

APPROVED

NAME: *Jacqueline Shanta*

DATE: *2/11/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514663

API: 47 - 017 - 06385

Submission: Initial Amended

Notes: Add'l Inj Tests - stg 1.02, 6.01, 7.01,
27.01, 41.01

w/o Flowback

Correction to Production Cement Top
(MD)

RECEIVED
Office of Oil and Gas

DEC 21 2015

WV Department of
Environmental Protection

WS A-X 03/25/16 ^{03/25/2016}

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

API 47-017-06385 County Doddridge District West Union
Quad West Union 7.5' Pad Name WEU51 Field/Pool Name _____
Farm name Jane Hardin Trustee/Mary Holland Well Number 514663
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 4,345,185 Easting 520,435
Landing Point of Curve Northing 4,345,102 Easting 520,596
Bottom Hole Northing 4,343,025 Easting 521,606

Elevation (ft) 1208 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 w/o Flowback
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 12.5ppg - 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 1/31/2014 Date drilling commenced 5/29/2014 Date drilling ceased 10/9/2014
Date completion activities began 3/15/2015 Date completion activities ceased 3/28/2015
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 334 Open mine(s) (Y/N) depths N
Salt water depth(s) ft _____ Void(s) encountered (Y/N) depths N
Coal depth(s) ft 101,170,294,314,486,555 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

03/25/2016

API 47-017 - 06385 Farm name Jane Hardin Trustee/Mary Holland Well number 514663

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	28"	26"	40'	New	82.6#/ft		Y
Surface	17-1/2"	13-3/8"	1187'	New	54.5#/ft	234', 561'	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5340'	New	40#/ft	3151'	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	14,869'	New	20#/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	49	15.6	1.18	57.82	0	8
Surface	Class A	985	15.7	1.19	1172.15	0	8
Coal							
Intermediate 1	Class A	385/340/1,363	14.2/15.6/15.6	1.26/1.18/1.18	2048.6	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	305/1020	14.2/15.2	1.26/1.97	2394	4,643'	72
Tubing							

Drillers TD (ft) 14,885' Loggers TD (ft) 6,813'

Deepest formation penetrated Onondaga Plug back to (ft) 5,382'

Plug back procedure Drilled 60' into the Onondaga. Trip out hole to @ 6176' pumped 1 bbl H2O, 37.6 bbls cmt. 2 bbls H2O. Trip out hole @ 5651' pumped 2 bbls H2O, 37.6 bbls cmt. 2 bbls H2O. Trip out of hole to @ 4950' 2 bbls H2O, 40.9 bbls cmt, 20 bbls H2O

Kick off depth (ft) 5,387'

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-bow spring centralizers set at 992', 500'

Intermediate-bow spring centralizers set at 5294', 4811', 4328', 3847', 3367', 2910', 2430', 1948', 1466', 984', 502'

Production- Composite bodied centralizers on every joint from Shoe track up to 5,000' MD.

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 - 06385

Drilling Contractor: Savanna Drilling

Address: 2204 Timberloch Place Suite 230

City: Woodlands

State: TX

Zip: 77380

03/25/2016

API 47- 017- 06385

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FESH WATER ZONE	0	0	334	334
SAND / SHALE	0	0	101	101
WASHINGTON COAL	101	101	104	104
SAND / SHALE	104	104	170	170
WAYNESBURG A COAL	170	170	172	172
SAND / SHALE	172	172	294	294
COAL	294	294	298	298
SAND / SHALE	298	298	314	314
UNIONTOWN COAL	314	314	317	317
SAND / SHALE	317	317	486	486
REDSTONE COAL	486	486	487	487
SAND / SHALE	487	487	555	555
PITTSBURGH COAL	555	555	558	558
SAND / SHALE	558	558	1,478	1,478
MAXTON	1,478	1,478	1,874	1,874
BIG LIME	1,874	1,874	1,943	1,943
KEENER	1,943	1,943	2,173	2,173
WEIR	2,173	2,173	2,369	2,369
BEREA	2,369	2,369	2,375	2,375
GANTZ	2,375	2,375	2,489	2,489
50F	2,489	2,489	2,579	2,579
30F	2,579	2,579	2,723	2,723
4TH	2,723	2,723	2,916	2,916
BAYARD	2,916	2,916	3,233	3,233
WARREN	3,233	3,233	3,294	3,294
SPEECHLEY	3,294	3,294	3,965	3,965
BALLTOWN A	3,965	3,965	4,241	4,241
BRADFORD	4,241	4,241	4,447	4,447
RILEY	4,447	4,447	4,884	4,884
BENSON	4,884	4,884	5,131	5,131
ALEXANDER	5,131	5,131	6,386	6,300
SONYEA	6,386	6,300	6,552	6,447
MIDDLESEX	6,552	6,447	6,620	6,502
GENESE	6,620	6,502	6,754	6,594
GENESE	6,754	6,594	6,804	6,623
TULLY	6,804	6,623	6,861	6,653
HAMILTON	6,861	6,653	6,912	6,675
MARCELLUS	6,912	6,675	14,885	6,755

03/25/2016

PHOENIX
TECHNOLOGY SERVICES



EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 514663

Well #514663

Main Wellbore

Design: As Drilled Surveys

Standard Survey Report

07 October, 2014



Where energy meets innovation.



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514663
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514663	North Reference:	Grid
Well:	Well #514663	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 514663				
Site Position:	From: Map	Northing:	277 743.50 usft	Latitude:	39 26
		Easting:	1 642,266.10 usft	Longitude:	-80 76
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0 81 °

Well	Well #514663					
Well Position	+N/-S	0 0 usft	Northing:	277,743.50 usft	Latitude:	39° 15' 20.391 N
	+E/-W	0 0 usft	Easting:	1 642 266.10 usft	Longitude:	80° 45' 47.975 W
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft	Ground Level:	1,208.0 usft	

Wellbore	Main Wellbore				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	9/15/2014	-8.49	66.76	52,244

Design	As Drilled Surveys				
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Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	152.48

