	10.60	217.10	5,529.5	4,253.5	-40.0	17.1	42.0	1.71	-1.56	3.75
5,562.0	11.70	215.20	5,559.9	4,283.9	-44.8	13.6	46.3	3.74	3.55	-6.13
5,594.0	12.40	212.80	5,591.2	4,315.2	-50.4	9.8	51.2	2.69	2.19	-7.50
5,625.0	14.20	211.70	5,621.4	4,345.4	-56.4	6.0	56.7	5.86	5.81	-3.55
5,657.0	16.80	212.60	5,652.2	4,376.2	-63.6	1.5	63.2	8.16	8.13	2.81
5,689.0	18.30	213.30	5,682.7	4,406.7	-71.7	-3.8	70.4	4.73	4.69	2.19
5,720.0	19.80	213.50	5,712.0	4,438.0	-80.2	-9.3	78.0	4.84	4.84	0.65
5,752.0	22.50	214.80	5,741.9	4,465.9	-89.7	-15.8	86.5	8.56	8.44	4.06
5,784.0	25.40	216.40	5,771.1	4,495.1	-100.3	-23.4	95.8	9.29	9.06	5.00
5,815.0	28.50	216.70	5,798.7	4,522.7	-111.6	-31.8	105.8	10.01	10.00	0.97
5,847.0	31.80	217.40	5,826.4	4,550.4	-124.4	-41.5	117.1	10.37	10.31	2.19
5,879.0	35.00	217.10	5,853.1	4,577.1	-138.4	-52.1	129.4	10.01	10.00	-0.94
5,910.0	38.50	216.70	5,877.9	4,601.9	-153.2	-63.2	142.5	11.32	11.29	-1.29
5,974.0	43.50	216.10	5,926.2	4,650.2	-187.0	-88.1	172.4	7.84	7.81	-0.94
6,037.0	42.50	215.70	5,972.3	4,696.3	-221.8	-113.3	203.2	1.65	-1.59	-0.63
6,100.0	44.00	216.40	6,018.2	4,742.2	-256.7	-138.7	234.0	2.50	2.38	1.11
6,163.0	43.80	216.50	6,063.6	4,787.6	-291.9	-164.7	265.1	0.34	-0.32	0.16
6,227.0	42.50	215.30	6,110.3	4,834.3	-327.3	-190.4	296.4	2.40	-2.03	-1.88
6,290.0	40.90	214.00	6,157.3	4,881.3	-361.8	-214.2	327.1	2.89	-2.54	-2.06
6,353.0	42.20	214.30	6,204.5	4,928.5	-396.4	-237.7	357.9	2.09	2.06	0.48
6,417.0	42.70	214.30	6,251.7	4,975.7	-432.0	-262.0	389.7	0.78	0.78	0.00
6,480.0	41.80	217.00	6,298.3	5,022.3	-466.5	-286.7	420.2	3.22	-1.43	4.29
6,543.0	40.40	217.10	6,345.8	5,069.8	-499.5	-311.6	449.3	2.22	-2.22	0.16
6,606.0	40.10	217.10	6,393.9	5,117.9	-532.0	-336.2	477.9	0.48	-0.48	0.00
6,669.0	40.00	217.20	6,442.1	5,166.1	-564.3	-360.7	506.4	0.19	-0.16	0.16
6,732.0	40.40	217.80	6,490.2	5,214.2	-596.6	-385.4	534.7	0.88	0.63	0.95
6,795.0	40.80	217.90	6,538.1	5,262.1	-628.9	-410.6	563.1	0.64	0.63	0.16
6,827.0	39.40	217.70	6,562.5	5,286.5	-645.2	-423.2	577.4	4.39	-4.38	-0.63
6,858.0	39.80	213.60	6,586.4	5,310.4	-661.3	-434.7	591.6	8.53	1.29	-13.23
6,890.0	42.40	209.60	6,610.5	5,334.5	-679.2	-445.7	607.8	11.55	8.13	-12.50
6,921.0	44.30	206.00	6,633.1	5,357.1	-698.0	-455.6	625.0	10.05	6.13	-11.61
6,953.0	46.00	203.80	6,655.6	5,379.6	-718.6	-465.2	644.0	7.21	5.31	-6.88



