

APPROVED

NAME: *Phil A. Huber*

DATE: *2/16/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513142

API: 47 - 017 - 06331

Submission: Initial Amended

Notes:

Add'l inj test [1.01, 1.02, 1.03]

Correction to Production Cement Top
(MD)

RECEIVED
Office of Oil and Gas

DEC 21 2015

WV Department of
Environmental Protection

04/01/2016
AX 04/01/16

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

API 47-017-06331 County DODDRIDGE District WEST UNION
Quad OXFORD 7.5' Pad Name OXF156 Field/Pool Name _____
Farm name HEASTER, CHARLES P., ET AL Well Number 513142
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 4,342,148 Easting 518,347
Landing Point of Curve Northing 4,342,212 Easting 518,735
Bottom Hole Northing 4,341,138 Easting 519,258

Elevation (ft) 1,202 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)
SBM 11.9ppg - powdered hydrocarbon resin, calcium carbonate, ground almond hulls, barium sulfate, calcium chloride, lecithin liquid, organophilic clay, polyaminated fatty acid, calcium hydroxide, polyimide surfactant, modified fatty acid, dimer.trimer fatty acid, ground walnut hulls, refined base oil.

Date permit issued 11/20/2013 Date drilling commenced 5/7/2014 Date drilling ceased 7/29/2014
Date completion activities began 1/18/2015 Date completion activities ceased 1/31/2015
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 169,216,320,386,462,600,1084 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1456 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1272,1312 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

04/01/2016

API 47-017 - 06331 Farm name HEASTER, CHARLES P., ET AL Well number 513142

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	94lb/ft	N/A	Y
Surface	17-1/2"	13-3/8"	1,192'	New	54.5lb/ft	320	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5,270'	New	40lb/ft	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	11,937'	New	20lb/ft	N/A	N
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	38	15.6	1.18	44.84	0	8
Surface	Class A	930	15.6	1.18	970	0	8
Coal							
Intermediate 1	Class A 5050 POZ/Class A/Class A	380/310/1115	14.2/15.6/15.6	1.28/1.18/1.18	2168	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	430/590	14.2/15.2	1.26/1.97	1704	4,604'	72
Tubing							

Drillers TD (ft) 11,940' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,645'

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-Bowspring centralizer on shoe track and every 300' to surface
 Intermediate-Bowspring centralizer on shoe track and every 500' to surface
 Production- Composite bodied centralizers on every joint from Shoe track up to 4,145'

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 _____

513142 Final Formations API#47-017-06331

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	1,084.00	1,084.00
SAND/SHALE	1	1	1,272.00	1,272.00
COAL	1,272.00	1,272.00	1,277.00	1,277.00
SAND/SHALE	1,277.00	1,277.00	1,312.00	1,312.00
COAL	1,312.00	1,312.00	1,318.00	1,318.00
SAND/SHALE	1,318.00	1,318.00	1,513.00	1,513.00
MAXTON	1,513.00	1,513.00	1,865.00	1,865.00
BIG LIME	1,865.00	1,865.00	1,923.00	1,923.00
KEENER	1,923.00	1,923.00	2,163.00	2,162.90
WEIR	2,163.00	2,162.90	2,358.00	2,357.90
BEREA	2,358.00	2,357.90	2,367.00	2,366.90
GANTZ	2,367.00	2,366.90	2,442.00	2,441.90
50F	2,442.00	2,441.90	2,563.00	2,562.90
30F	2,563.00	2,562.90	2,612.00	2,611.90
GORDON	2,612.00	2,611.90	2,710.00	2,709.90
4TH	2,710.00	2,709.90	2,918.00	2,917.90
BAYARD	2,918.00	2,917.90	3,207.00	3,206.90
WARREN	3,207.00	3,206.90	3,293.00	3,292.90
SPEECHLEY	3,293.00	3,292.90	3,796.00	3,795.90
BALLTOWN A	3,796.00	3,795.90	4,023.00	4,022.90
BALLTOWN B	4,023.00	4,022.90	4,183.00	4,182.90
BRADFORD	4,183.00	4,182.90	4,424.00	4,423.80
RILEY	4,424.00	4,423.80	4,871.00	4,870.70
BENSON	4,871.00	4,870.70	5,122.00	5,121.60
ALEXANDER	5,122.00	5,121.60	6,397.00	6,209.70
MIDDLESEX	6,397.00	6,209.70	6,454.00	6,227.10
GENESEEE	6,454.00	6,227.10	6,518.00	6,246.70
GENESEEO	6,518.00	6,246.70	6,559.00	6,259.60
TULLY	6,559.00	6,259.60	6,584.00	6,267.80
HAMILTON	6,584.00	6,267.80	6,598.00	6,272.60
MARCELLUS	6,598.00	6,272.60		

PHOENIX
TECHNOLOGY SERVICES



EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 513142

Well #513142

Main Wellbore

Design: As Drilled Surveys

Standard Survey Report

29 July, 2014

EQT

Where energy meets innovation.

04/01/2016



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513142
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1218.0usft
Site:	Doddridge County 513142	North Reference:	Grid
Well:	Well #513142	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 513142				
Site Position:		Northing:	267,891.60 usft	Latitude:	39.23
From:	Map	Easting:	1,635,248.80 usft	Longitude:	-80.79
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.82 °

Well	Well #513142					
Well Position	+N/-S	0.0 usft	Northing:	267,891.60 usft	Latitude:	39° 13' 42.038 N
	+E/-W	0.0 usft	Easting:	1,635,248.80 usft	Longitude:	80° 47' 15.381 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,202.0 usft	

Wellbore	Main Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	7/3/2014	-8.46	66.76	52,257

Design	As Drilled Surveys		
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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	138.89	

Survey Program	Date	7/29/2014			
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5,500.0	513142 Gyrodatta Gyros (Main Wellbore)	GYD_DP_MS	Gyrodatta gyro-compassing and drop	
0.00	11,940.0	513142 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3-standard declination	

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	-1,218.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.13	348.47	100.0	-1,118.0	0.1	0.0	-0.1	0.13	0.13	0.00
200.0	0.09	321.45	200.0	-1,018.0	0.3	-0.1	-0.3	0.06	-0.04	-27.02
300.0	0.10	300.21	300.0	-918.0	0.4	-0.2	-0.4	0.04	0.01	-21.24
400.0	0.04	1.43	400.0	-818.0	0.5	-0.3	-0.5	0.09	-0.06	61.22
500.0	0.04	16.74	500.0	-718.0	0.5	-0.3	-0.6	0.01	0.00	15.31
600.0	0.07	50.43	600.0	-618.0	0.6	-0.2	-0.6	0.04	0.03	33.69
700.0	0.17	35.44	700.0	-518.0	0.8	-0.1	-0.6	0.10	0.10	-14.99