Survey Program	Date	From (')	To (usft)	Survey (Wellbore)	Tool Name	Description
	10/7/2014	0.00	5,395.0	514663 Gyrodata (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop
		0.00	14,885.0	514663 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	-1,224.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.24	139.96	100.0	-1,124.0	-0.2	0.1	0.2	0.24	0.24	0.00
200.0	0.25	155.32	200.0	-1,024.0	-0.5	0.4	0.6	0.07	0.01	15.36
300.0	0.18	159.72	300.0	-924.0	-0.9	0.5	1.0	0.07	-0.07	4.40
400.0	0.10	121.62	400.0	-824.0	-1.1	0.6	1.2	0.12	-0.08	-38.10
500.0	0.14	157.41	500.0	-724.0	-1.2	0.8	1.4	0.08	0.04	35.79
600.0	0.15	167.10	600.0	-624.0	-1.5	0.8	1.7	0.03	0.01	9.69
700.0	0.10	138.20	700.0	-524.0	-1.6	0.9	1.9	0.08	-0.05	-28.90



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User DB	Local Co-ordinate Reference:	Site Doddridge County 514663
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514663	North Reference:	Grid
Well:	Well #514663	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	0.15	143.76	800.0	-424.0	-1.8	1.1	2.1	0.05	0.05	5.56
900.0	0.23	226.01	900.0	-324.0	-2.1	1.0	2.3	0.26	0.08	82.25
1,000.0	0.25	242.30	1,000.0	-224.0	-2.3	0.7	2.3	0.07	0.02	16.29
1,100.0	0.16	219.78	1,100.0	-124.0	-2.5	0.4	2.4	0.12	-0.09	-22.52
1,200.0	0.14	213.78	1,200.0	-24.0	-2.7	0.2	2.5	0.03	-0.02	-6.00
1,300.0	0.08	232.58	1,300.0	76.0	-2.9	0.1	2.6	0.07	-0.06	18.80
1,400.0	0.25	85.57	1,400.0	176.0	-2.9	0.2	2.7	0.32	0.17	-147.01
1,500.0	0.36	99.88	1,500.0	276.0	-2.9	0.8	3.0	0.13	0.11	14.31
1,600.0	0.49	114.26	1,600.0	376.0	-3.2	1.5	3.5	0.17	0.13	14.38
1,700.0	0.56	125.44	1,700.0	476.0	-3.6	2.3	4.3	0.12	0.07	11.18
1,800.0	0.57	138.12	1,800.0	576.0	-4.3	3.0	5.2	0.13	0.01	12.68
1,900.0	0.58	138.88	1,900.0	676.0	-5.0	3.7	6.1	0.01	0.01	0.76
2,000.0	0.49	147.88	2,000.0	776.0	-5.8	4.2	7.1	0.12	-0.09	9.00
2,100.0	0.49	155.22	2,100.0	876.0	-6.5	4.6	7.9	0.06	0.00	7.34
2,200.0	0.44	166.12	2,200.0	976.0	-7.3	4.9	8.7	0.10	-0.05	10.90
2,300.0	0.40	164.02	2,300.0	1,076.0	-8.0	5.1	9.4	0.04	-0.04	-2.10
2,400.0	0.47	166.41	2,400.0	1,176.0	-8.7	5.3	10.2	0.07	0.07	2.39
2,500.0	0.41	173.18	2,500.0	1,276.0	-9.5	5.4	10.9	0.08	-0.06	6.77
2,600.0	0.32	171.62	2,600.0	1,376.0	-10.1	5.5	11.5	0.09	-0.09	-1.56
2,700.0	0.41	183.22	2,700.0	1,476.0	-10.7	5.5	12.1	0.12	0.09	11.60
2,800.0	0.43	163.01	2,799.9	1,575.9	-11.5	5.6	12.8	0.15	0.02	-20.21
2,900.0	0.39	191.28	2,899.9	1,675.9	-12.1	5.7	13.4	0.20	-0.04	28.27
3,000.0	0.41	172.77	2,999.9	1,775.9	-12.8	5.6	14.0	0.13	0.02	-18.51
3,100.0	0.45	178.42	3,099.9	1,875.9	-13.6	5.7	14.7	0.06	0.04	5.65
3,200.0	0.37	173.12	3,199.9	1,975.9	-14.3	5.7	15.3	0.09	-0.08	-5.30
3,300.0	0.41	173.84	3,299.9	2,075.9	-15.0	5.8	16.0	0.04	0.04	0.72
3,400.0	0.44	177.03	3,399.9	2,175.9	-15.7	5.9	16.6	0.04	0.03	3.19
3,500.0	0.40	176.59	3,499.9	2,275.9	-16.4	5.9	17.3	0.04	-0.04	-0.44
3,600.0	0.41	171.53	3,599.9	2,375.9	-17.1	6.0	18.0	0.04	0.01	-5.06
3,700.0	0.41	162.27	3,699.9	2,475.9	-17.8	6.1	18.7	0.07	0.00	-9.26
3,800.0	0.45	158.88	3,799.9	2,575.9	-18.5	6.4	19.4	0.05	0.04	-3.39
3,900.0	0.50	167.04	3,899.9	2,675.9	-19.3	6.6	20.2	0.08	0.05	8.16
4,000.0	0.47	198.19	3,999.9	2,775.9	-20.2	6.6	20.9	0.26	-0.03	31.15
4,100.0	0.58	220.79	4,099.9	2,875.9	-20.9	6.1	21.4	0.23	0.11	22.60
4,200.0	0.75	228.36	4,199.9	2,975.9	-21.7	5.3	21.7	0.19	0.17	7.57
4,300.0	0.88	246.37	4,299.9	3,075.9	-22.5	4.1	21.9	0.29	0.13	18.01
4,400.0	0.94	262.24	4,399.9	3,175.9	-22.9	2.6	21.5	0.26	0.06	15.87
4,500.0	1.02	267.99	4,499.9	3,275.9	-23.1	0.9	20.9	0.13	0.08	5.75
4,600.0	1.12	275.74	4,599.9	3,375.9	-23.0	-0.9	19.9	0.18	0.10	7.75
4,700.0	1.17	281.73	4,699.8	3,475.8	-22.7	-2.9	18.8	0.13	0.05	5.99
4,800.0	1.19	285.15	4,799.8	3,575.8	-22.2	-4.9	17.4	0.07	0.02	3.42
4,900.0	1.23	293.12	4,899.8	3,675.8	-21.5	-6.9	15.9	0.17	0.04	7.97