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513343
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513343	North Reference:	Gnd
Well:	Well #513343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
6,985.0	48.00	201.10	6,677.5	5,401.5	-740.2	-474.1	664.1	8.78	6.25	-8.44
7,016.0	49.70	198.80	6,697.9	5,421.9	-762.1	-482.1	684.6	7.83	5.48	-7.42
7,048.0	51.40	196.70	6,718.2	5,442.2	-785.7	-489.6	706.8	7.34	5.31	-6.56
7,080.0	53.60	194.30	6,737.7	5,461.7	-810.1	-496.4	730.1	9.09	6.88	-7.50
7,111.0	56.30	192.00	6,755.5	5,479.5	-834.9	-502.1	753.7	10.62	8.71	-7.42
7,143.0	57.90	190.10	6,772.9	5,496.9	-861.2	-507.3	779.0	7.06	5.00	-5.94
7,175.0	58.00	187.80	6,789.9	5,513.9	-888.0	-511.5	804.9	6.10	0.31	-7.19
7,206.0	61.10	186.60	6,805.6	5,529.6	-914.5	-514.8	830.7	10.54	10.00	-3.87
7,238.0	63.20	184.10	6,820.5	5,544.5	-942.7	-517.5	858.2	9.53	6.56	-7.81
7,270.0	66.40	183.40	6,834.1	5,558.1	-971.6	-519.4	886.5	10.19	10.00	-2.19
7,301.0	69.30	182.00	6,845.8	5,569.8	-1,000.3	-520.7	914.7	10.25	9.35	-4.52
Top of Marcellus@6854' TVD										
7,325.6	71.91	180.92	6,854.0	5,578.0	-1,023.5	-521.3	937.6	11.40	10.62	-4.40
7,333.0	72.70	180.60	6,856.2	5,580.2	-1,030.5	-521.4	944.5	11.40	10.64	-4.31
7,365.0	74.00	179.60	6,865.4	5,589.4	-1,061.2	-521.4	974.8	5.05	4.06	-3.13
513343 Plat LP4										
7,396.0	74.30	177.60	6,873.9	5,597.9	-1,091.0	-520.7	1,004.4	6.28	0.97	-6.45
7,428.0	76.40	176.10	6,882.0	5,606.0	-1,121.9	-519.0	1,035.3	7.98	6.56	-4.69
7,459.0	78.10	173.60	6,888.8	5,612.8	-1,152.0	-516.3	1,065.5	9.59	5.48	-8.06
7,491.0	79.10	171.10	6,895.1	5,619.1	-1,183.1	-512.1	1,096.8	8.27	3.13	-7.81
7,522.0	81.50	169.10	6,900.4	5,624.4	-1,213.2	-506.9	1,127.4	10.02	7.74	-6.45
7,554.0	84.30	167.10	6,904.3	5,628.3	-1,244.2	-500.3	1,159.1	10.72	8.75	-6.25
513343 LP 1165' VS										
7,559.6	84.69	166.83	6,904.9	5,628.9	-1,249.7	-499.1	1,164.6	8.45	6.98	-4.79
LP/Deepest Point of Well=7617' MD/ 6908' TVD										
7,617.0	88.70	164.10	6,908.2	5,632.2	-1,305.1	-484.7	1,221.6	8.45	6.98	-4.76
7,680.0	91.00	164.50	6,908.3	5,632.3	-1,365.8	-467.6	1,264.0	3.71	3.65	0.63
7,743.0	92.60	163.40	6,906.4	5,630.4	-1,426.3	-450.2	1,346.4	3.08	2.54	-1.75
7,806.0	92.10	164.40	6,903.8	5,627.8	-1,486.8	-432.8	1,408.8	1.77	-0.79	1.59
7,870.0	93.20	166.00	6,900.8	5,624.8	-1,548.6	-416.4	1,472.3	3.03	1.72	2.50
7,933.0	92.10	165.60	6,897.9	5,621.9	-1,609.6	-401.0	1,534.9	1.86	-1.75	-0.63
7,997.0	89.80	165.10	6,896.8	5,620.8	-1,671.5	-384.8	1,598.5	3.68	-3.59	-0.78
8,060.0	89.60	164.10	6,897.2	5,621.2	-1,732.2	-368.1	1,661.0	1.62	-0.32	-1.59
8,123.0	90.30	164.90	6,897.2	5,621.2	-1,792.9	-351.2	1,723.5	1.69	1.11	1.27
8,186.0	90.60	165.80	6,896.7	5,620.7	-1,853.9	-335.3	1,786.1	1.51	0.48	1.43
8,249.0	91.30	167.30	6,895.7	5,619.7	-1,915.1	-320.7	1,848.8	2.63	1.11	2.38
8,313.0	91.80	168.30	6,893.9	5,617.9	-1,977.7	-307.1	1,912.7	1.75	0.78	1.56
8,376.0	89.90	166.50	6,893.0	5,617.0	-2,039.1	-293.4	1,975.5	4.15	-3.02	-2.86
8,439.0	90.00	166.30	6,893.1	5,617.1	-2,100.4	-278.6	2,038.2	0.35	0.16	-0.32
8,503.0	90.10	166.60	6,893.0	5,617.0	-2,162.6	-263.6	2,101.9	0.49	0.16	0.47
8,566.0	89.70	166.40	6,893.1	5,617.1	-2,223.8	-248.9	2,164.7	0.71	-0.63	-0.32
8,629.0	89.40	165.70	6,893.6	5,617.6	-2,285.0	-233.7	2,227.4	1.21	-0.48	-1.11
8,692.0	89.40	165.40	6,894.3	5,618.3	-2,346.0	-218.0	2,290.0	0.48	0.00	-0.48