04/01/2016



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513142
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1218.0usft
Site:	Doddridge County 513142	North Reference:	Grid
Well:	Well # 513142	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)	
800.0	0.14	35.25	800.0	-418.0	1.0	0.1	-0.7	0.03	-0.03	-0.19	
900.0	0.15	25.22	900.0	-318.0	1.2	0.2	-0.8	0.03	0.01	-10.03	
1,000.0	0.11	40.32	1,000.0	-218.0	1.4	0.3	-0.9	0.05	-0.04	15.10	
1,100.0	0.16	79.87	1,100.0	-118.0	1.5	0.5	-0.8	0.10	0.05	39.55	
1,200.0	0.17	88.90	1,200.0	-18.0	1.5	0.8	-0.6	0.03	0.01	9.03	
1,300.0	0.39	111.13	1,300.0	82.0	1.4	1.3	-0.2	0.24	0.22	22.23	
1,400.0	0.64	101.75	1,400.0	182.0	1.2	2.1	0.5	0.26	0.25	-9.38	
1,500.0	0.73	101.79	1,500.0	282.0	0.9	3.3	1.5	0.09	0.09	0.04	
1,600.0	0.71	107.76	1,600.0	382.0	0.6	4.5	2.5	0.08	-0.02	5.97	
1,700.0	0.63	114.08	1,700.0	482.0	0.2	5.6	3.5	0.11	-0.08	6.32	
1,800.0	0.68	118.32	1,800.0	582.0	-0.3	6.6	4.6	0.07	0.05	4.24	
1,900.0	0.50	126.64	1,900.0	682.0	-0.9	7.5	5.6	0.20	-0.18	8.32	
2,000.0	0.48	138.17	2,000.0	782.0	-1.4	8.1	6.4	0.10	-0.02	11.53	
2,100.0	0.45	147.50	2,100.0	882.0	-2.1	8.6	7.2	0.08	-0.03	9.33	
2,200.0	0.44	156.84	2,199.9	981.9	-2.8	9.0	8.0	0.07	-0.01	9.34	
2,300.0	0.43	157.48	2,299.9	1,081.9	-3.5	9.3	8.7	0.01	-0.01	0.64	
2,400.0	0.38	163.19	2,399.9	1,181.9	-4.1	9.5	9.4	0.06	-0.05	5.71	
2,500.0	0.36	182.01	2,499.9	1,281.9	-4.8	9.6	9.9	0.12	-0.02	18.82	
2,600.0	0.37	177.31	2,599.9	1,381.9	-5.4	9.6	10.4	0.03	0.01	-4.70	
2,700.0	0.42	203.82	2,699.9	1,481.9	-6.0	9.5	10.8	0.19	0.05	26.51	
2,800.0	0.34	203.75	2,799.9	1,581.9	-6.7	9.2	11.1	0.08	-0.08	-0.07	
2,900.0	0.34	198.86	2,899.9	1,681.9	-7.2	9.0	11.3	0.03	0.00	-4.89	
3,000.0	0.34	199.34	2,999.9	1,781.9	-7.8	8.8	11.6	0.00	0.00	0.48	
3,100.0	0.34	196.67	3,099.9	1,881.9	-8.3	8.6	11.9	0.02	0.00	-2.67	
3,200.0	0.34	208.41	3,199.9	1,981.9	-8.9	8.4	12.2	0.07	0.00	11.74	
3,300.0	0.34	211.71	3,299.9	2,081.9	-9.4	8.1	12.4	0.02	0.00	3.30	
3,400.0	0.28	223.20	3,399.9	2,181.9	-9.8	7.8	12.5	0.09	-0.06	11.49	
3,500.0	0.21	229.48	3,499.9	2,281.9	-10.1	7.5	12.5	0.07	-0.07	6.28	
3,600.0	0.20	242.70	3,599.9	2,381.9	-10.3	7.2	12.5	0.05	-0.01	13.22	
3,700.0	0.13	243.52	3,699.9	2,481.9	-10.4	6.9	12.4	0.07	-0.07	0.82	
3,800.0	0.46	289.09	3,799.9	2,581.9	-10.4	6.4	12.0	0.38	0.33	45.57	
3,900.0	0.72	292.82	3,899.9	2,681.9	-10.0	5.5	11.1	0.26	0.26	3.73	
4,000.0	0.87	294.94	3,999.9	2,781.9	-9.4	4.2	9.9	0.15	0.15	2.12	
4,100.0	1.13	299.96	4,099.9	2,881.9	-8.6	2.7	8.2	0.27	0.26	5.02	
4,200.0	1.28	303.80	4,199.9	2,981.9	-7.5	0.9	6.2	0.17	0.15	3.84	
4,300.0	1.51	307.53	4,299.8	3,081.8	-6.1	-1.1	3.9	0.25	0.23	3.73	
4,400.0	1.57	311.81	4,399.8	3,181.8	-4.4	-3.2	1.2	0.13	0.06	4.28	
4,500.0	1.55	313.51	4,499.8	3,281.8	-2.5	-5.2	-1.5	0.05	-0.02	1.70	
4,600.0	1.45	315.88	4,599.7	3,381.7	-0.7	-7.0	-4.1	0.12	-0.10	2.37	
4,700.0	1.53	313.19	4,699.7	3,481.7	1.1	-8.9	-6.7	0.11	0.08	-2.59	
4,800.0	1.25	317.43	4,799.7	3,581.7	2.9	-10.6	-9.1	0.30	-0.28	4.24	
4,900.0	1.17	318.19	4,899.6	3,681.6	4.4	-12.0	-11.2	0.08	-0.08	0.76	



