

# APPROVED

NAME: *Chad G. Flank*

DATE: *2/10/2016*

Well Operator's Report of Well Work



Well Number: 513155

API: 47 - 017 - 06504

Submission:  Initial  Amended *2d gjs*

Notes: Add'l Injection Tests - 21.01, 21.02  
Reperfs - 2.1, 20.1

Waiting on Flowback

Correction to Production Cement Top  
(MD)

RECEIVED  
Office of Oil and Gas

DEC 21 2015

WV Department of  
Environmental Protection

02/12/2016

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

API 47 - 017 - 06504 County DODDRIDGE District Southwest  
Quad OXFORD 7.5' Pad Name OXFORD 159 Field/Pool Name \_\_\_\_\_  
Farm name JUSTIN L. HENDERSON ET AL Well Number 513155  
Operator (as registered with the OOG) EQT Production Company  
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,339,878 Easting 520,542  
Landing Point of Curve Northing 4,339,162 Easting 520,220  
Bottom Hole Northing 4,340,625 Easting 519,507

Elevation (ft) 1,252 GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other 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)  
Water base Mud 12.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution,  
calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 7/30/2014 Date drilling commenced 11/21/2014 Date drilling ceased 4/24/2015  
Date completion activities began 6/12/2015 Date completion activities ceased 6/19/2015  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 264, 325, 401 Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1312, 1379 Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 246, 313, 474, 616, 732, 735 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by: \_\_\_\_\_

02/12/2016

API 47- 017 - 06504 Farm name JUSTIN L. HENDERSON ET AL Well number 513155

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	40'	NEW	A-500 40LB/FT	NONE	Y
Surface	17.5"	13.375"	1,091'	NEW	J-55 54.5LB/FT	None	Y
Coal							
Intermediate 1	12.375"	9.625"	5,279'	NEW	P-110 40LB/FT	None	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	12881	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	866	15.6	1.20	1,021.88	0	8
Coal							
Intermediate 1	CLASS A / A / A	447 / 380 / 1,205	14.2 / 15.6 / 15.6	1.24 / 1.18 / 1.18	2,424.58	0	8
Intermediate 2							
Intermediate 3							
Production	Class A 50/50 POZ / H	870 / 565	14.2 / 15.2	1.26 / 1.97	2,209.25	3,476'	8
Tubing							

Drillers TD (ft) 12,885' Loggers TD (ft) N/A  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5,413'

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

Well cored  Yes  No  Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_  
 CONDUCTOR- NONE  
 SURFACE- (3) Centralizers placed every 500' from 1089' to 165'  
 INTERMEDIATE- (11) Centralizers placed at least every 500' FEET from 5277' to 64'  
 PRODUCTION- (181) Centralizers on every joint from 12881' to 5281'

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 - 6504 Farm name JUSTIN L. HENDERSON ET AL Well number 513155

PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
						Please	See	Attached

Please insert additional pages as applicable.

API 47- 017 - 06504

Farm name JUSTIN L. HENDERSON ET AL

Well number 513155

PRODUCING FORMATION(S)

DEPTHS

<u>Marcellus</u>	<u>6,694'</u>	<u>TVD</u>	<u>8,530'</u>	<u>MD</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface \_\_\_\_\_ psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs

OPEN FLOW Gas \_\_\_\_\_ mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ 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 <sub>2</sub> 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.

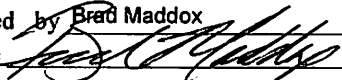
Drilling Contractor ALPHA HUNTER DRILLING (RIG 5)  
Address P.O. BOX 430 City RENO State OH Zip 45773

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

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

Stimulating Company FTSI  
Address 301 E 18th Street City Cisco State TX Zip 76437

Please insert additional pages as applicable.

Completed by Brad Maddox Telephone 412-395-7053  
Signature  Title Director of Drilling Date 12/9/2015

API 47- 017 - 6504 Farm name JUSTIN L. HENDERSON ET AL Well number 513155

Drilling Contractor Patterson UTI  
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

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

Logging Company Gyro Data Inc.  
Address 601 Mayer St. City Bridgeville State PA Zip 15017

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

**WELL #513155 FINAL FORMATIONS**

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	411	411
SAND/SHALE	1	1	256	256
WASHINGTON COAL	256	256	258	258
SAND/SHALE	258	258	323	323
WAYNESBURG A COAL	323	323	325	325
SAND/SHALE	325	325	484	484
UNIONTOWN COAL	484	484	486	486
SAND/SHALE	486	486	626	626
SEWICKLEY	626	626	628	628
SAND/SHALE	628	628	742	742
REDSTONE COAL	742	742	743	743
SAND/SHALE	743	743	745	745
PITTSBURGH COAL	745	745	749	749
SAND/SHALE	749	749	2,030.00	2,029.80
BIG LIME	2,030.00	2,029.80	2,174.00	2,173.70
SAND/SHALE	2,174.00	2,173.70	2,323.00	2,322.70
WEIR	2,323.00	2,322.70	2,437.00	2,436.60
SAND/SHALE	2,437.00	2,436.60	2,531.00	2,530.60
GANTZ	2,531.00	2,530.60	2,608.00	2,607.60
50F	2,608.00	2,607.60	2,684.00	2,683.50
SAND/SHALE	2,684.00	2,683.50	2,730.00	2,729.50
30F	2,730.00	2,729.50	2,765.00	2,764.50
SAND/SHALE	2,765.00	2,764.50	2,779.00	2,778.50
GORDON	2,779.00	2,778.50	2,870.00	2,869.50
4TH SAND	2,870.00	2,869.50	3,051.00	3,050.40
BAYARD	3,051.00	3,050.40	3,151.00	3,150.30
SAND/SHALE	3,151.00	3,150.30	3,388.00	3,387.20
WARREN	3,388.00	3,387.20	3,447.00	3,446.10
SAND/SHALE	3,447.00	3,446.10	3,459.00	3,458.10
SPEECHLEY	3,459.00	3,458.10	3,703.00	3,702.00
SAND/SHALE	3,703.00	3,702.00	4,139.00	4,137.10
BALLTOWN A	4,139.00	4,137.10	4,253.00	4,250.60
SAND/SHALE	4,253.00	4,250.60	4,338.00	4,335.20
RILEY	4,338.00	4,335.20	4,484.00	4,480.40
SAND/SHALE	4,484.00	4,480.40	5,009.00	5,001.80
BENSON	5,009.00	5,001.80	5,049.00	5,041.50
SAND/SHALE	5,049.00	5,041.50	5,180.00	5,171.60
ALEXANDER	5,180.00	5,171.60	6,211.00	5,995.80
RHINESTREET UPPER	6,211.00	5,995.80	6,362.00	6,038.50
RHINESTREET	6,362.00	6,038.50	7,448.00	6,354.60
SONYEA	7,448.00	6,354.60	7,842.00	6,492.70
MIDDLESEX	7,842.00	6,492.70	8,000.00	6,546.10
GENESSEE	8,000.00	6,546.10	8,196.00	6,608.90
GENESE0	8,196.00	6,608.90	8,338.00	6,654.60
TULLY	8,338.00	6,654.60	8,414.00	6,672.20
HAMILTON	8,414.00	6,672.20	8,530.00	6,693.60
MARCELLUS	8,530.00	6,693.60		