Phoenix Technology Services
Survey Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513343
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513343	North Reference:	Gnd
Well:	Well #513343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
8,756.0	89.50	165.60	6,894.9	5,618.9	-2,407.9	-202.0	2,353.6	0.35	0.16	0.31
8,819.0	91.30	165.10	6,894.5	5,618.5	-2,468.9	-186.0	2,416.2	2.97	2.86	-0.79
8,882.0	91.40	163.70	6,893.0	5,617.0	-2,529.6	-169.1	2,478.7	2.23	0.16	-2.22
8,945.0	90.60	162.70	6,891.9	5,615.9	-2,589.9	-150.9	2,541.0	2.03	-1.27	-1.59
9,008.0	90.90	162.60	6,891.0	5,615.0	-2,650.0	-132.1	2,603.2	0.50	0.48	-0.16
9,071.0	90.90	161.90	6,890.1	5,614.1	-2,710.0	-112.9	2,665.3	1.11	0.00	-1.11
9,135.0	91.90	164.30	6,888.5	5,612.5	-2,771.2	-94.3	2,728.6	4.06	1.56	3.75
9,198.0	90.20	164.80	6,887.3	5,611.3	-2,831.9	-77.5	2,791.1	2.81	-2.70	0.79
9,261.0	89.90	163.70	6,887.3	5,611.3	-2,892.5	-60.4	2,853.6	1.81	-0.48	-1.75
9,324.0	90.90	164.70	6,886.8	5,610.8	-2,953.1	-43.3	2,916.0	2.24	1.59	1.59
9,388.0	90.60	166.20	6,886.0	5,610.0	-3,015.1	-27.2	2,979.6	2.39	-0.47	2.34
9,451.0	90.80	168.60	6,885.2	5,609.2	-3,076.6	-13.4	3,042.4	3.82	0.32	3.81
9,514.0	89.60	168.10	6,885.0	5,609.0	-3,138.3	-0.7	3,105.3	2.06	-1.90	-0.79
9,578.0	88.40	166.70	6,887.2	5,611.2	-3,200.7	13.2	3,169.1	5.46	-5.00	-2.19
9,641.0	86.00	166.60	6,891.4	5,615.4	-3,261.8	27.7	3,231.7	0.65	-0.63	-0.16
9,704.0	88.10	166.50	6,894.7	5,618.7	-3,323.0	42.4	3,294.4	3.34	3.33	-0.16
9,768.0	89.50	166.10	6,896.0	5,620.0	-3,385.2	57.5	3,358.1	2.27	2.19	-0.63
9,831.0	91.20	165.80	6,895.6	5,619.6	-3,446.3	72.8	3,420.8	2.74	2.70	-0.48
9,894.0	90.90	165.40	6,894.5	5,618.5	-3,507.3	88.5	3,483.4	0.79	-0.48	-0.63
9,958.0	92.00	164.80	6,892.8	5,616.8	-3,569.1	104.9	3,546.9	1.96	1.72	-0.94
10,021.0	92.80	164.90	6,890.2	5,614.2	-3,629.9	121.4	3,609.4	1.28	1.27	0.16
10,084.0	91.60	164.10	6,887.8	5,611.8	-3,690.6	138.2	3,671.9	2.29	-1.90	-1.27
10,147.0	90.90	163.10	6,886.4	5,610.4	-3,751.0	156.0	3,734.2	1.94	-1.11	-1.59
10,210.0	90.30	162.40	6,885.8	5,609.8	-3,811.1	174.7	3,796.5	1.46	-0.95	-1.11
10,274.0	91.10	162.40	6,885.0	5,609.0	-3,872.1	194.0	3,859.6	1.25	1.25	0.00
10,337.0	89.70	163.20	6,884.5	5,608.5	-3,932.3	212.7	3,921.9	2.56	-2.22	1.27
10,400.0	89.30	162.30	6,885.1	5,609.1	-3,992.5	231.3	3,984.1	1.56	-0.63	-1.43
10,463.0	89.80	162.10	6,885.6	5,609.6	-4,052.5	250.6	4,046.2	0.85	0.79	-0.32
10,526.0	89.40	164.80	6,886.0	5,610.0	-4,112.8	268.5	4,108.6	4.33	-0.63	4.29
10,589.0	88.40	165.00	6,887.2	5,611.2	-4,173.7	284.9	4,171.1	1.62	-1.59	0.32
10,652.0	88.80	164.30	6,888.8	5,612.8	-4,234.4	301.6	4,233.6	1.28	0.63	-1.11
10,715.0	88.80	164.30	6,890.1	5,614.1	-4,295.0	318.7	4,296.1	0.00	0.00	0.00
10,778.0	89.30	165.40	6,891.1	5,615.1	-4,355.8	335.1	4,358.6	1.92	0.79	1.75
10,841.0	89.50	165.40	6,891.8	5,615.8	-4,416.8	351.0	4,421.2	0.32	0.32	0.00
10,904.0	89.70	165.50	6,892.2	5,616.2	-4,477.8	366.8	4,483.9	0.35	0.32	0.16
10,967.0	90.10	165.40	6,892.3	5,616.3	-4,538.7	382.7	4,546.5	0.65	0.63	-0.16
11,030.0	90.40	165.60	6,892.1	5,616.1	-4,599.7	398.4	4,609.1	0.57	0.48	0.32
11,093.0	90.50	166.10	6,891.6	5,615.6	-4,660.8	413.8	4,671.8	0.81	0.16	0.79
11,156.0	90.90	166.20	6,890.8	5,614.8	-4,722.0	428.9	4,734.5	0.65	0.63	0.16
11,220.0	90.70	165.00	6,889.9	5,613.9	-4,784.0	444.8	4,798.1	1.90	-0.31	-1.88
11,282.0	91.00	164.30	6,889.0	5,613.0	-4,843.8	461.2	4,859.6	1.23	0.48	-1.13
11,346.0	88.80	163.70	6,889.1	5,613.1	-4,905.3	478.9	4,923.0	3.56	-3.44	-0.94
11,409.0	88.40	164.10	6,890.6	5,614.6	-4,965.8	496.3	4,985.4	0.90	-0.63	0.63