Phoenix Technology Services
Survey Report



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Well:	Well #513142	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	1.01	319.71	4,999.6	3,781.6	5.9	-13.3	-13.1	0.16	-0.16	1.52
5,100.0	0.89	318.62	5,099.6	3,881.6	7.1	-14.3	-14.8	0.12	-0.12	-1.09
5,200.0	0.88	319.56	5,199.6	3,981.6	8.3	-15.4	-16.3	0.02	-0.01	0.94
5,300.0	0.89	320.62	5,299.6	4,081.6	9.5	-16.4	-17.9	0.02	0.01	1.06
5,400.0	1.82	330.21	5,399.6	4,181.6	11.4	-17.6	-20.2	0.95	0.93	9.59
Gyro Tie In=5500' MD										
5,500.0	2.53	344.21	5,499.5	4,281.5	14.9	-19.0	-23.8	0.88	0.71	14.00
5,632.0	2.60	349.80	5,631.4	4,413.4	20.7	-20.3	-29.0	0.20	0.05	4.23
KOP=6658' MD										
5,664.0	3.00	342.40	5,663.3	4,445.3	22.2	-20.7	-30.4	1.68	1.25	-23.13
5,695.0	6.00	9.00	5,694.2	4,476.2	24.6	-20.7	-32.1	11.54	9.68	85.81
5,727.0	9.30	18.70	5,725.9	4,507.9	28.7	-19.6	-34.5	11.04	10.31	30.31
5,758.0	10.90	24.40	5,756.5	4,538.5	33.7	-17.6	-37.0	6.08	5.16	18.39
5,790.0	12.70	26.90	5,787.8	4,569.8	39.6	-14.8	-39.6	5.85	5.63	7.81
5,822.0	15.40	30.40	5,818.8	4,600.8	46.4	-11.0	-42.2	8.84	8.44	10.94
5,853.0	18.80	30.70	5,848.4	4,630.4	54.3	-6.4	-45.1	10.97	10.97	0.97
5,884.0	21.70	30.50	5,877.5	4,659.5	63.5	-0.9	-48.5	9.36	9.35	-0.65
5,916.0	24.10	28.60	5,907.0	4,689.0	74.3	5.2	-52.6	7.85	7.50	-5.94
5,947.0	25.80	29.90	5,935.1	4,717.1	85.7	11.6	-57.0	5.76	5.48	4.19
5,979.0	28.60	31.00	5,963.6	4,745.6	98.4	19.0	-61.6	8.89	8.75	3.44
6,010.0	32.20	29.90	5,990.3	4,772.3	111.9	26.9	-66.6	11.75	11.61	-3.55
6,042.0	36.00	29.50	6,016.8	4,798.8	127.5	35.8	-72.5	11.90	11.88	-1.25
6,073.0	39.30	28.90	6,041.3	4,823.3	144.0	45.1	-78.9	10.71	10.65	-1.94
6,105.0	42.90	28.00	6,065.4	4,847.4	162.5	55.1	-86.2	11.40	11.25	-2.81
6,136.0	47.40	28.00	6,087.3	4,869.3	181.9	65.4	-94.0	14.52	14.52	0.00
6,168.0	51.60	26.50	6,108.1	4,890.1	203.5	76.5	-103.0	13.60	13.13	-4.69
6,199.0	55.10	25.90	6,126.6	4,908.6	225.8	87.5	-112.6	11.40	11.29	-1.94
6,231.0	59.30	25.90	6,143.9	4,925.9	250.0	99.2	-123.1	13.13	13.13	0.00
6,263.0	61.30	28.40	6,159.8	4,941.8	274.7	111.9	-133.4	9.23	6.25	7.81
6,294.0	64.80	29.20	6,173.8	4,955.8	299.0	125.2	-142.9	11.52	11.29	2.58
6,326.0	68.40	29.10	6,186.5	4,968.5	324.6	139.6	-152.8	11.25	11.25	-0.31
6,357.0	71.30	28.10	6,197.2	4,979.2	350.2	153.5	-162.9	9.83	9.35	-3.23
6,389.0	72.20	26.30	6,207.2	4,989.2	377.2	167.4	-174.1	6.04	2.81	-5.63
6,421.0	72.30	26.00	6,217.0	4,999.0	404.5	180.8	-185.9	0.95	0.31	-0.94
6,452.0	72.10	26.50	6,226.5	5,008.5	431.0	193.9	-197.3	1.67	-0.65	1.61
6,484.0	72.20	26.70	6,236.3	5,018.3	458.2	207.5	-208.8	0.67	0.31	0.63
6,514.0	72.10	27.20	6,245.5	5,027.5	483.7	220.4	-219.5	1.62	-0.33	1.67
6,546.0	71.60	28.70	6,255.4	5,037.4	510.6	234.7	-230.4	4.72	-1.56	4.69
6,577.0	70.60	34.00	6,265.5	5,047.5	535.6	249.9	-239.2	16.49	-3.23	17.10
6,609.0	69.50	38.30	6,276.4	5,058.4	559.9	267.7	-245.9	13.09	-3.44	13.44
6,640.0	68.60	42.90	6,287.5	5,069.5	581.9	286.5	-250.0	14.16	-2.90	14.84
6,672.0	67.30	46.00	6,299.5	5,081.5	603.0	307.3	-252.3	9.85	-4.06	9.69
6,703.0	65.90	48.50	6,311.8	5,093.8	622.3	328.2	-253.2	8.67	-4.52	8.06