## **EQT Production - Marcellus**

**Doddridge County, WV Grid**

**Doddridge County 513155**

**Well #513155**

**Main Wellbore**

**Design: 513155 AS Drilled**

## **Standard Survey Report**

**28 April, 2015**



**Where energy meets innovation.**





PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513155
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1275.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@23 @ 1275.0usft
Site:	Doddridge County 513155	North Reference:	Grid
Well:	Well #513155	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513155 AS Drilled		

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, 513155				
Site Position:		Northing:	260,322.00 usft	Latitude:	39.21
From:	Map	Easting:	1,642,326.60 usft	Longitude:	-80.76
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.81 °

Well	Well #513155					
Well Position	+N/-S	0.0 usft	Northing:	260,322.00 usft	Latitude:	39° 12' 28.219 N
	+E/-W	0.0 usft	Easting:	1,642,326.60 usft	Longitude:	80° 45' 44.094 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,252.0 usft

Wellbore	Main Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/6/2015	-7.78	66.68	52,241

Design	513155 AS Drilled		
--------	-------------------	--	--

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	306.82	

Survey Program	Date	4/28/2015			
From ()	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5,288.0	513155 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
0.00	12,885.0	513155 PHX MWD Surveys (Main Wellbor	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	-1,275.0	0.0	0.0	0.0	0.00	0.00	0.00
23.0	0.00	0.00	23.0	-1,252.0	0.0	0.0	0.0	0.00	0.00	0.00
123.0	0.29	243.85	123.0	-1,152.0	-0.1	-0.2	0.1	0.29	0.29	0.00
223.0	0.21	253.74	223.0	-1,052.0	-0.3	-0.6	0.3	0.09	-0.08	9.89
323.0	0.24	287.49	323.0	-952.0	-0.3	-1.0	0.6	0.13	0.03	33.75
423.0	0.18	275.94	423.0	-852.0	-0.2	-1.4	1.0	0.07	-0.06	-11.55
523.0	0.23	277.22	523.0	-752.0	-0.1	-1.7	1.3	0.05	0.05	1.28
623.0	0.20	277.01	623.0	-652.0	-0.1	-2.1	1.6	0.03	-0.03	-0.21

02/12/2016



PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513155
Company:	EDT Production - Marcellus	TVD Reference:	KB@23 @ 1275.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@23 @ 1275.0usft
Site:	Doddridge County 513155	North Reference:	Grid
Well:	Well #513155	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513155 AS Drilled		

Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
723.0	0.25	279.63	723.0	-552.0	0.0	-2.5	2.0	0.05	0.05	2.62	
823.0	0.28	285.69	823.0	-452.0	0.1	-2.9	2.4	0.04	0.03	6.06	
923.0	0.37	294.38	923.0	-352.0	0.3	-3.5	2.9	0.10	0.09	8.69	
1,023.0	0.54	282.82	1,023.0	-252.0	0.5	-4.2	3.7	0.19	0.17	-11.46	
1,123.0	0.67	291.20	1,123.0	-152.0	0.8	-5.2	4.7	0.16	0.13	8.28	
1,223.0	0.97	308.13	1,223.0	-52.0	1.6	-6.4	6.1	0.38	0.30	16.93	
1,323.0	1.19	302.11	1,323.0	48.0	2.6	-8.0	8.0	0.25	0.22	-6.02	
1,423.0	1.27	300.62	1,422.9	147.9	3.7	-9.8	10.1	0.09	0.08	-1.49	
1,523.0	1.17	299.60	1,522.9	247.9	4.8	-11.6	12.2	0.10	-0.10	-1.02	
1,623.0	1.02	296.15	1,622.9	347.9	5.7	-13.3	14.1	0.16	-0.15	-3.45	
1,723.0	1.18	293.23	1,722.9	447.9	6.5	-15.1	16.0	0.17	0.16	-2.92	
1,823.0	1.49	287.93	1,822.8	547.8	7.3	-17.3	18.2	0.33	0.31	-5.30	
1,923.0	1.43	291.42	1,922.8	647.8	8.2	-19.7	20.6	0.11	-0.06	3.49	
2,023.0	1.50	294.67	2,022.8	747.8	9.2	-22.0	23.1	0.11	0.07	3.25	
2,123.0	1.51	294.72	2,122.7	847.7	10.3	-24.4	25.7	0.01	0.01	0.05	
2,223.0	1.49	296.67	2,222.7	947.7	11.4	-26.8	28.3	0.05	-0.02	1.95	
2,323.0	1.49	300.15	2,322.7	1,047.7	12.6	-29.0	30.8	0.09	0.00	3.48	
2,423.0	1.66	302.63	2,422.6	1,147.6	14.1	-31.4	33.6	0.18	0.17	2.48	
2,523.0	1.54	304.77	2,522.6	1,247.6	15.6	-33.7	36.3	0.13	-0.12	2.14	
2,623.0	1.66	305.48	2,622.6	1,347.6	17.2	-36.0	39.1	0.12	0.12	0.71	
2,723.0	1.70	309.02	2,722.5	1,447.5	19.0	-38.3	42.1	0.11	0.04	3.54	
2,823.0	1.71	304.43	2,822.5	1,547.5	20.8	-40.7	45.0	0.14	0.01	-4.59	
2,923.0	1.76	310.12	2,922.4	1,647.4	22.6	-43.1	48.1	0.18	0.05	5.69	
3,023.0	1.87	308.62	3,022.4	1,747.4	24.6	-45.6	51.2	0.12	0.11	-1.50	
3,123.0	1.93	308.41	3,122.3	1,847.3	26.7	-48.2	54.5	0.06	0.06	-0.21	
3,223.0	1.96	307.52	3,222.3	1,947.3	28.8	-50.8	57.9	0.04	0.03	-0.89	
3,323.0	2.13	307.03	3,322.2	2,047.2	30.9	-53.7	61.5	0.17	0.17	-0.49	
3,423.0	1.97	307.41	3,422.1	2,147.1	33.1	-56.5	65.1	0.16	-0.16	0.38	
3,523.0	2.05	309.81	3,522.1	2,247.1	35.3	-59.3	68.6	0.12	0.08	2.40	
3,623.0	2.03	313.95	3,622.0	2,347.0	37.7	-61.9	72.1	0.15	-0.02	4.14	
3,723.0	1.97	314.53	3,722.0	2,447.0	40.1	-64.4	75.6	0.06	-0.06	0.58	
3,823.0	2.41	312.00	3,821.9	2,546.9	42.7	-67.2	79.4	0.45	0.44	-2.53	
3,923.0	3.50	304.70	3,921.7	2,646.7	45.9	-71.3	84.5	1.15	1.09	-7.30	
4,023.0	4.52	300.66	4,021.5	2,746.5	49.6	-77.2	91.5	1.06	1.02	-4.04	
4,123.0	5.06	302.06	4,121.2	2,846.2	54.0	-84.3	99.8	0.55	0.54	1.40	
4,223.0	5.40	301.56	4,220.7	2,945.7	58.8	-92.0	108.9	0.34	0.34	-0.50	
4,323.0	5.56	302.91	4,320.3	3,045.3	63.8	-100.1	118.4	0.21	0.16	1.35	
4,423.0	6.01	304.20	4,419.8	3,144.8	69.4	-108.5	128.5	0.47	0.45	1.29	
4,523.0	6.44	306.80	4,519.2	3,244.2	75.7	-117.3	139.3	0.51	0.43	2.60	
4,623.0	6.70	311.16	4,618.5	3,343.5	82.9	-126.2	150.7	0.56	0.26	4.36	
4,723.0	6.93	313.55	4,717.8	3,442.8	90.9	-135.0	162.5	0.37	0.23	2.39	
4,823.0	6.92	317.49	4,817.1	3,542.1	99.5	-143.4	174.5	0.48	-0.01	3.94	