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513343
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276.0usft
Site:	Doddridge County 513343	North Reference:	Gnd
Well:	Well #513343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
11,472.0	88.40	163.50	6,892.4	5,616.4	-5,026.3	513.9	5,047.8	0.95	0.00	-0.95
11,535.0	88.90	164.50	6,893.9	5,617.9	-5,086.8	531.3	5,110.2	1.77	0.79	1.59
11,598.0	90.90	166.40	6,894.0	5,618.0	-5,147.8	547.1	5,172.9	4.38	3.17	3.02
11,662.0	91.40	166.90	6,892.7	5,616.7	-5,210.0	561.9	5,236.6	1.10	0.78	0.78
11,725.0	92.00	168.80	6,890.8	5,614.8	-5,271.3	576.2	5,299.3	0.97	0.95	-0.16
11,788.0	89.60	164.00	6,890.0	5,614.0	-5,332.3	592.1	5,361.9	5.85	-3.81	-4.44
11,851.0	88.90	163.40	6,890.8	5,614.8	-5,392.8	609.8	5,424.3	1.46	-1.11	-0.95
11,915.0	89.40	164.20	6,891.7	5,615.7	-5,454.2	627.6	5,487.7	1.47	0.78	1.25
11,978.0	90.90	166.30	6,891.6	5,615.6	-5,515.1	643.6	5,550.3	4.10	2.38	3.33
12,041.0	91.50	167.20	6,890.2	5,614.2	-5,576.4	658.1	5,613.0	1.72	0.95	1.43
12,104.0	91.60	167.50	6,888.5	5,612.5	-5,637.9	671.9	5,675.8	0.50	0.16	0.48
12,167.0	89.80	162.40	6,887.8	5,611.8	-5,698.7	688.2	5,738.4	8.58	-2.86	-8.10
12,230.0	89.30	160.90	6,888.3	5,612.3	-5,758.5	708.1	5,800.4	2.51	-0.79	-2.38
12,293.0	89.60	161.50	6,888.9	5,612.9	-5,818.1	728.4	5,862.3	1.06	0.48	0.95
12,356.0	89.80	161.70	6,889.2	5,613.2	-5,877.9	748.2	5,924.4	0.45	0.32	0.32
12,419.0	90.20	162.20	6,889.2	5,613.2	-5,937.8	767.8	5,986.5	1.02	0.63	0.79
12,483.0	90.60	163.50	6,888.8	5,612.8	-5,999.0	786.6	6,049.7	2.13	0.63	2.03
12,546.0	90.90	163.50	6,887.9	5,611.9	-6,059.4	804.5	6,112.0	0.48	0.48	0.00
12,609.0	90.90	164.50	6,886.9	5,610.9	-6,119.9	821.9	6,174.5	1.59	0.00	1.59
12,672.0	90.50	164.90	6,886.2	5,610.2	-6,180.7	838.5	6,237.0	0.90	-0.63	0.63
12,736.0	90.70	165.20	6,885.5	5,609.5	-6,242.5	855.0	6,300.5	0.56	0.31	0.47
12,799.0	90.00	166.10	6,885.1	5,609.1	-6,303.5	870.6	6,363.2	1.81	-1.11	1.43
12,862.0	90.30	166.80	6,885.0	5,609.0	-6,364.8	885.4	6,425.9	1.21	0.48	1.11
12,926.0	91.20	168.40	6,884.1	5,608.1	-6,427.3	899.1	6,489.8	2.87	1.41	2.50
12,989.0	91.50	168.80	6,882.6	5,606.6	-6,489.0	911.6	6,552.6	0.79	0.48	0.63
13,052.0	91.90	168.60	6,880.8	5,604.8	-6,550.8	923.9	6,615.5	0.71	0.63	-0.32
13,116.0	91.50	166.90	6,878.9	5,602.9	-6,613.3	937.5	6,679.3	2.73	-0.63	-2.66
13,179.0	90.90	164.60	6,877.5	5,601.5	-6,674.3	953.0	6,742.0	3.77	-0.95	-3.65
13,242.0	91.00	164.30	6,876.5	5,600.5	-6,735.0	969.9	6,804.5	0.50	0.16	-0.48
13,305.0	91.10	164.50	6,875.3	5,599.3	-6,795.7	986.8	6,867.0	0.35	0.16	0.32
13,369.0	91.30	164.30	6,874.0	5,598.0	-6,857.3	1,004.0	6,930.4	0.44	0.31	-0.31
13,432.0	91.40	164.10	6,872.5	5,596.5	-6,917.9	1,021.2	6,992.9	0.35	0.16	-0.32
13,495.0	91.30	163.60	6,871.0	5,595.0	-6,978.4	1,038.7	7,055.3	0.81	-0.16	-0.79
13,558.0	91.20	162.70	6,869.7	5,593.7	-7,038.7	1,057.0	7,117.5	1.44	-0.16	-1.43
13,621.0	91.10	162.20	6,868.4	5,592.4	-7,098.7	1,076.0	7,179.7	0.81	-0.16	-0.79
13,685.0	90.20	163.50	6,867.7	5,591.7	-7,159.9	1,094.8	7,242.9	2.47	-1.41	2.03
13,748.0	89.70	165.00	6,867.7	5,591.7	-7,220.5	1,111.9	7,305.4	2.51	-0.79	2.38
13,811.0	90.60	165.30	6,867.6	5,591.6	-7,281.4	1,128.1	7,368.0	1.51	1.43	0.48
13,875.0	90.20	164.00	6,867.1	5,591.1	-7,343.1	1,145.0	7,431.5	2.13	-0.63	-2.03
13,938.0	90.40	163.60	6,866.8	5,590.8	-7,403.6	1,162.6	7,493.9	0.71	0.32	-0.63
14,001.0	91.80	165.50	6,865.6	5,589.6	-7,464.3	1,179.4	7,556.4	3.75	2.22	3.02
14,065.0	92.00	165.40	6,863.5	5,587.5	-7,526.3	1,195.4	7,620.0	0.35	0.31	-0.16



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513343
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1276 0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1276 0usft
Site:	Doddridge County 513343	North Reference:	Gnd
Well:	Well #513343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
14,128.0	91.60	164.80	6,861.5	5,585.5	-7,587.1	1,211.6	7,682.5	1.14	-0.63	-0.95
14,191.0	91.20	162.70	6,859.9	5,583.9	-7,647.6	1,229.2	7,744.9	3.39	-0.63	-3.33
14,254.0	91.80	164.40	6,858.3	5,582.3	-7,708.0	1,247.1	7,807.2	2.86	0.95	2.70
14,318.0	91.40	163.10	6,856.5	5,580.5	-7,769.4	1,265.0	7,870.6	2.12	-0.63	-2.03
14,381.0	90.70	161.60	6,855.3	5,579.3	-7,829.4	1,284.1	7,932.7	2.63	-1.11	-2.38
14,444.0	92.50	162.60	6,853.6	5,577.6	-7,889.3	1,303.4	7,994.8	3.27	2.86	1.59
14,507.0	93.60	163.80	6,850.2	5,574.2	-7,949.6	1,321.6	8,057.1	2.58	1.75	1.90
14,570.0	93.60	163.20	6,846.3	5,570.3	-8,009.8	1,339.5	8,119.3	0.95	0.00	-0.95
14,634.0	93.70	162.90	6,842.2	5,566.2	-8,070.9	1,358.1	8,182.4	0.49	0.16	-0.47
Last Survey=14666' MD/ 6840' TVD										
14,666.0	94.00	162.80	6,840.1	5,564.1	-8,101.4	1,367.5	8,214.0	0.99	0.94	-0.31
513343 Plat TD4										
14,714.4	94.00	162.80	6,836.7	5,560.7	-8,147.6	1,381.8	8,261.7	0.00	0.00	0.00
Projection to TD MD=14717' MD/ 6837' TVD										
14,717.0	94.00	162.80	6,836.5	5,560.5	-8,150.0	1,382.6	8,264.2	0.00	0.00	0.00

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,325.6	6,854.0	Top of Marcellus@6854' TVD		0.00	