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User On	Local Co-ordinate Reference:	Site Doddridge County 513142
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1218.0usft
Site:	Doddridge County 513142	North Reference:	Grid
Well:	Well #513142	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)	Doglag Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,735.0	65.10	51.40	6,325.1	5,107.1	641.1	350.4	-252.6	8.62	-2.50	9.06
6,766.0	65.20	55.40	6,338.1	5,120.1	657.8	373.0	-250.4	11.71	0.32	12.90
6,798.0	65.60	58.50	6,351.4	5,133.4	673.7	397.4	-246.3	8.90	1.25	9.69
6,829.0	65.80	61.90	6,364.2	5,146.2	687.7	421.9	-240.8	10.02	0.65	10.97
6,861.0	65.40	65.00	6,377.4	5,159.4	700.8	448.0	-233.5	8.91	-1.25	9.69
6,892.0	65.20	68.20	6,390.4	5,172.4	712.0	473.8	-224.9	9.40	-0.65	10.32
6,924.0	64.40	71.50	6,404.0	5,186.0	721.9	501.0	-214.5	9.66	-2.50	10.31
6,955.0	63.30	73.70	6,417.7	5,199.7	730.3	527.5	-203.4	7.29	-3.55	7.10
6,987.0	63.10	76.80	6,432.1	5,214.1	737.5	555.2	-190.7	8.67	-0.63	9.69
7,018.0	63.30	80.50	6,446.1	5,228.1	743.0	582.3	-177.0	10.67	0.65	11.94
7,050.0	64.30	85.30	6,460.2	5,242.2	746.5	610.8	-160.9	13.82	3.13	15.00
7,081.0	64.30	88.00	6,473.7	5,255.7	748.1	638.6	-143.8	7.85	0.00	8.71
7,113.0	64.50	91.20	6,487.5	5,269.5	748.3	667.5	-125.0	9.04	0.63	10.00
7,144.0	65.50	94.90	6,500.6	5,282.6	746.8	695.5	-105.4	11.29	3.23	11.94
7,176.0	66.80	97.80	6,513.5	5,295.5	743.6	724.6	-83.8	9.23	4.06	9.06
7,207.0	68.10	101.00	6,525.4	5,307.4	738.9	752.9	-61.7	10.41	4.19	10.32
7,239.0	69.00	103.70	6,537.1	5,319.1	732.6	782.0	-37.8	8.34	2.81	8.44
7,270.0	70.20	107.10	6,547.9	5,329.9	724.8	810.0	-13.6	10.98	3.87	10.97
7,302.0	71.60	110.60	6,558.4	5,340.4	715.1	838.6	12.6	11.22	4.38	10.94
7,333.0	73.40	114.00	6,567.7	5,349.7	703.8	865.9	39.0	11.96	5.81	10.97
7,365.0	74.00	116.10	6,576.7	5,358.7	690.8	893.7	67.1	6.57	1.88	6.56
7,396.0	74.80	117.40	6,585.1	5,367.1	677.4	920.4	94.8	4.79	2.58	4.19
7,428.0	75.30	120.80	6,593.3	5,375.3	662.4	947.4	123.9	10.38	1.56	10.63
7,459.0	77.10	124.90	6,600.7	5,382.7	646.0	972.7	152.8	14.09	5.81	13.23
7,491.0	77.60	128.50	6,607.7	5,389.7	627.4	997.7	183.3	11.09	1.56	11.25
7,522.0	77.50	131.40	6,614.4	5,396.4	607.9	1,020.9	213.2	9.14	-0.32	9.35
7,553.0	78.60	134.30	6,620.8	5,402.8	587.3	1,043.2	243.3	9.82	3.55	9.35
7,585.0	80.70	136.90	6,626.6	5,408.6	564.8	1,065.2	274.8	10.34	6.56	8.13
7,616.0	83.30	139.50	6,630.9	5,412.9	541.9	1,085.6	305.5	11.80	8.39	8.39
7,648.0	86.20	142.70	6,633.8	5,415.8	517.2	1,105.6	337.3	13.46	9.06	10.00
LP=77.11 MD: 6638 TVD										
7,711.0	89.70	147.00	6,636.1	5,418.1	465.7	1,141.9	399.9	8.80	5.56	6.83
7,775.0	89.80	147.70	6,636.4	5,418.4	411.8	1,176.4	463.2	1.10	0.16	1.09
7,838.0	90.60	149.20	6,636.1	5,418.1	358.1	1,209.4	525.3	2.70	1.27	2.38
7,900.0	90.30	151.10	6,635.6	5,417.6	304.4	1,240.2	586.1	3.10	-0.48	3.06
7,964.0	90.20	151.30	6,635.4	5,417.4	248.3	1,271.0	648.6	0.35	-0.16	0.31
8,026.0	90.50	151.60	6,635.0	5,417.0	193.8	1,300.7	709.2	0.68	0.48	0.48
8,090.0	91.30	154.70	6,634.0	5,416.0	136.7	1,329.6	771.2	5.00	1.25	4.84
8,153.0	91.30	155.70	6,632.6	5,414.6	79.5	1,356.0	831.6	1.59	0.00	1.59
8,216.0	91.10	156.50	6,631.2	5,413.2	22.0	1,381.5	891.8	1.31	-0.32	1.27
8,278.0	90.20	156.10	6,630.5	5,412.5	-34.8	1,406.4	950.9	1.59	-1.45	-0.65
8,341.0	90.30	157.10	6,630.3	5,412.3	-92.6	1,431.5	1,011.0	1.60	0.16	1.59
8,403.0	90.70	156.70	6,629.7	5,411.7	-149.6	1,455.8	1,069.9	0.91	0.65	-0.65