PHX  
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513155
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1275.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@23 @ 1275.0usft
Site:	Doddridge County 513155	North Reference:	Grid
Well:	Well #513155	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513155 AS Drilled		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,923.0	6 87	319.81	4,916.4	3,641.4	108.5	-151.4	186.2	0.28	-0.05	2.32
5,023.0	6 73	322.25	5,015.7	3,740.7	117.7	-158.8	197.7	0.32	-0.14	2.44
5,123.0	6 51	325.49	5,115.0	3,840.0	127.0	-165.6	208.7	0.43	-0.22	3.24
5,223.0	6 52	327.14	5,214.3	3,939.3	136.5	-171.9	219.4	0.19	0.01	1.65
<b>By 2.125' in = 6.25' MD</b>										
5,288.0	6 57	331.05	5,278.9	4,003.9	142.8	-175.7	226.2	0.69	0.08	6.02
<b>KOP=6310' MD</b>										
5,318.0	6 40	330.70	5,308.7	4,033.7	145.8	-177.3	229.3	0.58	-0.57	-1.17
5,350.0	4 50	331.50	5,340.6	4,065.6	148.4	-178.8	232.1	5.94	-5.94	2.50
5,381.0	1 30	324.00	5,371.5	4,096.5	149.8	-179.6	233.6	10.37	-10.32	-24.19
5,413.0	1 80	165.40	5,403.5	4,128.5	149.6	-179.7	233.5	9.52	1.56	-495.63
5,444.0	5 20	160.60	5,434.5	4,159.5	147.8	-179.1	232.0	11.00	10.97	-15.48
5,476.0	8 00	157.00	5,466.3	4,191.3	144.4	-177.8	228.8	8.84	8.75	-11.25
5,507.0	10 20	163.60	5,496.9	4,221.9	139.8	-176.1	224.8	7.84	7.10	21.29
5,539.0	12 60	169.60	5,528.2	4,253.2	133.6	-174.7	219.9	8.36	7.50	18.75
5,570.0	15 10	173.60	5,558.3	4,283.3	126.3	-173.6	214.7	8.63	8.06	12.90
5,601.0	17 70	177.10	5,588.1	4,313.1	117.6	-173.0	208.9	8.97	8.39	11.29
5,633.0	20 30	179.70	5,618.3	4,343.3	107.2	-172.7	202.4	8.54	8.13	8.13
5,664.0	22 20	182.00	5,647.2	4,372.2	95.9	-172.9	195.9	6.69	6.13	7.42
5,696.0	24 40	185.10	5,676.6	4,401.6	83.3	-173.7	188.9	7.87	6.88	9.69
5,727.0	27 00	187.40	5,704.5	4,429.5	69.9	-175.1	182.1	8.98	8.39	7.42
5,759.0	29 40	188.80	5,732.7	4,457.7	55.0	-177.3	174.8	7.78	7.50	4.38
5,790.0	32 20	190.30	5,759.4	4,484.4	39.3	-179.9	167.6	9.37	9.03	4.84
5,821.0	35 10	191.70	5,785.2	4,510.2	22.5	-183.2	160.1	9.68	9.35	4.52
5,853.0	37 80	192.50	5,810.9	4,535.9	3.9	-187.2	152.2	8.57	8.44	2.50
5,884.0	41 10	193.70	5,834.8	4,559.8	-15.3	-191.7	144.2	10.93	10.65	3.87
5,915.0	44 50	194.70	5,857.6	4,582.6	-35.7	-196.8	136.1	11.18	10.97	3.23
5,947.0	47 70	195.30	5,879.8	4,604.8	-58.0	-202.8	127.6	10.09	10.00	1.88
5,978.0	52 10	195.20	5,899.7	4,624.7	-80.9	-209.0	118.9	14.20	14.19	-0.32
6,010.0	56 40	194.50	5,918.4	4,643.4	-106.0	-215.7	109.1	13.55	13.44	-2.19
6,041.0	60 60	194.00	5,934.6	4,659.6	-131.6	-222.2	99.0	13.62	13.55	-1.61
6,073.0	64 50	194.10	5,949.4	4,674.4	-159.1	-229.1	88.0	12.19	12.19	0.31
6,105.0	67 90	194.60	5,962.3	4,687.3	-187.5	-236.3	76.8	10.72	10.63	1.56
6,136.0	70 70	195.50	5,973.2	4,698.2	-215.5	-243.9	66.1	9.43	9.03	2.90
6,167.0	72 80	197.70	5,982.9	4,707.9	-243.7	-252.3	55.9	9.56	6.77	7.10
6,230.0	73 40	198.90	6,001.3	4,726.3	-300.9	-271.2	36.7	2.06	0.95	1.90
6,324.0	73 70	199.50	6,027.9	4,752.9	-386.1	-300.9	9.5	0.69	0.32	0.64
6,419.0	74 10	197.80	6,054.2	4,779.2	-472.5	-330.0	-19.0	1.77	0.42	-1.79
6,514.0	75 00	194.30	6,079.5	4,804.5	-560.5	-355.3	-51.5	3.68	0.95	-3.68
6,609.0	75 90	194.00	6,103.4	4,828.4	-649.7	-377.8	-86.9	1.00	0.95	-0.32
6,703.0	73 10	195.20	6,128.5	4,853.5	-737.3	-400.6	-121.2	3.22	-2.98	1.28
6,798.0	70 90	195.80	6,157.9	4,882.9	-824.4	-424.8	-154.0	2.39	-2.32	0.63
6,893.0	70 80	197.20	6,189.0	4,914.0	-910.4	-450.3	-185.2	1.40	-0.11	1.47

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513155
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1275.usft
Project:	Doddridge County WV Grid	MD Reference:	KB@23 @ 1275.0usft
Site:	Doddridge County 513155	North Reference:	Grid
Well:	Well #513155	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513155 AS Drilled		