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User DB	Local Co-ordinate Reference:	Site Doddridge County 514653
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514653	North Reference:	Grid
Well:	Well #514653	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	1.24	298.89	4,999.8	3,775.8	-20.6	-8.8	14.2	0.12	0.01	5.77
5,100.0	1.31	300.30	5,099.7	3,875.7	-19.5	-10.8	12.3	0.08	0.07	1.41
5,200.0	1.59	304.66	5,199.7	3,975.7	-18.1	-12.9	10.1	0.30	0.28	4.36
5,254.0	1.72	306.83	5,253.7	4,029.7	-17.2	-14.2	8.7	0.27	0.24	4.02
5,364.0	1.80	297.60	5,363.6	4,139.6	-15.4	-17.0	5.8	0.27	0.07	-8.39
Cyno Tie In #5395.1 MD										
5,395.0	1.10	312.10	5,394.6	4,170.6	-15.0	-17.7	5.1	2.53	-2.26	46.77
5,427.0	3.30	287.00	5,426.6	4,202.6	-14.5	-18.8	4.2	7.35	6.88	-78.44
5,458.0	6.30	254.10	5,457.4	4,233.4	-14.8	-21.8	3.1	18.74	16.13	-106.13
5,490.0	12.80	247.50	5,488.9	4,264.9	-16.8	-27.3	2.3	14.54	14.05	-20.63
5,522.0	12.20	257.00	5,520.1	4,296.1	-19.0	-33.9	1.2	6.69	-1.88	29.69
5,553.0	10.20	276.80	5,550.6	4,326.6	-19.4	-39.8	-1.2	13.89	-6.45	63.87
5,585.0	9.40	294.40	5,582.1	4,358.1	-18.0	-45.0	-4.9	9.65	-2.50	55.00
5,616.0	11.00	313.60	5,612.6	4,388.6	-14.9	-49.4	-9.7	12.05	5.16	61.94
5,648.0	9.80	317.90	5,644.1	4,420.1	-10.7	-53.5	-15.2	4.46	-3.75	13.44
5,679.0	10.70	326.60	5,674.6	4,450.6	-6.4	-56.8	-20.6	5.77	2.90	28.06
5,711.0	13.10	339.80	5,705.9	4,481.9	-0.5	-59.7	-27.1	11.29	7.50	41.25
5,742.0	16.90	348.80	5,735.9	4,511.9	7.2	-61.8	-35.0	14.34	12.26	29.03
5,774.0	20.80	355.00	5,766.1	4,542.1	17.5	-63.2	-44.7	13.69	12.19	19.38
5,806.0	24.90	359.60	5,795.6	4,571.6	29.9	-63.7	-55.9	13.97	12.81	14.38
5,837.0	28.60	1.70	5,823.3	4,599.3	43.8	-63.6	-68.2	12.32	11.94	6.77
5,868.0	32.70	4.80	5,850.0	4,626.0	59.6	-62.6	-81.8	14.17	13.23	10.00
5,900.0	36.80	6.10	5,876.2	4,652.2	77.7	-60.9	-97.1	13.02	12.81	4.06
5,931.0	40.90	9.90	5,900.4	4,676.4	97.0	-58.2	-112.9	15.29	13.23	12.26
5,963.0	41.40	16.20	5,924.5	4,700.5	117.5	-53.4	-128.8	13.05	1.56	19.69
5,995.0	39.70	20.70	5,948.8	4,724.8	137.2	-46.8	-143.3	10.57	-5.31	14.06
6,026.0	36.00	24.70	5,973.3	4,749.3	154.7	-39.5	-155.5	14.32	-11.94	12.90
6,057.0	32.00	27.80	5,999.0	4,775.0	170.3	-31.9	-165.7	14.06	-12.90	10.00
6,089.0	28.50	31.30	6,026.6	4,802.6	184.3	-24.0	-174.5	12.24	-10.94	10.94
6,121.0	25.30	36.30	6,055.2	4,831.2	196.3	-15.9	-181.5	12.24	-10.00	15.63
6,152.0	23.60	33.50	6,083.4	4,859.4	206.9	-8.6	-187.4	6.64	-5.48	-9.03
6,183.0	21.80	38.60	6,112.0	4,888.0	216.5	-1.6	-192.8	8.60	-5.81	16.45
6,215.0	21.50	46.50	6,141.7	4,917.7	225.2	6.4	-196.8	9.15	-0.94	24.69
6,246.0	21.20	54.20	6,170.6	4,946.6	232.4	15.0	-199.2	9.09	-0.97	24.84
6,278.0	20.80	60.50	6,200.5	4,976.5	238.6	24.7	-200.2	7.16	-1.25	19.69
6,309.0	20.80	64.30	6,229.5	5,005.5	243.7	34.4	-200.2	4.35	0.00	12.26
6,341.0	23.20	74.30	6,259.2	5,035.2	247.9	45.6	-198.7	13.88	7.50	31.25
6,372.0	25.90	81.80	6,287.4	5,063.4	250.5	58.2	-195.2	13.29	8.71	24.19
6,404.0	27.30	90.20	6,316.0	5,092.0	251.5	72.5	-189.5	12.53	4.38	26.25
6,436.0	27.90	97.30	6,344.3	5,120.3	250.5	87.2	-181.8	10.44	1.88	22.19
6,467.0	29.30	103.40	6,371.6	5,147.6	247.8	101.8	-172.7	10.44	4.52	19.68
6,499.0	30.90	111.40	6,399.3	5,175.3	243.0	117.1	-161.4	13.49	5.00	25.00
6,531.0	32.70	116.20	6,426.5	5,202.5	236.2	132.5	-148.2	9.70	5.63	15.00