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513142
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1218.0usft
Site:	Doddridge County 513142	North Reference:	Grid
Well:	Well #513142	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)	
8,467.0	90.30	157.20	6,629.2	5,411.2	-208.5	1,460.8	1,130.8	1.00	-0.63	0.78	
8,529.0	89.50	157.70	6,629.3	5,411.3	-265.8	1,504.6	1,189.5	1.52	-1.29	0.81	
8,592.0	89.10	157.50	6,630.0	5,412.0	-324.0	1,528.6	1,249.2	0.71	-0.63	-0.32	
8,655.0	88.70	157.60	6,631.2	5,413.2	-382.3	1,552.7	1,308.9	0.65	-0.63	0.16	
8,719.0	89.00	157.50	6,632.5	5,414.5	-441.4	1,577.1	1,369.5	0.49	0.47	-0.16	
8,782.0	89.00	157.20	6,633.6	5,415.6	-499.5	1,601.4	1,429.3	0.48	0.00	-0.48	
8,843.0	89.10	156.70	6,634.6	5,416.6	-555.6	1,625.2	1,487.2	0.84	0.16	-0.82	
8,906.0	89.30	155.50	6,635.5	5,417.5	-613.2	1,650.8	1,547.4	1.93	0.32	-1.90	
8,969.0	89.50	154.90	6,636.2	5,418.2	-670.4	1,677.2	1,607.9	1.00	0.32	-0.95	
9,033.0	89.80	154.30	6,636.6	5,418.6	-728.2	1,704.6	1,669.5	1.05	0.47	-0.94	
9,095.0	89.90	153.80	6,636.7	5,418.7	-784.0	1,731.8	1,729.3	0.82	0.16	-0.81	
9,158.0	90.50	155.60	6,636.5	5,418.5	-840.9	1,758.7	1,789.9	3.01	0.95	2.86	
9,221.0	90.20	154.20	6,636.1	5,418.1	-898.0	1,785.4	1,850.5	2.27	-0.48	-2.22	
9,285.0	88.30	155.00	6,637.0	5,419.0	-955.8	1,812.9	1,912.1	3.22	-2.97	1.25	
9,347.0	88.10	154.70	6,638.9	5,420.9	-1,011.9	1,839.2	1,971.7	0.58	-0.32	-0.48	
9,410.0	87.90	154.40	6,641.1	5,423.1	-1,068.7	1,866.3	2,032.3	0.57	-0.32	-0.48	
9,473.0	88.70	155.00	6,643.0	5,425.0	-1,125.7	1,893.2	2,092.9	1.59	1.27	0.95	
9,536.0	88.70	154.50	6,644.4	5,426.4	-1,182.6	1,920.0	2,153.5	0.79	0.00	-0.79	
9,599.0	87.70	153.00	6,646.4	5,428.4	-1,239.1	1,947.9	2,214.3	2.86	-1.59	-2.38	
9,662.0	89.70	154.00	6,647.8	5,429.8	-1,295.5	1,976.0	2,275.3	3.55	3.17	1.59	
9,725.0	89.90	155.10	6,648.0	5,430.0	-1,352.4	2,003.1	2,335.9	1.77	0.32	1.75	
9,788.0	90.50	155.10	6,647.8	5,429.8	-1,409.5	2,029.6	2,396.4	0.95	0.95	0.00	
9,851.0	90.80	154.60	6,647.1	5,429.1	-1,466.5	2,056.4	2,457.0	0.93	0.48	-0.79	
9,914.0	92.00	153.30	6,645.6	5,427.6	-1,523.1	2,084.0	2,517.8	2.81	1.90	-2.06	
9,977.0	91.10	150.60	6,643.9	5,425.9	-1,578.7	2,113.6	2,579.2	4.52	-1.43	-4.29	
10,040.0	91.60	149.90	6,642.4	5,424.4	-1,633.4	2,144.9	2,640.9	1.37	0.79	-1.11	
10,104.0	91.60	150.60	6,640.6	5,422.6	-1,688.9	2,176.6	2,703.6	1.09	0.00	1.09	
10,167.0	92.80	151.30	6,638.2	5,420.2	-1,743.9	2,207.2	2,765.2	2.20	1.90	1.11	
10,230.0	94.80	151.50	6,634.0	5,416.0	-1,799.1	2,237.3	2,826.6	3.19	3.17	0.32	
10,293.0	94.60	151.00	6,628.8	5,410.8	-1,854.2	2,267.5	2,887.9	0.85	-0.32	-0.79	
10,357.0	95.00	151.30	6,623.5	5,405.5	-1,910.0	2,298.3	2,950.2	0.78	0.63	0.47	
10,420.0	92.80	153.30	6,619.2	5,401.2	-1,965.7	2,327.5	3,011.3	4.71	-3.49	3.17	
10,482.0	92.00	154.20	6,616.6	5,398.6	-2,021.2	2,354.9	3,071.2	1.94	-1.29	1.45	
10,545.0	91.00	154.30	6,614.9	5,396.9	-2,078.0	2,382.2	3,131.9	1.60	-1.59	0.16	
10,608.0	90.30	156.60	6,614.2	5,396.2	-2,135.2	2,408.4	3,192.3	3.82	-1.11	3.65	
10,671.0	90.10	157.00	6,614.0	5,396.0	-2,193.2	2,433.2	3,252.3	0.71	-0.32	0.63	
10,734.0	89.80	157.10	6,614.1	5,396.1	-2,251.2	2,457.8	3,312.1	0.50	-0.48	0.16	
10,798.0	89.40	156.80	6,614.5	5,396.5	-2,310.1	2,482.8	3,373.0	0.78	-0.63	-0.47	
10,861.0	90.10	156.80	6,614.8	5,396.8	-2,368.0	2,507.7	3,432.9	1.11	1.11	0.00	
10,924.0	90.20	157.10	6,614.6	5,396.6	-2,425.9	2,532.3	3,492.8	0.50	0.16	0.48	
10,987.0	90.10	157.20	6,614.5	5,396.5	-2,484.0	2,556.8	3,552.7	0.22	-0.16	0.16	
11,050.0	90.60	157.00	6,614.1	5,396.1	-2,542.0	2,581.3	3,612.5	0.85	0.79	-0.32	



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513142
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1218.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1218.0usft
Site:	Doddridge County 513142	North Reference:	Grid
Well:	Well #513142	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)
11,113.0	90.90	156.10	6,613.3	5,395.3	-2,599.8	2,606.4	3,672.5	1.51	0.48	-1.43
11,176.0	91.60	155.00	6,611.9	5,393.9	-2,657.1	2,632.4	3,732.9	2.07	1.11	-1.75
11,239.0	92.50	154.30	6,609.6	5,391.6	-2,714.0	2,659.4	3,793.5	1.81	1.43	-1.11
11,302.0	92.70	153.60	6,606.8	5,388.8	-2,770.6	2,687.0	3,854.2	1.15	0.32	-1.11
11,365.0	92.40	154.20	6,604.0	5,386.0	-2,827.1	2,714.7	3,915.0	1.06	-0.48	0.95
11,429.0	91.70	156.40	6,601.7	5,383.7	-2,885.2	2,741.4	3,976.4	3.61	-1.09	3.44
11,492.0	90.90	155.80	6,600.2	5,382.2	-2,942.8	2,767.0	4,036.5	1.59	-1.27	-0.95
11,555.0	90.90	156.50	6,599.3	5,381.3	-3,000.4	2,792.4	4,096.7	1.11	0.00	1.11
11,618.0	90.90	157.10	6,598.3	5,380.3	-3,058.3	2,817.2	4,156.6	0.95	0.00	0.95
11,681.0	90.50	157.30	6,597.5	5,379.5	-3,116.4	2,841.7	4,216.4	0.71	-0.63	0.32
11,744.0	90.50	157.20	6,596.9	5,378.9	-3,174.5	2,866.0	4,276.2	0.16	0.00	-0.16
11,807.0	90.00	156.40	6,596.7	5,378.7	-3,232.4	2,890.8	4,336.2	1.50	-0.79	-1.27
11,870.0	89.80	156.50	6,596.8	5,378.8	-3,290.1	2,916.0	4,396.2	0.35	-0.32	0.16
Last Survey=11881' MD/ 6597' TVD										
11,881.0	89.80	156.40	6,596.8	5,378.8	-3,300.2	2,920.4	4,406.7	0.91	0.00	-0.91
Projection to TD=11940' MD/ 6597' TVD										
11,940.0	89.80	156.40	6,597.0	5,379.0	-3,354.3	2,944.0	4,463.0	0.00	0.00	0.00