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)
6,987.0	72.00	198.80	6,219.0	4,944.0	-995.2	-477.8	-213.9	2.06	1.28	1.70
7,081.0	72.40	197.40	6,247.8	4,972.8	-1,080.2	-505.6	-242.7	1.48	0.43	-1.49
7,175.0	73.70	198.90	6,275.2	5,000.2	-1,165.7	-533.6	-271.5	2.06	1.38	1.60
7,269.0	74.50	197.60	6,300.9	5,025.9	-1,251.5	-561.9	-300.3	1.58	0.85	-1.38
7,301.0	75.00	196.90	6,309.3	5,034.3	-1,281.0	-571.1	-310.6	2.63	1.56	-2.19
7,332.0	73.50	198.60	6,317.8	5,042.8	-1,309.4	-580.2	-320.3	7.16	-4.84	5.48
7,363.0	72.20	201.80	6,326.9	5,051.9	-1,337.2	-590.4	-328.8	10.72	-4.19	10.32
7,394.0	71.20	205.60	6,336.6	5,061.6	-1,364.1	-602.2	-335.5	12.08	-3.23	12.26
7,426.0	70.50	208.90	6,347.1	5,072.1	-1,391.0	-616.1	-340.5	9.98	-2.19	10.31
7,458.0	69.80	211.70	6,358.0	5,083.0	-1,417.0	-631.2	-343.9	8.52	-2.19	8.75
7,489.0	68.80	215.00	6,369.0	5,094.0	-1,441.2	-647.2	-345.7	10.47	-3.23	10.65
7,521.0	68.00	217.90	6,380.7	5,105.7	-1,465.2	-664.9	-345.9	8.79	-2.50	9.06
7,552.0	67.70	220.80	6,392.4	5,117.4	-1,487.4	-683.1	-344.6	8.72	-0.97	9.35
7,583.0	67.70	223.90	6,404.2	5,129.2	-1,508.5	-702.4	-341.9	9.25	0.00	10.00
7,613.0	68.20	227.80	6,415.5	5,140.5	-1,527.9	-722.3	-337.5	12.16	1.67	13.00
7,645.0	69.20	231.00	6,427.1	5,152.1	-1,547.3	-745.0	-331.0	9.83	3.13	10.00
7,676.0	70.60	236.00	6,437.8	5,162.8	-1,564.6	-768.4	-322.7	15.80	4.52	16.13
7,708.0	71.10	240.30	6,448.3	5,173.3	-1,580.6	-794.0	-311.7	12.79	1.56	13.44
7,739.0	70.60	244.10	6,458.4	5,183.4	-1,594.2	-819.9	-299.1	11.69	-1.61	12.26
7,771.0	71.00	247.50	6,469.0	5,194.0	-1,606.6	-847.5	-284.5	10.11	1.25	10.63
7,802.0	70.60	250.90	6,479.1	5,204.1	-1,617.0	-874.8	-268.8	10.44	-1.29	10.97
7,834.0	70.00	254.20	6,489.9	5,214.9	-1,626.0	-903.6	-251.2	9.89	-1.88	10.31
7,865.0	70.50	257.20	6,500.4	5,225.4	-1,633.2	-931.8	-232.9	9.25	1.61	9.68
7,896.0	70.80	261.50	6,510.7	5,235.7	-1,638.6	-960.6	-213.1	13.12	0.97	13.87
7,928.0	70.10	262.90	6,521.4	5,246.4	-1,642.7	-990.5	-191.7	4.67	-2.19	4.38
7,960.0	69.80	266.20	6,532.4	5,257.4	-1,645.6	-1,020.4	-169.4	9.73	-0.94	10.31
7,991.0	70.10	269.60	6,543.0	5,268.0	-1,646.7	-1,049.5	-146.8	10.35	0.97	10.97
8,023.0	70.50	272.80	6,553.8	5,278.8	-1,646.0	-1,079.6	-122.3	9.50	1.25	10.00
8,055.0	70.90	276.00	6,564.4	5,289.4	-1,643.7	-1,109.7	-96.8	9.52	1.25	10.00
8,086.0	71.40	278.90	6,574.4	5,299.4	-1,639.9	-1,138.8	-71.3	9.00	1.61	9.35
8,118.0	71.80	281.90	6,584.5	5,309.5	-1,634.4	-1,168.6	-44.1	8.98	1.25	9.38
8,149.0	71.70	284.50	6,594.2	5,319.2	-1,627.7	-1,197.3	-17.1	7.97	-0.32	8.39
8,181.0	71.80	287.60	6,604.2	5,329.2	-1,619.3	-1,226.5	11.3	9.21	0.31	9.69
8,212.0	71.70	290.50	6,613.9	5,338.9	-1,609.7	-1,254.3	39.4	8.89	-0.32	9.35
8,244.0	70.70	293.80	6,624.3	5,349.3	-1,598.3	-1,282.4	68.6	10.25	-3.13	10.31
8,275.0	70.30	297.20	6,634.6	5,359.6	-1,585.7	-1,308.8	97.3	10.42	-1.29	10.97
8,307.0	71.00	300.60	6,645.2	5,370.2	-1,571.1	-1,335.2	127.2	10.26	2.19	10.63
8,338.0	73.70	303.70	6,654.6	5,379.6	-1,555.4	-1,360.2	156.6	12.91	8.71	10.00
8,369.0	76.60	306.30	6,662.6	5,387.6	-1,538.2	-1,384.7	186.6	12.38	9.35	8.39
8,401.0	78.10	309.00	6,669.6	5,394.6	-1,519.1	-1,409.4	217.8	9.47	4.69	8.44
8,432.0	78.90	312.90	6,675.7	5,400.7	-1,499.2	-1,432.4	248.1	12.60	2.58	12.58
8,464.0	79.70	316.30	6,681.7	5,406.7	-1,477.1	-1,454.8	279.2	10.74	2.50	10.63
8,495.0	79.80	319.30	6,687.2	5,412.2	-1,454.5	-1,475.2	309.2	9.53	0.32	9.68



<b>Database:</b>	EDM 6000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Site Doddridge County 513155
<b>Company:</b>	EQT Production - Marcellus	<b>TVD Reference:</b>	KB@23 @ 1275.0usft
<b>Project:</b>	Doddridge County, WV Grid	<b>MD Reference:</b>	KB@23 @ 1275.0usft
<b>Site:</b>	Doddridge County 513155	<b>North Reference:</b>	Grid
<b>Well:</b>	Well #513155	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Main Wellbore		
<b>Design:</b>	513155 AS Drilled		