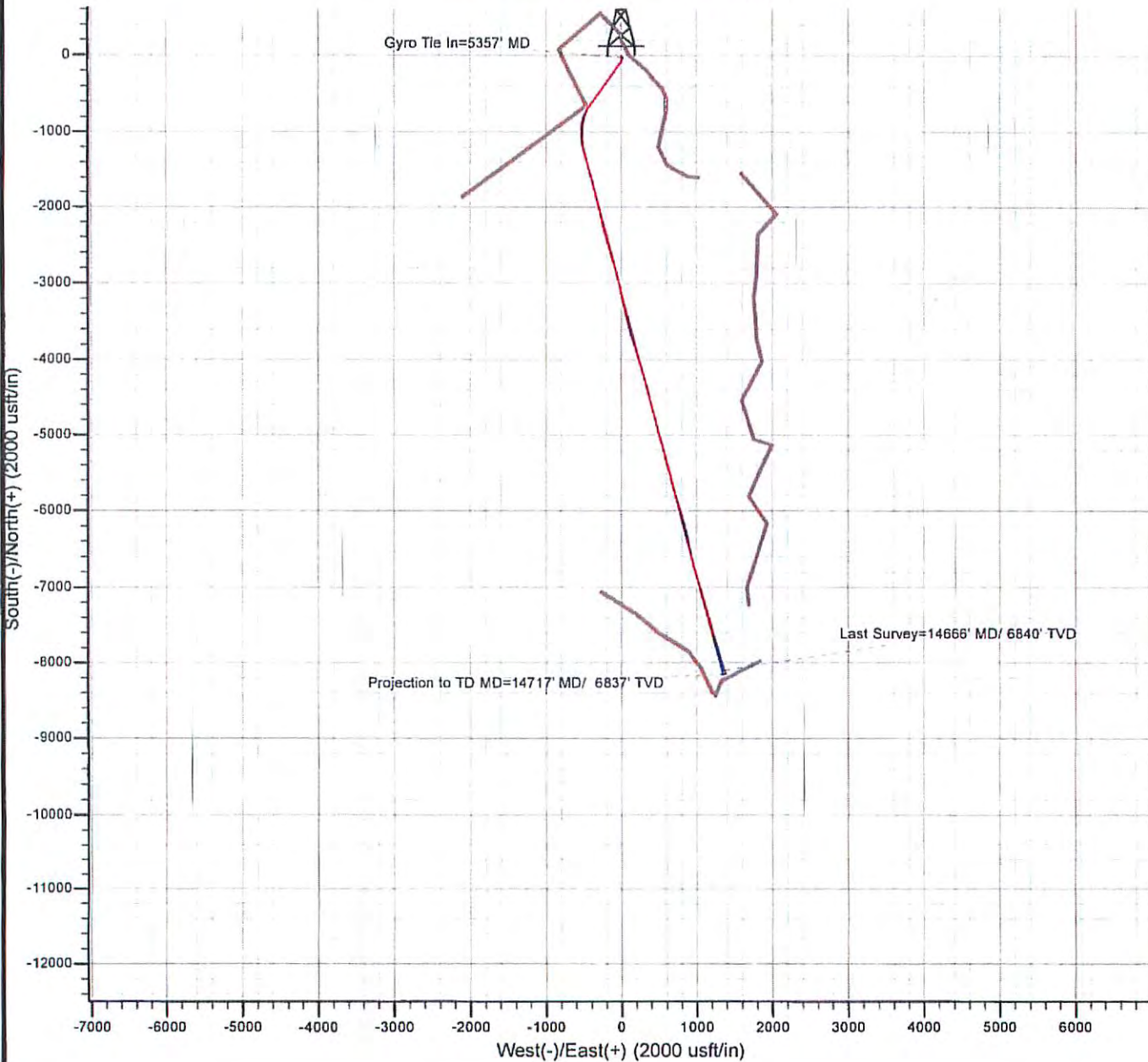
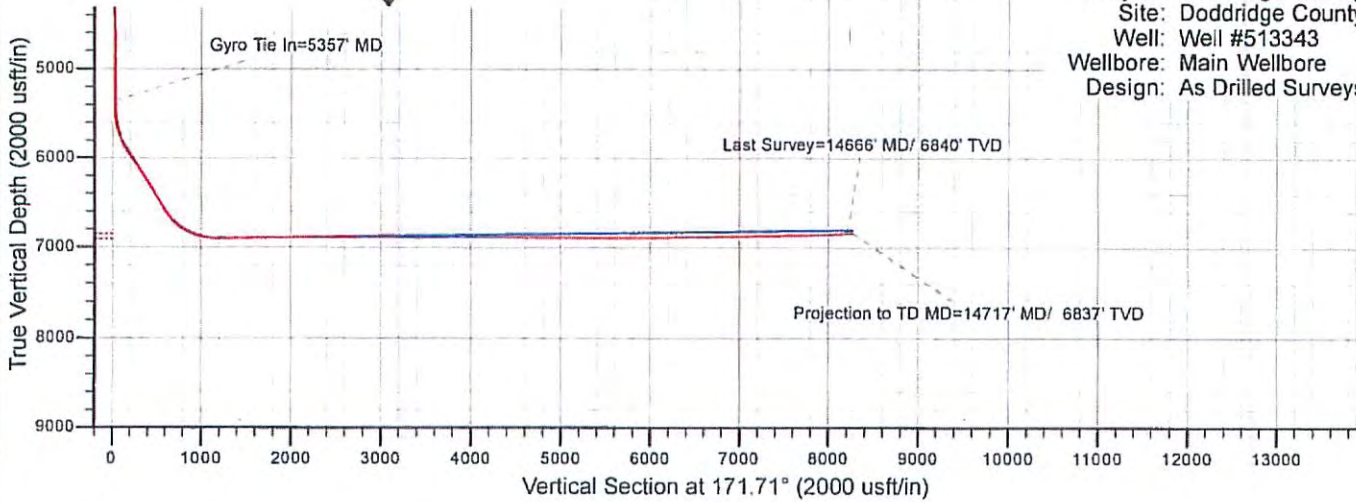
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,357.0	5,356.7	-26.6	25.2	Gyro Tie In=5357' MD
5,404.0	5,403.7	-26.6	25.8	KOP=5404' MD
7,617.0	6,908.2	-1,305.1	-484.7	LP/Deepest Point of Well=7617' MD/ 6908' TVD
14,666.0	6,840.1	-8,101.4	1,367.5	Last Survey=14666' MD/ 6840' TVD
14,717.0	6,836.5	-8,150.0	1,382.6	Projection to TD MD=14717' MD/ 6837' TVD

Checked By: _____	Approved By: _____	Date: _____
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EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513343
Well: Well #513343
Wellbore: Main Wellbore
Design: As Drilled Surveys