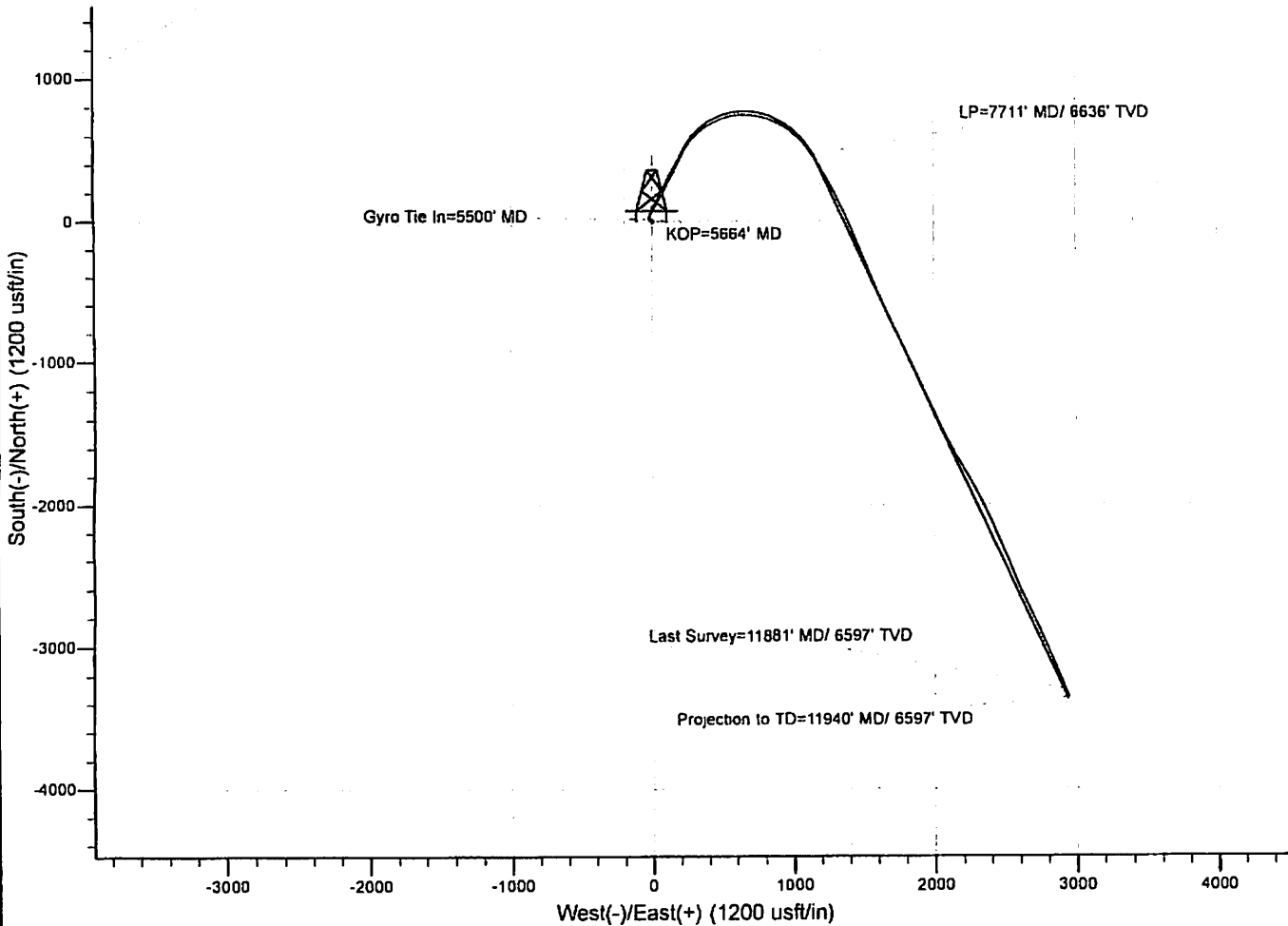
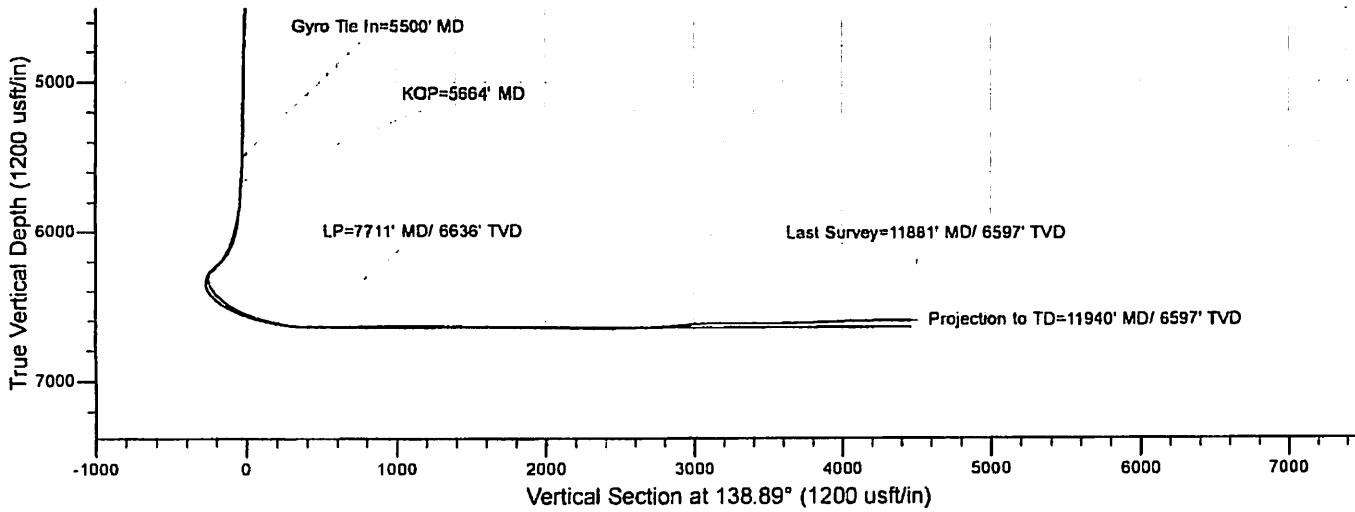
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,500.0	5,499.5	14.9	-19.0	Gyro Tie In=5500' MD
5,664.0	5,663.3	22.2	-20.7	KOP=5664' MD
7,711.0	6,636.1	465.7	1,141.9	LP=7711' MD/ 6636' TVD
11,881.0	6,596.8	-3,300.2	2,920.4	Last Survey=11881' MD/ 6597' TVD
11,940.0	6,597.0	-3,354.3	2,944.0	Projection to TD=11940' MD/ 6597' TVD