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)	
8 526 0	79 30	322.90	6,692.8	5,417.8	-1,430.8	-1,494.4	338 7	11 53	-1 61	11 61	
8 558 0	79 80	326.10	6,698 6	5,423.6	-1,405 2	-1,512 7	368 7	9 96	1 56	10 00	
8 589 0	82 00	328.10	6,703 5	5,428.5	-1,379 5	-1,529 3	397 4	9 54	7 10	6 45	
8 621 0	85 10	330.40	6,707 1	5,432 1	-1,352 2	-1,545 5	426 8	12 04	9 69	7 19	
8 652 0	88 50	332.30	6,708.9	5,433.9	-1,325.0	-1,560 4	454 9	12 56	10 97	6 13	
<b>LP/Deepest Point of Well-1834' MD/ 6709' TVD</b>											
8 684 0	89 70	333.60	6,709.4	5,434.4	-1,296.5	-1,574 9	483 7	5 53	3 75	4 06	
8 778 0	91 30	334 10	6,708.5	5,433 5	-1,212 2	-1 616 3	567 4	1 78	1 70	0 53	
8 872 0	90 50	334 50	6,707 1	5,432 1	-1,127 5	-1,657 1	650 8	0 95	-0 85	0 43	
8 967 0	92 00	334 90	6,705 0	5,430 0	-1,041 6	-1,697 7	734 7	1 63	1 58	0 42	
9 062 0	90 70	334 00	6,702 8	5,427 8	-955 9	-1,738 7	818 9	1 66	-1 37	-0 95	
9 156 0	92 00	333 30	6,700 5	5,425 5	-871 7	-1,780 4	902 7	1 57	1 38	-0 74	
9 251 0	89 90	334.10	6,699.0	5,424.0	-786 6	-1,822.4	987 5	2 37	-2 21	0 84	
9 346 0	90 50	334.80	6,698.6	5,423.6	-700 9	-1,863.4	1,071.6	0 97	0 63	0 74	
9 440 0	92 00	335.50	6,696 6	5,421 6	-615 6	-1,902 9	1,154 3	1 76	1 60	0 74	
9 534 0	90 00	334 90	6,694 9	5,419 9	-530 3	-1,942 3	1,237 0	2 22	-2 13	-0 64	
9 629 0	92 60	337.50	6,692 8	5,417 8	-443 4	-1,980 7	1,319 8	3 87	2 74	2 74	
9 724 0	91 00	335.80	6,689 8	5,414 8	-356 2	-2,018.3	1,402.1	2 46	-1 68	-1 79	
9 818 0	92 00	336 70	6,687 3	5,412 3	-270 2	-2,056.1	1 484 0	1 43	1 06	0 96	
9 913 0	89 20	335.50	6,686 4	5,411 4	-183 4	-2,094.6	1,566 8	3 21	-2 95	-1 26	
10,007 0	89 00	334 90	6,687 8	5,412 8	-98 0	-2,134.0	1,649 5	0 67	-0 21	-0 64	
10,102 0	90 20	334 50	6,688 5	5,413 5	-12 2	-2,174 6	1 733 5	1 33	1 26	-0 42	
10,196 0	91 00	333 90	6,687 5	5,412 5	72 5	-2,215 5	1,817 0	1 05	0 85	-0 64	
10,291 0	91 70	334 70	6,685 3	5,410 3	158 0	-2,256 7	1,901 2	1 12	0 74	0 64	
10,385 0	92 70	333 30	6,681 7	5,406 7	242 5	-2,297 9	1,984 8	1 83	1 05	-1 49	
10,480 0	89 00	334 10	6,680 3	5,405 3	327 6	-2,340 0	2 069 5	3 98	-3 89	0 84	
10,574 0	89 00	333 50	6,681 9	5,406 9	411 9	-2,381 5	2 153 3	0 64	0 00	-0 64	
10,669 0	91 40	335.50	6,681 6	5,406 6	497 7	-2,422 4	2 237 4	3 29	2 53	2 11	
10,763 0	92 60	336 20	6,678 3	5,403 3	583 4	-2,460 8	2 319 5	1 48	1 28	0 74	
10,857 0	92 80	336 30	6,673 9	5,398 9	669 3	-2,498 6	2 401 3	0 24	0 21	0 11	
10,952 0	92 40	335.50	6,669 5	5,394 5	756 0	-2,537 4	2,484 2	0 94	-0 42	-0 84	
11,046 0	90 80	334 70	6,666 9	5,391 9	841 2	-2,576 9	2,567 0	1 90	-1 70	-0 85	
11,140 0	90 40	333 60	6,665 9	5,390 9	925 8	-2,517 9	2 650 5	1 25	-0 43	-1 17	
11,235 0	89 40	332 90	6,666 1	5,391 1	1 010 6	-2,660 7	2 735 6	1 28	-1 05	-0 74	
11,329 0	91 70	333 30	6,665 2	5,390 2	1 094 4	-2,703 2	2 819 8	2 48	2 45	0 43	
11,424 0	90 80	333 30	6,663 1	5,388 1	1,179 3	-2,745 9	2,904 8	0 95	-0 95	0 00	
11,518 0	92 40	336 20	6,660 5	5,385 5	1 264 2	-2,786 0	2 987 9	3 52	1 70	3 09	
11,612 0	92 30	335 40	6,656 6	5,381 6	1 349 9	-2,824 5	3 070 0	0 86	-0 11	-0 85	
11 707 0	91 80	333 70	6,653 2	5,378 2	1,435 6	-2,865 2	3 154 0	1 86	-0 53	-1 79	
11 801 0	90 30	327 70	6,651 5	5,376 5	1,517 6	-2,911 2	3 239 9	6 58	-1 60	-6 38	
11 895 0	91 70	329 70	6,649 9	5,374 9	1 597 9	-2,960 0	3 327 2	2 60	1 49	2 13	
11 990 0	93 00	332 50	6,646 0	5 371 0	1 680 9	-3 005 9	3 413 7	3 25	1 37	2 95	



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513155
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1275.0usft
Project:	Doddridge County, WV GPa	MD Reference:	KB@23 @ 1275.0usft
Site:	Doddridge County 513155	North Reference:	Grid
Well:	Well #513155	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513155 AS Drilled		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,084.0	91.90	337.80	6,642.0	5,367.0	1,766.1	-3,045.4	3,496.3	5.75	-1.17	5.64
12,178.0	91.70	336.80	6,639.0	5,364.0	1,852.8	-3,081.6	3,577.3	1.08	-0.21	-1.06
12,273.0	89.90	337.70	6,637.7	5,362.7	1,940.4	-3,118.4	3,659.2	2.12	-1.89	0.95
12,367.0	89.50	337.00	6,638.2	5,363.2	2,027.1	-3,154.6	3,740.2	0.86	-0.43	-0.74
12,461.0	89.70	336.00	6,638.8	5,363.8	2,113.3	-3,192.0	3,821.8	1.08	0.21	-1.06
12,555.0	90.50	336.40	6,638.7	5,363.7	2,199.4	-3,230.0	3,903.7	0.95	0.85	0.43
12,650.0	87.70	337.70	6,640.2	5,365.2	2,286.8	-3,267.0	3,985.8	3.25	-2.95	1.37
12,745.0	88.40	336.80	6,643.4	5,368.4	2,374.4	-3,303.7	4,067.7	1.20	0.74	-0.95
Final Survey=12832' MD/ 6645' TVD										
12,832.0	89.20	336.80	6,645.2	5,370.2	2,454.3	-3,338.0	4,143.0	0.92	0.92	0.00
Projection to TD=12885' MD/ 6646' TVD										
12,885.0	89.20	336.80	6,646.0	5,371.0	2,503.0	-3,358.9	4,188.9	0.00	0.00	0.00