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514663
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224 0usft
Project:	Doddridge County, WV Gnd	MD Reference:	KB @ 1224 0usft
Site:	Doddridge County 514663	North Reference:	Grid
Well:	Well #514663	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)
6,562.0	34.90	123.20	6,452.2	5,228.2	227.6	147.5	-133.7	14.42	7.10	22.58
6,593.0	35.40	126.90	6,477.6	5,253.6	217.4	162.1	-117.9	7.06	1.61	11.94
6,625.0	39.00	128.40	6,503.1	5,279.1	205.5	177.4	-100.3	11.60	11.25	4.69
6,656.0	43.30	128.70	6,526.4	5,302.4	192.8	193.3	-81.7	13.89	13.87	0.97
6,688.0	46.90	131.50	6,549.0	5,325.0	178.2	210.6	-60.7	12.84	11.25	8.75
6,719.0	49.60	134.40	6,569.6	5,345.6	162.5	227.5	-38.9	11.16	8.71	9.35
6,751.0	54.30	136.90	6,589.3	5,365.3	144.4	245.1	-14.8	15.92	14.69	7.81
6,783.0	54.00	137.80	6,608.1	5,384.1	125.4	262.7	10.2	2.46	-0.94	2.81
6,814.0	57.80	139.30	6,625.5	5,401.5	106.1	279.7	35.1	12.90	12.26	4.84
6,846.0	60.10	139.10	6,642.0	5,418.0	85.4	297.6	61.8	7.21	7.19	-0.63
6,877.0	62.40	139.30	6,656.9	5,432.9	64.8	315.4	88.3	7.44	7.42	0.65
6,909.0	66.20	140.60	6,670.8	5,446.8	42.7	333.9	116.4	12.43	11.88	4.06
6,941.0	69.90	142.90	6,682.7	5,458.7	19.4	352.3	145.6	13.35	11.56	7.19
6,972.0	74.40	144.70	6,692.2	5,468.2	-4.4	369.7	174.7	15.53	14.52	5.81
7,003.0	77.80	146.70	6,699.7	5,475.7	-29.3	386.6	204.6	12.63	10.97	6.45
7,035.0	81.80	148.00	6,705.3	5,481.3	-55.8	403.6	236.0	13.12	12.50	4.06
7,066.0	82.90	150.20	6,709.5	5,485.5	-82.1	419.4	266.6	7.88	3.55	7.10
7,098.0	84.40	152.00	6,713.0	5,489.0	-110.0	434.8	298.4	7.30	4.69	5.63
7,130.0	86.20	154.70	6,715.6	5,491.6	-138.5	449.1	330.3	10.12	5.63	8.44
7,190.0	90.20	155.80	6,717.5	5,493.5	-192.9	474.2	390.2	6.91	6.67	1.83
7,254.0	90.60	155.60	6,717.1	5,493.1	-251.2	500.5	454.1	0.70	0.63	-0.31
7,317.0	89.70	155.70	6,716.9	5,492.9	-308.6	526.5	517.0	1.44	-1.43	0.16
7,380.0	89.50	155.50	6,717.3	5,493.3	-366.0	552.5	579.9	0.45	-0.32	-0.32
7,443.0	89.80	155.60	6,717.7	5,493.7	-423.4	578.6	642.8	0.50	0.48	0.16
7,507.0	90.40	156.40	6,717.6	5,493.6	-481.8	604.6	706.7	1.56	0.94	1.25
7,570.0	91.20	157.30	6,716.7	5,492.7	-539.8	629.4	769.5	1.91	1.27	1.43
7,633.0	90.40	156.10	6,715.8	5,491.8	-597.6	654.3	832.3	2.29	-1.27	-1.90
7,696.0	90.70	155.50	6,715.2	5,491.2	-655.1	680.1	895.2	1.06	0.48	-0.95
7,759.0	90.90	155.80	6,714.4	5,490.4	-712.5	706.1	958.1	0.57	0.32	0.48
7,823.0	90.50	154.90	6,713.6	5,489.6	-770.6	732.8	1,022.0	1.54	-0.63	-1.41
7,886.0	90.50	155.20	6,713.0	5,489.0	-827.7	759.4	1,084.9	0.48	0.00	0.48
7,949.0	91.00	156.20	6,712.2	5,488.2	-885.2	785.3	1,147.8	1.77	0.79	1.59
8,012.0	90.10	155.50	6,711.6	5,487.6	-942.6	811.1	1,210.7	1.81	-1.43	-1.11
8,075.0	90.50	156.10	6,711.3	5,487.3	-1,000.1	836.9	1,273.6	1.14	0.63	0.95
8,138.0	90.60	155.00	6,710.7	5,486.7	-1,057.4	863.0	1,336.5	1.75	0.16	-1.75
8,201.0	89.50	152.90	6,710.6	5,486.6	-1,114.0	890.6	1,399.5	3.76	-1.75	-3.33
8,264.0	89.70	151.80	6,711.1	5,487.1	-1,169.8	919.9	1,462.5	1.77	0.32	-1.75
8,327.0	89.90	151.80	6,711.3	5,487.3	-1,225.4	949.6	1,525.5	0.32	0.32	0.00
8,390.0	90.60	153.50	6,711.0	5,487.0	-1,281.3	978.6	1,588.5	2.92	1.11	2.70
8,453.0	91.60	155.20	6,709.8	5,485.8	-1,338.1	1,005.8	1,651.4	3.13	1.59	2.70
8,516.0	90.60	153.60	6,708.6	5,484.6	-1,394.9	1,033.1	1,714.4	2.99	-1.59	-2.54
8,579.0	90.40	154.20	6,708.0	5,484.0	-1,451.5	1,060.8	1,777.4	1.00	-0.32	0.95
8,642.0	90.50	154.00	6,707.5	5,483.5	-1,508.1	1,088.3	1,840.3	0.35	0.16	-0.32