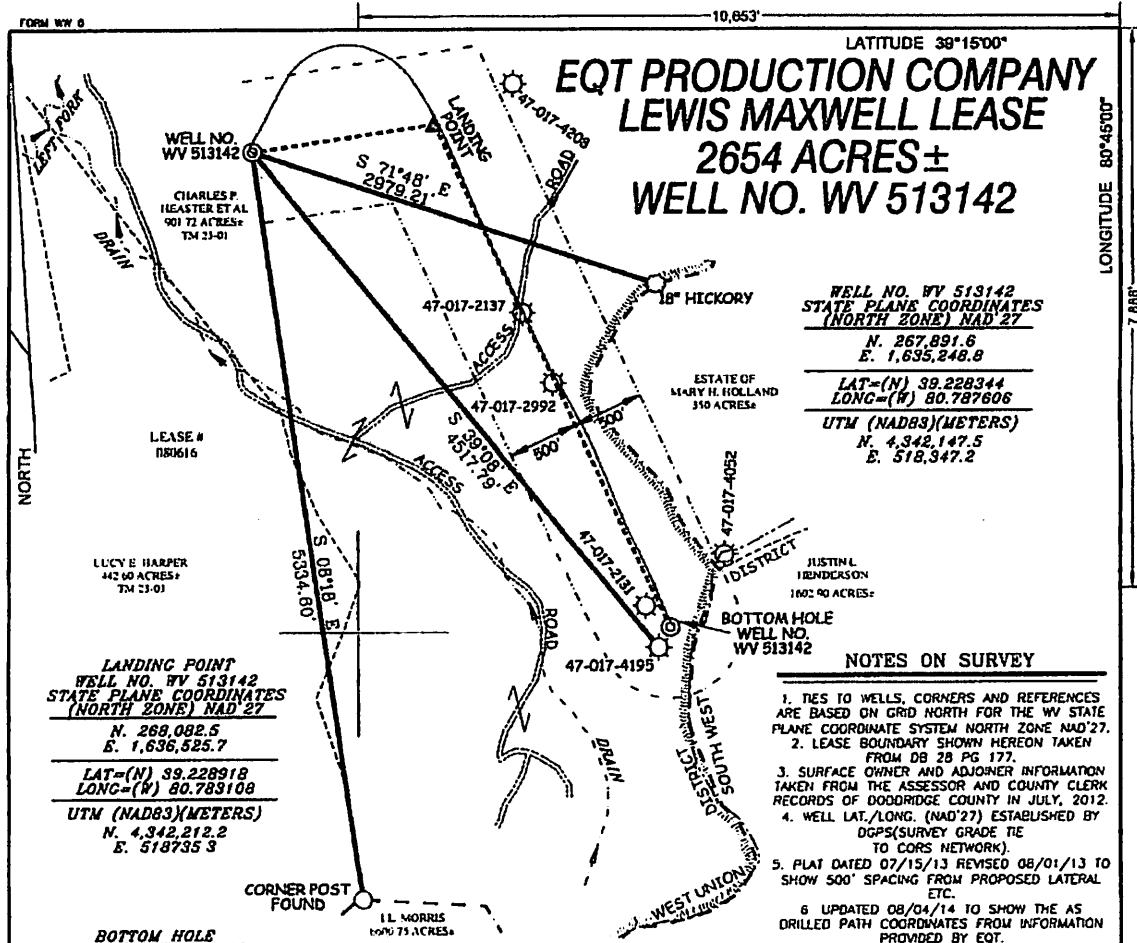
Checked By: _____ Approved By: _____ Date: _____



EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513142
Well: Well #513142
Wellbore: Main Wellbore
Design: As Drilled Surveys





**EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
2654 ACRES ±
WELL NO. WV 513142**

WELL NO. WV 513142
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27
N. 267,891.6
E. 1,635,248.8
LAT=(N) 39.228344
LONG=(W) 80.787606
UTM (NAD83)(METERS)
N. 4,342,147.5
E. 518,347.2

LANDING POINT
WELL NO. WV 513142
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27
N. 268,082.5
E. 1,636,525.7
LAT=(N) 39.228918
LONG=(W) 80.783108
UTM (NAD83)(METERS)
N. 4,342,212.2
E. 518,735.3

BOTTOM HOLE
WELL NO. WV 513142
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27
N. 264,529.8
E. 1,638,182.4
LAT=(N) 39.219230
LONG=(W) 80.777083
UTM (NAD83)(METERS)
N. 4,341,138.3
E. 519,258.0

- 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 DB 28 PG 177.
 3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF DODDRIDGE COUNTY IN JULY, 2012.
 4. WELL LAT./LONG. (NAD 27) ESTABLISHED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK).
 5. PLAT DATED 07/15/13 REVISED 08/01/13 TO SHOW 500' SPACING FROM PROPOSED LATERAL ETC.
 6. UPDATED 08/04/14 TO SHOW THE AS DRILLED PATH COORDINATES FROM INFORMATION PROVIDED BY EQT.

AS DRILLED INFORMATION

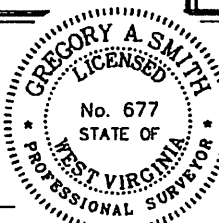
BOTTOM HOLE WELL NO. WV 513142 STATE PLANE COORDINATES (NORTH ZONE) NAD 27	WELL NO. WV 513142 STATE PLANE COORDINATES (NORTH ZONE) NAD 27
N. 264,529.8 E. 1,638,182.4	N. 267,891.6 E. 1,635,248.8
LAT=(N) 39.219230 LONG=(W) 80.777083	LAT=(N) 39.228344 LONG=(W) 80.787606
UTM (NAD83)(METERS) N. 4,341,138.3 E. 519,258.0	UTM (NAD83)(METERS) N. 4,342,147.5 E. 518,347.2

LEGEND

AS DRILLED ———

PROPOSED - - - - -

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 AUGUST 1 20 13

REVISED DATE AUGUST 4 20 14

OPERATORS WELL NO WV 513142

API WELL NO. 47

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 6980ASDRILLED513142

PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 1000'

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: ELEVATION 1,244'(GROUND) 1,202'(PROPOSED) WATERSHED LEFT FORK ARNOLDS CREEK

DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'