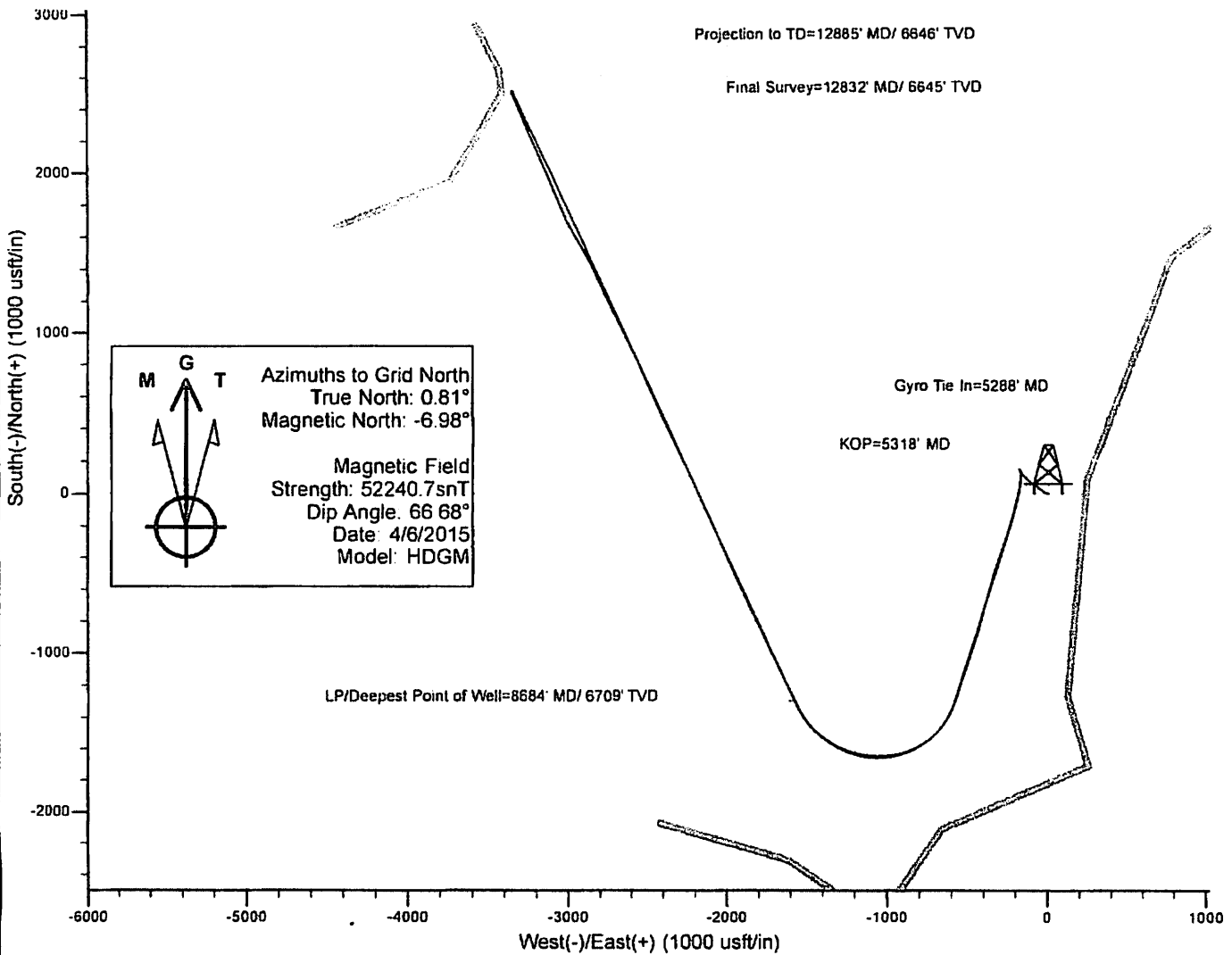
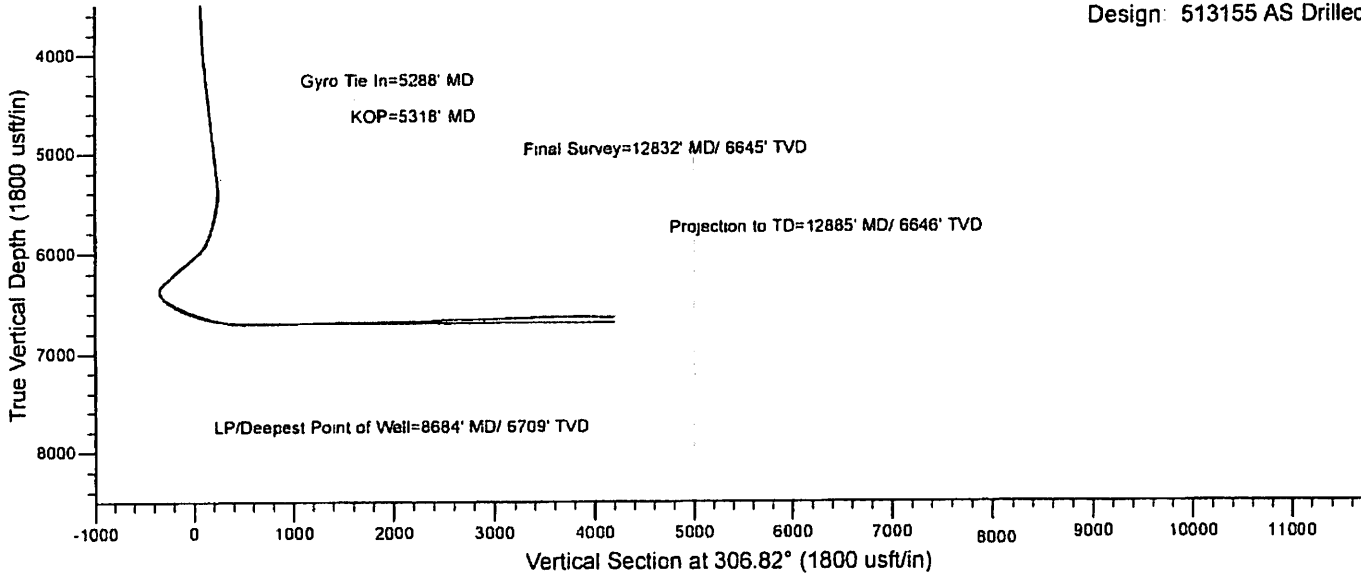
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,288.0	5,278.9	142.8	-175.7	Gyro Tie In=5288' MD
5,318.0	5,308.7	145.8	-177.3	KOP=5318' MD
8,684.0	6,709.4	-1,296.5	-1,574.9	LP/Deepest Point of Well=8684' MD/ 6709' TVD
12,832.0	6,645.2	2,454.3	-3,338.0	Final Survey=12832' MD/ 6645' TVD
12,885.0	6,646.0	2,503.0	-3,358.9	Projection to TD=12885' MD/ 6646' TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