Phoenix Technology Services
Survey Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514663
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514663	North Reference:	Grid
Well:	Well #514663	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)
8,705.0	90.60	154.80	6,706.9	5,482.9	-1,565.0	1,115.5	1,903.3	1.28	0.16	1.27
8,767.0	90.30	155.60	6,706.4	5,482.4	-1,621.2	1,141.5	1,965.2	1.38	-0.48	1.29
8,831.0	90.60	155.40	6,705.9	5,481.9	-1,679.5	1,168.0	2,029.1	0.56	0.47	-0.31
8,894.0	90.50	156.00	6,705.3	5,481.3	-1,736.9	1,194.0	2,092.0	0.97	-0.16	0.95
8,957.0	90.60	155.10	6,704.7	5,480.7	-1,794.2	1,220.0	2,154.9	1.44	0.16	-1.43
9,020.0	90.50	154.10	6,704.1	5,480.1	-1,851.1	1,247.1	2,217.9	1.60	-0.16	-1.59
9,083.0	90.70	152.30	6,703.5	5,479.5	-1,907.4	1,275.5	2,280.9	2.87	0.32	-2.86
9,146.0	90.60	150.00	6,702.7	5,478.7	-1,962.5	1,305.9	2,343.9	3.65	-0.16	-3.65
9,209.0	90.80	150.20	6,702.0	5,478.0	-2,017.2	1,337.3	2,406.8	0.45	0.32	0.32
9,272.0	90.60	150.50	6,701.2	5,477.2	-2,071.9	1,368.4	2,469.8	0.57	-0.32	0.48
9,335.0	89.90	146.60	6,700.9	5,476.9	-2,125.6	1,401.3	2,532.6	6.29	-1.11	-6.19
9,398.0	89.90	146.90	6,701.0	5,477.0	-2,178.3	1,435.8	2,595.3	0.48	0.00	0.48
9,461.0	88.80	148.60	6,701.8	5,477.8	-2,231.6	1,469.5	2,658.1	3.21	-1.75	2.70
9,524.0	89.60	150.60	6,702.6	5,478.6	-2,285.9	1,501.3	2,721.0	3.42	1.27	3.17
9,588.0	90.90	156.90	6,702.4	5,478.4	-2,343.3	1,529.6	2,784.9	10.05	2.03	9.84
9,650.0	91.40	157.10	6,701.1	5,477.1	-2,400.4	1,553.8	2,846.7	0.87	0.81	0.32
9,713.0	91.10	156.00	6,699.7	5,475.7	-2,458.1	1,578.9	2,909.5	1.81	-0.46	-1.75
9,777.0	91.80	155.70	6,698.1	5,474.1	-2,516.5	1,605.1	2,973.4	1.19	1.09	-0.47
9,840.0	91.50	157.20	6,696.3	5,472.3	-2,574.2	1,630.2	3,036.2	2.43	-0.48	2.38
9,903.0	90.20	156.20	6,695.4	5,471.4	-2,632.1	1,655.2	3,099.0	2.60	-2.06	-1.59
9,966.0	89.50	153.40	6,695.5	5,471.5	-2,689.1	1,682.0	3,162.0	4.58	-1.11	-4.44
10,029.0	89.20	152.50	6,696.3	5,472.3	-2,745.2	1,710.6	3,225.0	1.51	-0.48	-1.43
10,092.0	88.50	152.40	6,697.5	5,473.5	-2,801.0	1,739.8	3,288.0	1.12	-1.11	-0.16
10,155.0	88.80	153.90	6,699.0	5,475.0	-2,857.2	1,768.2	3,350.9	2.43	0.48	2.38
10,218.0	89.00	156.40	6,700.2	5,476.2	-2,914.4	1,794.7	3,413.9	3.98	0.32	3.97
10,282.0	88.90	155.40	6,701.4	5,477.4	-2,972.8	1,820.8	3,477.7	1.57	-0.16	-1.56
10,345.0	89.00	154.90	6,702.5	5,478.5	-3,030.0	1,847.3	3,540.7	0.81	0.16	-0.79
10,408.0	88.90	156.70	6,703.7	5,479.7	-3,087.4	1,873.1	3,603.5	2.86	-0.16	2.86
10,471.0	88.90	157.80	6,704.9	5,480.9	-3,145.5	1,897.4	3,666.3	1.75	0.00	1.75
10,535.0	89.40	156.40	6,705.9	5,481.9	-3,204.4	1,922.3	3,730.1	2.32	0.78	-2.19
10,598.0	89.50	156.30	6,706.5	5,482.5	-3,262.1	1,947.6	3,792.9	0.22	0.16	-0.16
10,661.0	89.50	155.30	6,707.0	5,483.0	-3,319.6	1,973.4	3,855.8	1.59	0.00	-1.59
10,724.0	89.70	156.10	6,707.4	5,483.4	-3,377.0	1,999.4	3,918.7	1.31	0.32	1.27
10,788.0	89.80	156.40	6,707.7	5,483.7	-3,435.6	2,025.1	3,982.6	0.49	0.16	0.47
10,851.0	90.00	156.20	6,707.8	5,483.8	-3,493.3	2,050.5	4,045.5	0.45	0.32	-0.32
10,914.0	89.80	154.70	6,707.9	5,483.9	-3,550.6	2,076.6	4,108.4	2.40	-0.32	-2.38
10,977.0	90.00	154.70	6,708.1	5,484.1	-3,607.5	2,103.6	4,171.3	0.32	0.32	0.00
11,040.0	90.60	155.40	6,707.7	5,483.7	-3,664.7	2,130.1	4,234.3	1.46	0.95	1.11
11,103.0	90.50	155.10	6,707.1	5,483.1	-3,721.9	2,156.5	4,297.2	0.50	-0.16	-0.48
11,167.0	90.90	154.10	6,706.3	5,482.3	-3,779.7	2,184.0	4,361.1	1.68	0.63	-1.56
11,230.0	90.90	154.30	6,705.3	5,481.3	-3,836.4	2,211.4	4,424.1	0.32	0.00	0.32
11,293.0	89.90	156.10	6,704.9	5,480.9	-3,893.6	2,237.8	4,487.0	3.27	-1.59	2.86



Phoenix Technology Services
Survey Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	
Company:	Ma	TVD Reference:	
Project:		MD Reference:	
Site:		North Reference:	
Well:		Survey Calculation Method:	
Wellbore:			
Design:			