513343 - 47-017-06323-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	8/24/2014	14,690.00	14,693.00	10	MARCELLUS
1	8/25/2014	14,569.00	14,659.00	32	MARCELLUS
2	8/25/2014	14,419.00	14,539.00	40	MARCELLUS
3	8/25/2014	14,269.00	14,389.00	40	MARCELLUS
4	8/26/2014	14,119.00	14,235.00	40	MARCELLUS
5	8/26/2014	13,969.00	14,089.00	40	MARCELLUS
6	8/26/2014	13,819.00	13,941.00	40	MARCELLUS
7	8/26/2014	13,669.00	13,791.00	40	MARCELLUS
8	8/26/2014	13,519.00	13,641.00	40	MARCELLUS
9	8/27/2014	13,369.00	13,491.00	40	MARCELLUS
9.1 (Re-Perf)	8/27/2014	13,355.00	13,388.00	32	MARCELLUS
10	8/27/2014	13,205.00	13,327.00	40	MARCELLUS
11	8/27/2014	13,055.00	13,177.00	40	MARCELLUS
12	8/28/2014	12,905.00	13,027.00	40	MARCELLUS
13	8/28/2014	12,755.00	12,877.00	56	MARCELLUS
14	8/29/2014	12,605.00	12,727.00	40	MARCELLUS
15	8/29/2014	12,455.00	12,577.00	40	MARCELLUS
16	8/29/2014	12,305.00	12,427.00	40	MARCELLUS
16.1 (Re-Perf)	8/30/2014	12,305.00	12,427.00	32	MARCELLUS
17	8/30/2014	12,155.00	12,277.00	40	MARCELLUS
18	8/30/2014	12,007.00	12,125.00	40	MARCELLUS
19	8/30/2014	11,857.00	11,975.00	40	MARCELLUS
20	8/30/2014	11,705.00	11,827.00	40	MARCELLUS
21	8/31/2014	11,555.00	11,677.00	40	MARCELLUS
22	8/31/2014	11,405.00	11,527.00	40	MARCELLUS
23	8/31/2014	11,255.00	11,375.00	40	MARCELLUS
24	8/31/2014	11,105.00	11,227.00	40	MARCELLUS
25	8/31/2014	10,955.00	11,077.00	40	MARCELLUS
26	8/31/2014	10,807.00	10,925.00	40	MARCELLUS
27	9/4/2014	10,665.00	10,777.00	40	MARCELLUS
28	9/4/2014	10,505.00	10,627.00	40	MARCELLUS
29	9/5/2014	10,355.00	10,471.00	40	MARCELLUS
30	9/5/2014	10,205.00	10,327.00	40	MARCELLUS
31	9/5/2014	10,052.00	10,175.00	40	MARCELLUS
32	9/5/2014	9,910.00	10,025.00	40	MARCELLUS
33	9/6/2014	9,755.00	9,872.00	40	MARCELLUS
34	9/6/2014	9,606.00	9,724.00	40	MARCELLUS
35	9/6/2014	9,455.00	9,577.00	40	MARCELLUS
36	9/6/2014	9,305.00	9,427.00	40	MARCELLUS
37	9/6/2014	9,155.00	9,277.00	40	MARCELLUS
38	9/6/2014	9,007.00	9,125.00	40	MARCELLUS
39	9/7/2014	8,859.00	8,975.00	40	MARCELLUS
40	9/7/2014	8,707.00	8,825.00	40	MARCELLUS
41	9/7/2014	8,555.00	8,675.00	40	MARCELLUS
42	9/7/2014	8,405.00	8,527.00	40	MARCELLUS
43	9/7/2014	8,255.00	8,379.00	40	MARCELLUS
44	9/7/2014	8,104.00	8,225.00	40	MARCELLUS
45	9/7/2014	7,955.00	8,075.00	40	MARCELLUS
46	9/8/2014	7,806.00	7,925.00	40	MARCELLUS
47	9/8/2014	7,655.00	7,777.00	40	MARCELLUS
48	9/8/2014	7,505.00	7,627.00	40	MARCELLUS
49	9/8/2014	7,355.00	7,477.00	40	MARCELLUS
49.1 (Re-Perf)	9/9/2014	7,370.00	7,467.00	24	MARCELLUS