SURFACE OWNER CHARLES P. HEASTER ET AL ACREAGE 901.72 ±

ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654 ±

PROPOSED WORK: LEASE NO 080616

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

LONGITUDE 80°45'00" COUNTY NAME PERMIT

513139 - 47-017-06328-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	12/21/2014	11,935.50	11,938.07	10	MARCELLUS
1	1/18/2015 23:08	11,811.00	11,863.00	32	MARCELLUS
2	1/23/2015 7:47	11,661.00	11,763.00	40	MARCELLUS
3	1/24/2015 6:17	11,511.00	11,613.00	40	MARCELLUS
4	1/24/2015 12:06	11,361.00	11,463.00	40	MARCELLUS
5	1/25/2015 3:29	11,211.00	11,313.00	40	MARCELLUS
6	1/25/2015 8:45	11,061.00	11,161.00	40	MARCELLUS
7	1/25/2015 13:30	10,911.00	11,013.00	40	MARCELLUS
8	1/25/2015 18:17	10,611.00	10,713.00	40	MARCELLUS
9	1/25/2015 18:17	10,761.00	10,861.00	40	MARCELLUS
10	1/26/2015 2:19	10,461.00	10,563.00	40	MARCELLUS
11	1/27/2015 10:44	10,311.00	10,413.00	40	MARCELLUS
12	1/27/2015 15:05	10,161.00	10,263.00	40	MARCELLUS
13	1/27/2015 19:32	10,011.00	10,113.00	40	MARCELLUS
14	1/27/2015 23:56	9,861.00	9,963.00	40	MARCELLUS
15	1/28/2015 4:18	9,711.00	9,818.00	40	MARCELLUS
16	1/28/2015 8:48	9,561.00	9,663.00	40	MARCELLUS
17	1/28/2015 22:11	9,411.00	9,513.00	40	MARCELLUS
18	1/29/2015 3:47	9,261.00	9,363.00	40	MARCELLUS
19	1/29/2015 6:00	9,111.00	9,213.00	40	MARCELLUS
20	1/29/2015 11:45	8,961.00	9,063.00	40	MARCELLUS
21	1/29/2015 16:16	8,811.00	8,913.00	40	MARCELLUS
22	1/29/2015 19:00	8,661.00	8,765.00	40	MARCELLUS
23	1/29/2015 22:00	8,511.00	8,613.00	40	MARCELLUS
24	1/30/2015 3:25	8,361.00	8,463.00	40	MARCELLUS
25	1/30/2015 6:47	8,211.00	8,313.00	40	MARCELLUS
26	1/30/2015 10:53	8,063.00	8,163.00	40	MARCELLUS
27	1/30/2015 15:02	7,911.00	8,013.00	40	MARCELLUS
28	1/30/2015 18:00	7,761.00	7,863.00	40	MARCELLUS
29	1/31/2015 4:00	7,611.00	7,718.00	40	MARCELLUS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	1/18/2015
Job End Date	1/31/2015
State	West Virginia
County	Doddridge
API Number	47-017-06331-00-00
Operator Name	EQT Production
Well Name and Number	513142
Longitude	-80.78760600
Latitude	39.22834400
Datum	NAD83
Federal Tribal Well	NO
True Vertical Depth	6,273
Total Base Water Volume (gal)	7,555,464
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	89.56981	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	10.08924	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03044	None
FRW-600	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.02162	None
			Ammonium acetate	531-61-8	6.00000	0.00432	None
B-10	FTS International	High pH buffer	Potassium carbonate	584-08-7	48.00000	0.00985	None
			Potassium hydroxide	1310-58-3	20.00000	0.00410	None
HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55.00000	0.00327	None
			Guar gum	9000-30-0	50.00000	0.00297	None
			Clay	14808-60-7	2.00000	0.00012	None
			Surfactant	58439-51-0	2.00000	0.00012	None
ICI-3240	FTS International	Biocide	Dazomet	533-74-4	24.00000	0.00239	None

			Sodium hydroxide	1310-73-2	4.00000	0.00040	None
CS-500-SI	FTS International	Scale Inhibitor					
			Ethylene glycol	107-21-1	10.00000	0.00244	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Organic amine resin salt	Proprietary	30.00000	0.00012	None
			Isopropanol	67-63-0	30.00000	0.00012	None
			Ethylene glycol	107-21-1	30.00000	0.00012	None
			Aromatic aldehyde	Proprietary	10.00000	0.00004	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00004	None
			Dimethylformamide	68-12-2	10.00000	0.00004	None
NE-100	FTS International	Non-emulsifier					
			2-Butoxyethanol	111-76-2	10.00000	0.00004	None
			2-Propanol	67-63-0	10.00000	0.00004	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	0.00007	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00005	None
Chlorine Dioxide Solution - SVP-Pure	Neptune	Disinfectant and/or oxidizer					
			Chlorine dioxide	10049-04-4	0.30000	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)

EQT PRODUCTION COMPANY LEWIS MAXWELL LEASE 2654 ACRES± WELL NO. WV 513142

WELL NO. WV 513142
CHARLES P. HEASTER ET AL.
901.72 ACRES±
TM 23-01

LEASE # 080616

LUCY E. HARPER
442.60 ACRES±
TM 23-03

LANDING POINT
WELL NO. WV 513142
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27
N. 268,082.5
E. 1,636,526.7
LAT=(N) 39.228918
LONG=(W) 80.783109
UTM (NAD83)(METERS)
N. 4,342,212.2
E. 518,347.3

BOTTOM HOLE
WELL NO. WV 513142
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27
N. 264,529.8
E. 1,638,182.4
LAT=(N) 39.219230
LONG=(W) 80.777083
UTM (NAD83)(METERS)
N. 4,341,138.3
E. 519,258.0

WELL NO. WV 513142
STATE PLANE COORDINATES
(NORTH ZONE) NAD 27
N. 267,891.6
E. 1,635,248.8
LAT=(N) 39.228344
LONG=(W) 80.787606
UTM (NAD83)(METERS)
N. 4,342,147.5
E. 518,347.2

NOTES ON SURVEY

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6. UPDATED 08/04/14 TO SHOW THE AS DRILLED PATH COORDINATES FROM INFORMATION PROVIDED BY EQT.

**AS DRILLED COORDINATES
FOR WELL NO. WV 513142**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
NAD27 S.P.C.(FT) N. 267,891.6 E. 1,635,248.8
NAD27 GEO. LAT=(N) 39.228344 LONG=(W) 80.787606
NAD'83 UTM (M) N. 4,342,147.5 E. 518,347.2
BOTTOM HOLE
NAD27 S.P.C.(FT) N. 264,537.4 E. 1,638,182.7
NAD27 GEO. LAT=(N) 39.219251 LONG=(W) 80.777047
NAD'83 UTM (M) N. 4,341,140.7 E. 519,261.2

LEGEND

AS DRILLED ———
PROPOSED - - - - -



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P.S. 2288 *Earl N. Thompson*



(*) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE AUGUST 1, 2013
REVISED DATE 08/04/04 & 03/09/15
OPERATORS WELL NO. WV 513142
API WELL NO. 47-017-06331
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 6980ASDRILLED513142R
PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK)
SCALE 1" = 1000'

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 1,244(GROUND) 1,202(PROPOSED) WATERSHED LEFT FORK ARNOLDS CREEK

DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5

SURFACE OWNER CHARLES P. HEASTER ET AL. ACREAGE 901.72 ±
ROYALTY OWNER LEWIS MAXWELL HRS ACREAGE 2654 ±

PROPOSED WORK: LEASE NO. 080616
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