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,356.0	88.80	157.90	6,705.6	5,481.6	-3,951.6	2,262.4	4,549.8	3.35	-1.75	2.86
11,419.0	89.00	158.40	6,706.8	5,482.8	-4,010.0	2,285.9	4,612.5	0.85	0.32	0.79
11,482.0	89.40	159.10	6,707.7	5,483.7	-4,068.7	2,308.7	4,675.1	1.28	0.63	1.11
11,545.0	88.90	158.50	6,708.6	5,484.6	-4,127.5	2,331.5	4,737.7	1.24	-0.79	-0.95
11,608.0	88.70	158.60	6,710.0	5,486.0	-4,186.1	2,354.5	4,800.4	0.35	-0.32	0.16
11,671.0	89.30	159.60	6,711.1	5,487.1	-4,244.9	2,377.0	4,862.9	1.85	0.95	1.59
11,734.0	88.80	159.20	6,712.1	5,488.1	-4,303.9	2,399.1	4,925.5	1.02	-0.79	-0.63
11,797.0	88.70	159.10	6,713.5	5,489.5	-4,362.8	2,421.6	4,988.0	0.22	-0.16	-0.16
11,860.0	88.10	159.40	6,715.2	5,491.2	-4,421.7	2,443.9	5,050.5	1.06	-0.95	0.48
11,923.0	86.30	159.00	6,718.3	5,494.3	-4,480.5	2,466.2	5,113.0	2.93	-2.86	-0.63
11,986.0	85.90	158.30	6,722.6	5,498.6	-4,539.0	2,489.1	5,175.5	1.28	-0.63	-1.11
12,048.0	86.20	156.30	6,726.9	5,502.9	-4,596.1	2,513.0	5,237.2	3.25	0.48	-3.23
12,111.0	86.80	155.00	6,730.7	5,506.7	-4,653.4	2,538.9	5,299.9	2.27	0.95	-2.06
12,174.0	87.60	154.30	6,733.8	5,509.8	-4,710.2	2,565.8	5,362.8	1.69	1.27	-1.11
12,237.0	88.60	153.50	6,735.9	5,511.9	-4,766.8	2,593.5	5,425.8	2.03	1.59	-1.27
12,301.0	89.70	152.40	6,736.8	5,512.8	-4,823.8	2,622.6	5,489.8	2.43	1.72	-1.72
12,364.0	88.50	149.60	6,737.8	5,513.8	-4,878.8	2,653.2	5,552.7	4.83	-1.90	-4.44
12,427.0	89.50	148.90	6,738.9	5,514.9	-4,933.0	2,685.4	5,615.6	1.94	1.59	-1.11
12,490.0	89.50	147.40	6,739.5	5,515.5	-4,986.5	2,718.6	5,678.4	2.38	0.00	-2.38
12,553.0	90.20	148.40	6,739.6	5,515.6	-5,039.9	2,752.1	5,741.2	1.94	1.11	1.59
12,616.0	90.80	149.20	6,739.1	5,515.1	-5,093.7	2,784.7	5,804.1	1.59	0.95	1.27
12,679.0	91.30	149.40	6,737.9	5,513.9	-5,147.9	2,816.9	5,867.0	0.85	0.79	0.32
12,742.0	91.40	148.90	6,736.5	5,512.5	-5,202.0	2,849.2	5,929.9	0.81	0.16	-0.79
12,805.0	90.70	150.70	6,735.3	5,511.3	-5,256.4	2,880.9	5,992.8	3.07	-1.11	2.86
12,869.0	89.50	147.10	6,735.2	5,511.2	-5,311.2	2,913.9	6,056.6	5.93	-1.88	-5.63
12,931.0	90.10	149.30	6,735.4	5,511.4	-5,363.9	2,946.6	6,118.5	3.68	0.97	3.55
12,995.0	89.70	148.90	6,735.5	5,511.5	-5,418.8	2,979.4	6,182.3	0.88	-0.63	-0.63
13,058.0	86.30	151.30	6,736.6	5,512.6	-5,473.4	3,010.8	6,245.3	4.41	-2.22	3.81
13,121.0	89.20	152.20	6,738.0	5,514.0	-5,528.9	3,040.7	6,308.3	2.02	1.43	1.43
13,184.0	89.80	153.70	6,738.5	5,514.5	-5,585.0	3,069.3	6,371.2	2.56	0.95	2.38
13,247.0	90.00	154.10	6,738.7	5,514.7	-5,641.6	3,097.0	6,434.2	0.71	0.32	0.63
13,310.0	89.30	153.20	6,739.0	5,515.0	-5,698.0	3,125.0	6,497.2	1.81	-1.11	-1.43
13,373.0	89.50	154.60	6,739.7	5,515.7	-5,754.6	3,152.7	6,560.2	2.24	0.32	2.22
13,436.0	89.40	154.40	6,740.3	5,516.3	-5,811.5	3,179.8	6,623.1	0.35	-0.16	-0.32
13,499.0	89.60	158.00	6,740.9	5,516.9	-5,869.1	3,205.2	6,686.0	5.72	0.32	5.71
13,562.0	88.90	160.40	6,741.7	5,517.7	-5,928.0	3,227.6	6,748.6	3.97	-1.11	3.81
13,625.0	89.80	161.40	6,742.4	5,518.4	-5,988.4	3,248.5	6,811.9	2.10	1.41	1.56
13,689.0	90.20	161.20	6,742.4	5,518.4	-6,048.1	3,268.7	6,874.1	0.71	0.63	-0.32
13,752.0	89.10	159.60	6,742.8	5,518.8	-6,107.5	3,289.9	6,936.5	3.08	-1.75	-2.54
13,815.0	88.70	158.70	6,744.0	5,520.0	-6,166.3	3,312.3	6,999.1	1.56	-0.63	-1.43
13,878.0	89.20	160.10	6,745.1	5,521.1	-6,225.3	3,334.5	7,061.6	2.36	0.79	2.22
13,942.0	88.80	159.80	6,746.3	5,522.3	-6,285.4	3,356.4	7,125.1	0.78	-0.63	-0.47
14,005.0	88.40	159.00	6,747.8	5,523.8	-6,344.4	3,378.6	7,187.6	1.42	-0.63	-1.27

03/25/2016



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Pb	Local Co-ordinate Reference:	Site Doddridge County 514863
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514863	North Reference:	Grid
Well:	Well #514863	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)
14,068.0	88.40	159.00	6,749.6	5,525.6	-6,403.1	3,401.1	7,250.1	0.00	0.00	0.00
14,131.0	88.40	159.30	6,751.3	5,527.3	-6,462.0	3,423.5	7,312.7	0.48	0.00	0.48
14,194.0	88.20	157.50	6,753.2	5,529.2	-6,520.5	3,446.7	7,375.3	2.87	-0.32	-2.86
14,257.0	90.30	156.90	6,754.0	5,530.0	-6,578.6	3,471.1	7,438.1	3.47	3.33	-0.95
14,318.0	91.40	155.90	6,753.1	5,529.1	-6,634.5	3,495.5	7,499.0	2.44	1.80	1.64
14,381.0	89.80	153.20	6,752.5	5,528.5	-6,691.4	3,522.6	7,561.9	4.98	-2.54	-4.29
14,444.0	88.40	151.10	6,753.4	5,529.4	-6,747.1	3,552.0	7,624.9	4.01	-2.22	-3.33
14,507.0	89.40	151.00	6,754.7	5,530.7	-6,802.2	3,582.5	7,687.9	1.60	1.59	-0.16
14,570.0	89.60	150.60	6,755.2	5,531.2	-6,857.2	3,613.3	7,750.8	0.71	0.32	-0.63
14,631.0	91.10	147.40	6,754.8	5,530.8	-6,909.5	3,644.7	7,811.7	5.79	2.46	-5.25
14,695.0	91.90	147.50	6,753.2	5,529.2	-6,963.4	3,679.1	7,875.4	1.26	1.25	0.16
14,758.0	90.50	143.90	6,751.8	5,527.8	-7,015.4	3,714.6	7,938.0	6.13	-2.22	-5.71
Final Survey=514821' MD/ 6752' TVD										
14,821.0	89.70	142.90	6,751.7	5,527.7	-7,066.0	3,752.1	8,000.2	2.03	-1.27	-1.59
Projection to TD=14885' MD/ 6752' TVD										
14,885.0	89.70	142.90	6,752.1	5,528.1	-7,117.0	3,790.7	8,063.3	0.00	0.00	0.00