513343 - 47-017-06323-0000 - 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	8/24/2014	10.20	7,636.00	9,814.00	4,343	0	853	0
1	8/25/2014	87.20	8,364.00	8,744.00	5,079	200,020	6,301	0
2	8/25/2014	98.00	8,580.00	9,250.00	4,088	201,720	7,146	0
3	8/26/2014	93.80	8,314.00	8,648.00	4,590	199,840	5,589	0
4	8/26/2014	98.70	8,653.00	9,222.00	4,129	199,480	6,474	0
5	8/26/2014	95.60	8,679.00	9,021.00	5,591	199,640	5,552	0
6	8/26/2014	99.40	8,632.00	8,854.00	4,243	199,840	5,378	0
7	8/26/2014	91.50	8,744.00	9,211.00	4,995	200,300	5,990	0
8	8/26/2014	86.60	8,842.00	9,181.00	4,898	200,960	5,487	0
9	8/27/2014	93.90	8,933.00	9,248.00	5,561	10,000	2,336	0
9.1 (Re-Perf)	8/27/2014	56.00	8,276.00	9,115.00	4,987	2,000	2,498	0
10	8/27/2014	100.10	8,128.00	8,779.00	4,291	400,660	8,868	0
11	8/27/2014	90.30	8,696.00	9,441.00	4,766	199,100	5,051	0
12	8/28/2014	93.20	8,763.00	9,202.00	5,129	201,080	6,333	0
13	8/28/2014	89.20	8,679.00	9,181.00	4,945	200,620	6,121	0
14	8/29/2014	93.70	8,684.00	8,986.00	4,932	200,960	5,370	0
15	8/29/2014	97.00	8,503.00	9,134.00	4,208	200,480	5,800	0
16	8/29/2014	80.50	8,819.00	9,264.00	4,957	9,000	1,627	0
16.1 (Re-Perf)	8/30/2014	82.40	9,146.00	9,658.00	5,163	13,000	2,350	0
17	8/30/2014	100.60	8,198.00	8,764.00	5,517	401,766	8,784	0
18	8/30/2014	93.10	8,474.00	9,059.00	5,247	201,320	7,222	0
19	8/30/2014	100.60	8,149.00	8,426.00	5,268	200,280	5,371	0
20	8/30/2014	101.30	8,188.00	8,787.00	4,741	199,240	5,350	0
21	8/31/2014	101.30	8,302.00	8,620.00	4,594	201,180	5,392	0
22	8/31/2014	99.20	8,496.00	9,159.00	4,847	200,760	6,732	0
23	8/31/2014	99.60	8,539.00	8,655.00	5,241	200,690	4,929	0
24	8/31/2014	99.00	8,735.00	9,186.00	5,430	200,640	5,285	0
25	8/31/2014	99.30	8,224.00	8,719.00	5,272	200,140	5,320	0
26	9/4/2014	100.00	8,190.00	8,658.00	5,379	200,882	5,210	0
27	9/4/2014	98.50	8,354.00	8,882.00	5,129	200,620	5,351	0
28	9/4/2014	100.80	8,034.00	8,653.00	5,202	200,780	5,447	0
29	9/5/2014	99.30	8,059.00	8,712.00	4,971	200,880	5,403	0
30	9/5/2014	99.50	8,074.00	8,253.00	5,389	200,800	5,152	0
31	9/5/2014	99.50	8,258.00	8,513.00	4,653	200,780	5,247	0
32	9/5/2014	99.80	8,158.00	8,534.00	5,135	200,650	5,687	0
33	9/6/2014	99.20	8,115.00	8,587.00	5,464	200,920	5,219	0
34	9/6/2014	100.40	8,098.00	8,952.00	5,083	200,615	4,919	0
35	9/6/2014	100.50	8,054.00	8,324.00	5,234	200,814	4,995	0
36	9/6/2014	100.40	8,125.00	8,402.00	5,292	200,840	4,897	0
37	9/6/2014	91.80	8,768.00	9,066.00	5,275	200,490	5,180	0
38	9/6/2014	100.80	8,025.00	8,738.00	5,322	200,840	5,165	0
39	9/7/2014	101.00	7,783.00	8,020.00	5,223	200,340	5,184	0
40	9/7/2014	100.00	8,147.00	8,643.00	5,154	200,640	5,023	0
41	9/7/2014	101.00	8,027.00	9,291.00	5,319	200,560	5,235	0
42	9/7/2014	102.00	8,025.00	8,775.00	5,247	201,200	4,791	0
43	9/7/2014	101.00	8,114.00	9,160.00	5,501	200,210	5,019	0
44	9/7/2014	101.00	8,230.00	9,149.00	5,370	200,640	5,121	0
45	9/7/2014	99.00	7,959.00	8,554.00	5,281	200,480	5,151	0
46	9/8/2014	101.00	8,581.00	8,651.00	5,536	200,100	5,144	0
47	9/8/2014	100.00	7,984.00	9,087.00	5,175	199,670	5,376	0
48	9/8/2014	100.00	7,808.00	8,412.00	4,780	201,860	5,093	0
49	9/8/2014	78.00	8,234.00	9,559.00	4,500	80,430	4,840	0
49.1 (Re-Perf)	9/9/2014	98.80	8,146.00	8,852.00	4,486	139,680	4,152	0

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/24/2014
Job End Date:	9/9/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06323-00-00
Operator Name:	EQT Production
Well Name and Number:	WEU6 - 513343
Longitude:	-80.75379500
Latitude:	39.29022100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,908
Total Base Water Volume (gal):	12,425,906
Total Base Non Water Volume:	519,737



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	Carrier	Water	7732-18-5	100.00000	90.74817	
Sand	Stingray	Proppant	Crystalline Silica	14808-60-7	100.00000	8.62300	
Hydrochloric Acid 15%	Stingray	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.05993	
FRA-405	Stingray	Friction Reducer	Petroleum Distillates	64742-47-8	40.00000	0.03679	
			Sodium Chloride	7647-14-5	10.00000	0.00920	
			Ammonium Chloride	12125-02-9	7.00000	0.00644	
			Alcohols, C12-16, Ethoxylated	68551-12-2	7.00000	0.00644	
MX-5	Halliburton	Biocide	Sodium Nitrate	7631-99-4	60.00000	0.05375	
Scale Clear 112	Stingray	Scale Inhibitor	Non Hazardous	NA	100.00000	0.02435	
Polyfrac PTL Plus M-4.0	Stingray	Gel	Petroleum Distillates	64742-47-8	55.00000	0.00705	
			Guar Gum	9000-30-0	50.00000	0.00641	
			Clay	Proprietary	5.00000	0.00064	

MX-8	Halliburton	Biocide				
			Bacteria Culture	N/A	100.00000	0.00911
TCA-6038	Stingray	Corrosion Inhibitor				
			Methanol	67-56-1	20.00000	0.00027
Breaker 3L	Stingray	Gel Breaker				
			Sodium Chloride	7647-14-5	40.00000	0.00006
			Potassium Chloride	7447-40-7	10.00000	0.00001
			Sodium Chlorite	7758-19-2	5.00000	0.00001

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)

EQT PRODUCTION CO. LEWIS MAXWELL LEASE 640 ACRES± WELL NO. WV 513343

LATITUDE 39° 17' 30"
NOTES ON SURVEY

1. TIES TO WELLS, CORNERS, AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD 27.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 167 PAGE 831 & DEED BOOK 143 PAGE 277.
3. SURFACE OWNER AND ADJACENT INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2013.
4. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS (SURVEY GRADE TIES TO CORS NETWORK).
5. PLAT DATED 10/22/12 REVISED 07/02/13 TO SHOW NEW BOTTOM HOLE COORDINATES, 08/02/13 TO SHOW 500' SPACING FROM LATERAL REVISED 11/01/13 TO ADD ADDITIONAL NOTES AND APPROXIMATE LOCATION OF DODDRIDGE COUNTY MIDDLE SCHOOL BASED ON IMAGERY FROM MGCIST & REVISED 11/06/13 TO SHOW ADDITIONAL WELLS ON LEASE ETC.
6. NO WATER WELLS WERE FOUND WITHIN 250 FEET OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS (GREATER THAN 2500 SQUARE FEET) OR DWELLINGS WERE FOUND WITHIN 625 FEET OF CENTER OF PROPOSED WELL PAD.
7. PLAT UPDATED ON 07/08/14 TO SHOW AS DRILLED PATH COORDINATES PROVIDED BY EQT ON 06/27/14.