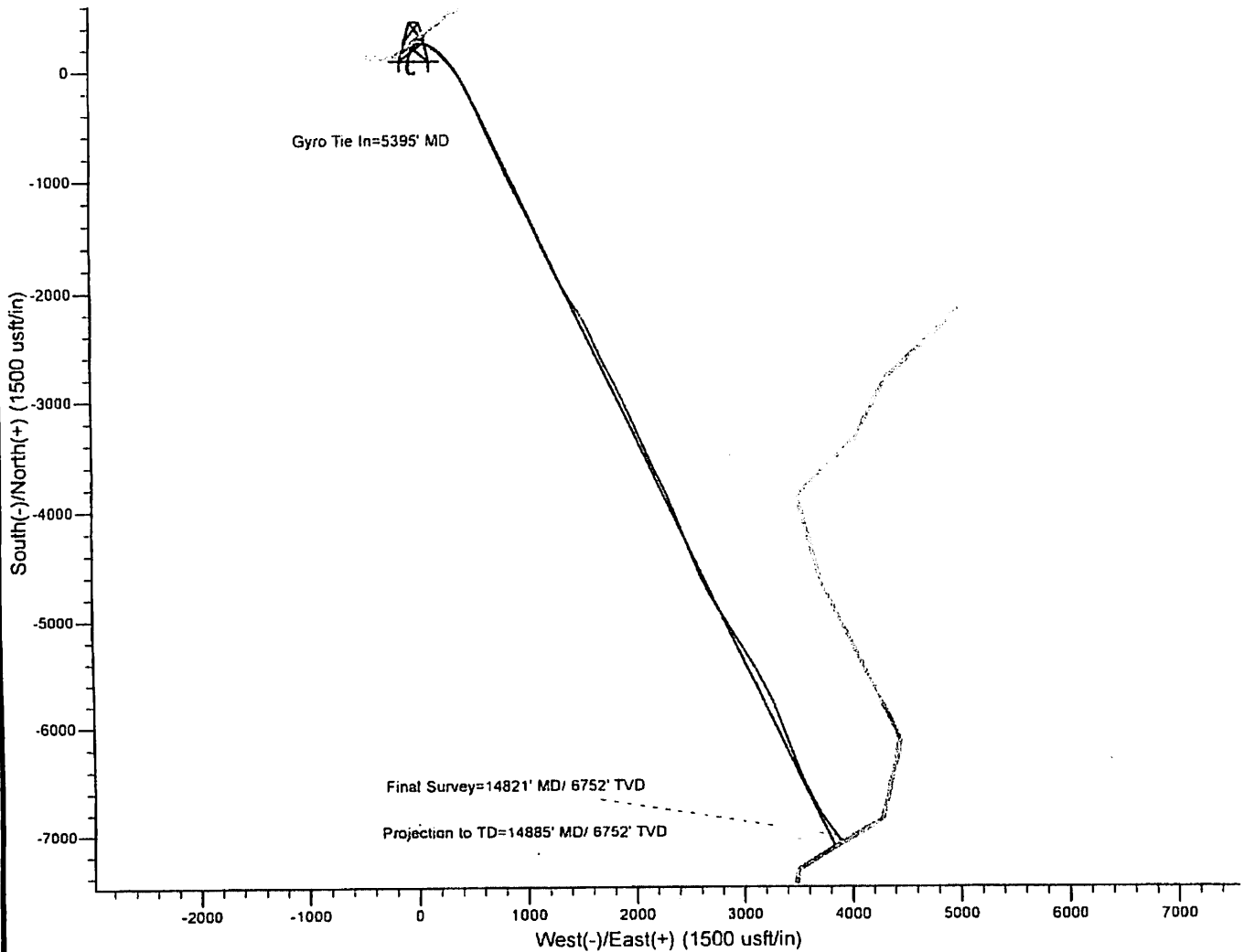
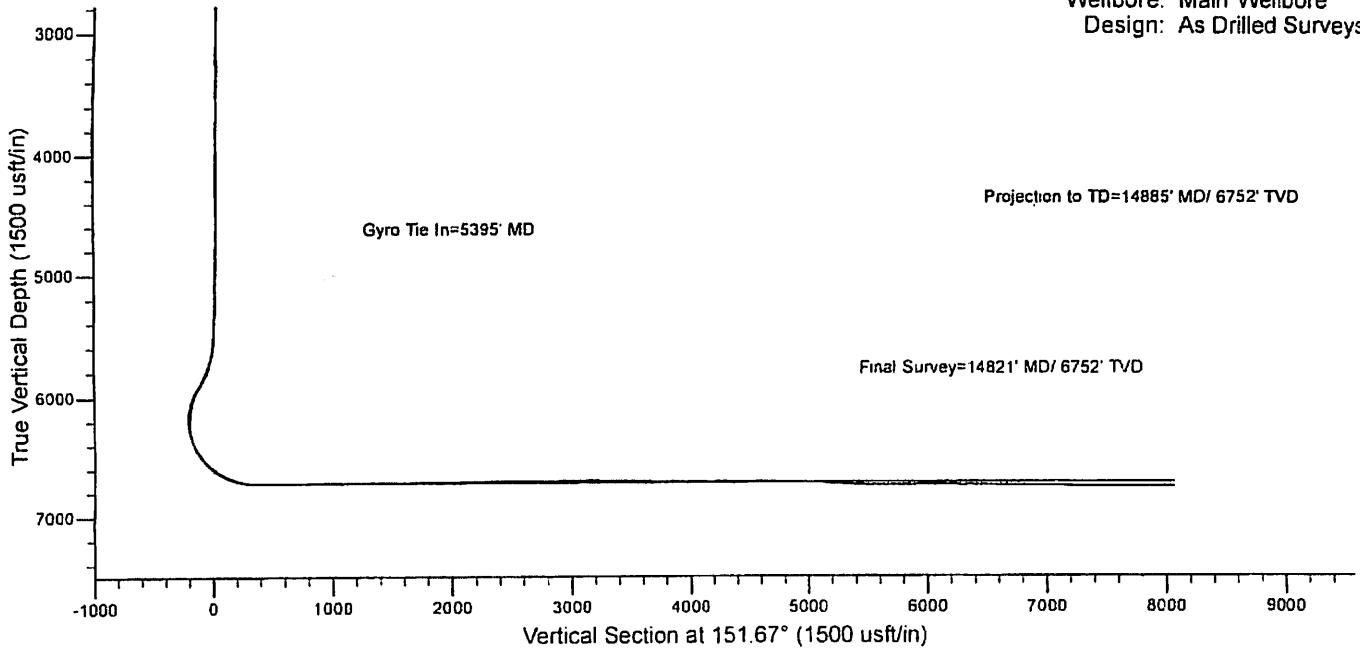
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,395.0	5,394.6	-15.0	-17.7	Gyro Tie In=5395' MD
14,821.0	6,751.7	-7,066.0	3,752.1	Final Survey=14821' MD/ 6752' TVD
14,885.0	6,752.1	-7,117.0	3,790.7	Projection to TD=14885' MD/ 6752' TVD