WELL NO. WV 513343
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)
N. 290,290.7
E. 1,645,140.6

LAT=(N) 39.290221
LONG=(W) 80.763795

UTM (NAD'83)(METERS)
N. 4,349,021.7
E. 621,246.9

LANDING POINT
WELL NO. WV 513343
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)
N. 289,206.6
E. 1,644,598.4

LAT=(N) 39.287224
LONG=(W) 80.755684

UTM (NAD'83)(METERS)
N. 4,348,688.7
E. 621,086.6

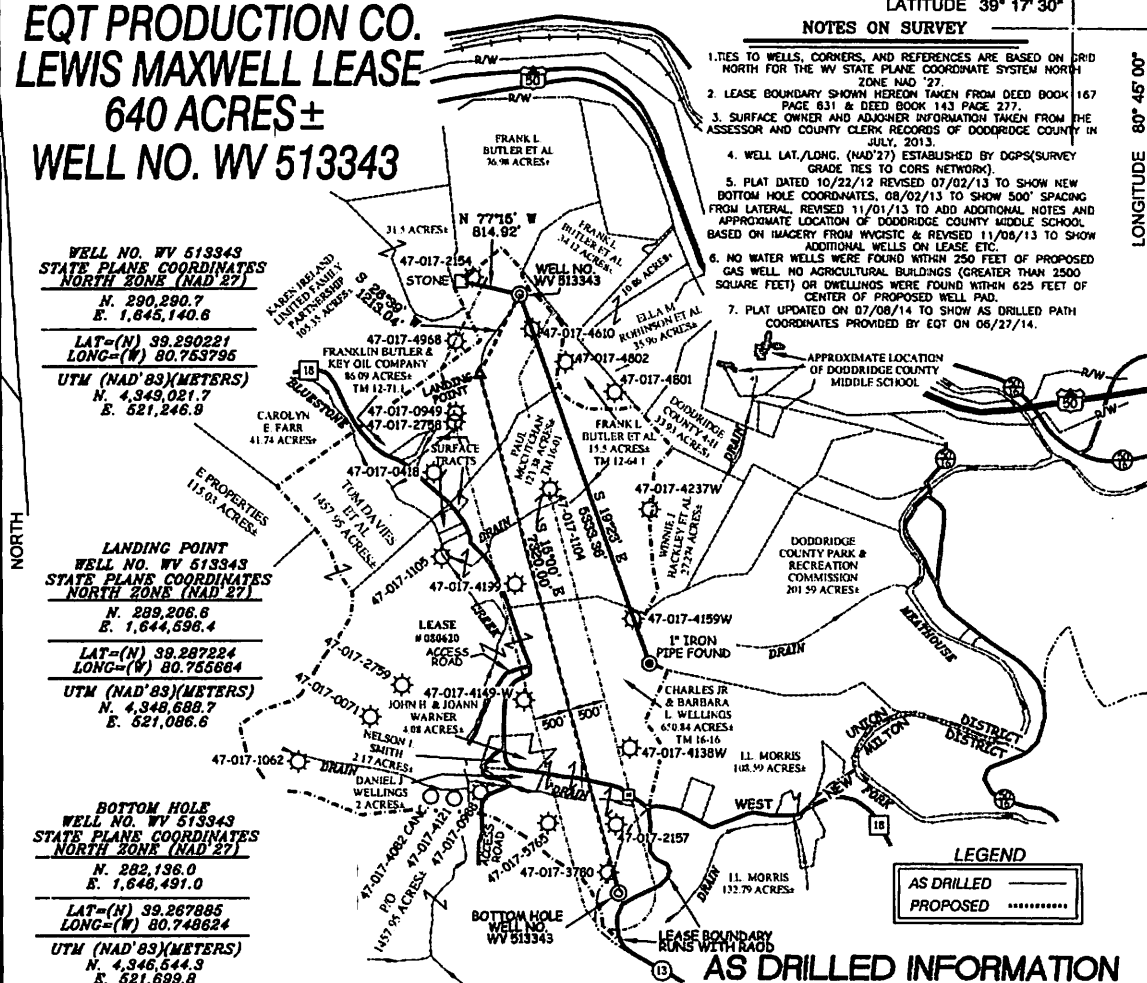
BOTTOM HOLE
WELL NO. WV 513343
STATE PLANE COORDINATES
NORTH ZONE (NAD 27)
N. 282,136.0
E. 1,646,491.0

LAT=(N) 39.287885
LONG=(W) 80.748624

UTM (NAD'83)(METERS)
N. 4,346,544.3
E. 621,699.8

NORTH

LONGITUDE 80° 45' 00"

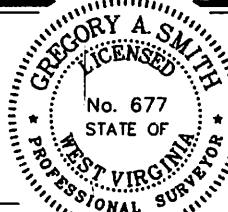


AS DRILLED INFORMATION

BOTTOM HOLE WELL NO. WV 513343 STATE PLANE COORDINATES NORTH ZONE (NAD 27)		WELL NO. WV 513343 STATE PLANE COORDINATES NORTH ZONE (NAD 27)	
N. 282,141.0	E. 1,646,529.1	N. 290,290.7	E. 1,645,140.6
LAT=(N) 39.287900	LONG=(W) 80.748511	LAT=(N) 39.290221	LONG=(W) 80.763795
UTM (NAD'83)(METERS) N. 4,346,548.0 E. 621,709.6		UTM (NAD'83)(METERS) N. 4,349,021.7 E. 621,246.9	



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 NOVEMBER 6 20 13

REVISED DATE JULY 08 20 14

OPERATORS WELL NO. WV 513343

API WELL NO. 47

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7831ASDRILLED513343

PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIES TO CORS NETWORK) SCALE 1" = 200'

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

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1,288 (GROUND) 1,281' (PROPOSED) WATERSHED BLUESTONE CREEK & MIDDLE ISLAND CREEK

DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE WEST UNION 7.5'

SURFACE OWNER FRANKLIN BUTLER & KEY OIL COMPANY ACREAGE 86.09±

ROYALTY OWNER LEWIS MAXWELL HEIRS ACREAGE 640±

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

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