Checked By: _____ Approved By: _____ Date: _____



EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 514663
Well: Well #514663
Wellbore: Main Wellbore
Design: As Drilled Surveys



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/15/2015
Job End Date:	3/28/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06385-00-00
Operator Name:	EQT Production
Well Name and Number:	514663
Longitude:	-80.76332600
Latitude:	39.25566400
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,755
Total Base Water Volume (gal):	14,086,548
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	90.02860	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	9.58571	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05734	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02770	None
FRW-600	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.02003	None
			Ammonium acetate	631-61-8	6.00000	0.00401	None
CI-150	FTS International	Acid Corrosion Inhibitor	Isopropanol	67-63-0	30.00000	0.00729	None
			Dimethylformamide	68-12-2	10.00000	0.00243	None
			Organic amine resin salt	Proprietary	30.00000	0.00010	None
			Ethylene glycol	107-21-1	30.00000	0.00010	None
			Aromatic aldehyde	Proprietary	10.00000	0.00003	None

			Quaternary ammonium compound	Proprietary	10.00000	0.00003	None
B-10	FTS International	High pH buffer					
			Potassium carbonate	584-08-7	48.00000	0.00570	None
			Potassium hydroxide	1310-58-3	20.00000	0.00238	None
CS-500-SI	FTS International	Scale inhibitor					
			Ethylene glycol	107-21-1	10.00000	0.00243	None
HVG-1	FTS International	Gelling agent					
			Petroleum distillate	64742-47-8	55.00000	0.00041	None
			Guar gum	9000-30-0	50.00000	0.00037	None
			Clay	14808-60-7	2.00000	0.00001	None
			Surfactant	68439-51-0	2.00000	0.00001	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	0.00033	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00019	None
NE-100	FTS International	Non-emulsifier					
			2-Butoxyethanol	111-76-2	10.00000	0.00011	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00001	None
			2-Propanol	67-63-0	10.00000	0.00000	None

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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



Submission to FracFocus using Excel Spreadsheets has been turned off.

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[ABOUT PROJECT PARTNERS](#)

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

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i Disclosure has been submitted.

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

Hydraulic Fracturing Data

Job Start Date 3/15/2015	Job End Date 3/28/2015	API Number 47-017-06385-00-00	State & County West Virginia --- Doddridge
Well Name 514663			
Longitude -80.763326	Latitude 39.255664	Datum NAD83	Federal/Tribal Well?
True Vertical Depth (ft) 6755	Total Water Vol (gal) 14086548	Total Non Water Vol 0	Total Mass (lbs) 130572111



MSDS Chemical Ingredients

	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
<input type="button" value="Edit"/>	Water	FTS International	Carrier/Base Fluid	Water	7732-18-5	100%	90.0285993224%	None	117552243.06
<input type="button" value="Edit"/>	Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100%	9.5857146364%	None	12516270
<input type="button" value="Edit"/>	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0573438823%	None	74875.118
<input type="button" value="Edit"/>	Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15%	.027695851%	None	36163.058
<input type="button" value="Edit"/>	FRW-600	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30%	.0200310506%	None	26154.966
				Ammonium acetate	631-61-8	6%	.0040062101%	None	5230.993
<input type="button" value="Edit"/>	CI-150	FTS International	Acid Corrosion Inhibitor	Isopropanol	67-63-0	30%	.007286348%	None	9513.938
				Dimethylformamide	68-12-2	10%	.0024287827%	None	3171.313
				Organic amine resin salt	Proprietary	30%	.0001043987%	None	136.316
				Ethylene glycol	107-21-1	30%	.0001043987%	None	136.316

			Aromatic aldehyde	Proprietary	10%	.0000347996%	None	45.439
			Quaternary ammonium compound	Proprietary	10%	.0000347996%	None	45.439
<input type="button" value="Edit"/>	B-10	FTS International	High pH buffer					
			Potassium carbonate	584-08-7	48%	.0057004929%	None	7443.254
			Potassium hydroxide	1310-58-3	20%	.0023752054%	None	3101.356
<input type="button" value="Edit"/>	CS-500-5I	FTS International	Scale inhibitor					
			Ethylene glycol	107-21-1	10%	.0024287827%	None	3171.313
<input type="button" value="Edit"/>	HVG-1	FTS International	Gelling agent					
			Petroleum distillate	64742-47-8	55%	.000408104%	None	532.87
			Guar gum	9000-30-0	50%	.0003710036%	None	484.427
			Clay	14808-60-7	2%	.0000148401%	None	19.377
			Surfactant	68439-51-0	2%	.0000148401%	None	19.377
<input type="button" value="Edit"/>	APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95%	.0003305959%	None	431.666
<input type="button" value="Edit"/>	FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55%	.0001913976%	None	249.912
<input type="button" value="Edit"/>	NE-100	FTS International	Non-emulsifier					
			2-Butoxyethanol	111-76-2	10%	.0001142538%	None	149.184
			Dodecylbenzenesulfonic acid	27176-87-0	5%	.0000148689%	None	19.415
			2-Propanol	67-63-0	10%	.0000009956%	None	1.3

Non-MSDS Chemical Ingredients

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