# EQT Production - Marcellus

Project: Doddridge County, WV Grid  
 Site: Doddridge County 513155  
 Well: Well #513155  
 Wellbore: Main Wellbore  
 Design: 513155 AS Drilled



**513155 - 47-017-06504-0000- Perforations**

<b>Stage Number</b>	<b>Perforation Date</b>	<b>Top Perf Depth (ftKB)</b>	<b>Bottom Perf Depth (ftKB)</b>	<b>Number of Shots</b>	<b>Formation</b>
<b>Initiation Sleeve</b>	5/20/2015	12,879.00	12,881.00	10	MARCELLUS
<b>1</b>	6/12/2015	12,727.00	12,849.00	42	MARCELLUS
<b>2</b>	6/12/2015	12,547.00	12,669.00	42	MARCELLUS
<b>2:1</b>	6/13/2015	12,512.00	12,534.00	28	MARCELLUS
<b>3</b>	6/13/2015	12,332.00	12,454.00	42	MARCELLUS
<b>4</b>	6/13/2015	12,152.00	12,274.00	42	MARCELLUS
<b>5</b>	6/14/2015	11,972.00	12,094.00	42	MARCELLUS
<b>6</b>	6/14/2015	11,792.00	11,912.00	42	MARCELLUS
<b>7</b>	6/14/2015	11,612.00	11,734.00	42	MARCELLUS
<b>8</b>	6/14/2015	11,432.00	11,554.00	42	MARCELLUS
<b>9</b>	6/14/2015	11,252.00	11,374.00	42	MARCELLUS
<b>10</b>	6/15/2015	11,072.00	11,194.00	42	MARCELLUS
<b>11</b>	6/15/2015	10,892.00	11,014.00	42	MARCELLUS
<b>12</b>	6/15/2015	10,712.00	10,834.00	42	MARCELLUS
<b>13</b>	6/15/2015	10,532.00	10,654.00	42	MARCELLUS
<b>14</b>	6/15/2015	10,352.00	10,474.00	42	MARCELLUS
<b>15</b>	6/16/2015	10,172.00	10,290.00	42	MARCELLUS
<b>16</b>	6/16/2015	9,992.00	10,114.00	42	MARCELLUS
<b>17</b>	6/16/2015	9,812.00	9,934.00	42	MARCELLUS
<b>18</b>	6/16/2015	9,632.00	9,754.00	42	MARCELLUS
<b>19</b>	6/16/2015	9,452.00	9,574.00	42	MARCELLUS
<b>20</b>	6/16/2015	9,272.00	9,392.00	42	MARCELLUS
<b>20:1</b>	6/17/2015	9,228.00	9,250.00	28	MARCELLUS
<b>21</b>	6/17/2015	9,046.00	9,168.00	42	MARCELLUS
<b>21:02</b>	6/17/2015	9,036.00	9,057.00	28	MARCELLUS
<b>22</b>	6/18/2015	8,866.00	8,988.00	42	MARCELLUS
<b>23</b>	6/18/2015	8,686.00	8,808.00	42	MARCELLUS
<b>24</b>	6/18/2015	8,506.00	8,611.00	42	MARCELLUS
<b>25</b>	6/18/2015	8,326.00	8,450.00	42	MARCELLUS





# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/12/2015
Job End Date:	6/19/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06504-00-00
Operator Name:	EQT Production
Well Name and Number:	513155
Longitude:	-80.76224800
Latitude:	39.20783900
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,694
Total Base Water Volume (gal):	8,859,564
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	89.20986	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	10.35601	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05825	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.02469	None
			Alkyl Alcohol	Proprietary	10.00000	0.00823	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00411	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03313	None
HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55.00000	0.00371	None
			Guar gum	9000-30-0	50.00000	0.00337	None
			Clay	14808-60-7	2.00000	0.00013	None
			Surfactant	68439-51-0	2.00000	0.00013	None
CS-500-SI	FTS International	Scale inhibitor					

			Ethylene glycol	107-21-1	10.00000	0.00249	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00074	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Organic amine resin salt	Proprietary	30.00000	0.00012	None
			Ethylene glycol	107-21-1	30.00000	0.00012	None
			Isopropanol	67-63-0	30.00000	0.00012	None
			Dimethylformamide	68-12-2	10.00000	0.00004	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00004	None
			Aromatic aldehyde	Proprietary	10.00000	0.00004	None
NE-100	FTS International	Non-emulsifier					
			2-Butoxyethanol	111-76-2	10.00000	0.00003	None
			2-Propanol	67-63-0	10.00000	0.00003	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00002	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	0.00008	None
B-10	FTS International	High pH buffer					
			Potassium carbonate	584-08-7	48.00000	0.00003	None
			Potassium hydroxide	1310-58-3	20.00000	0.00001	None

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

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

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

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

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

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

**Hydraulic Fracturing**  
DISCLOSURE



**FIND A WELL**  
BY STATE

**ABOUT PROJECT**  
PARTNERS

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

**Prepare Disclosure for FracFocus Submission**

[Disclosure Lists](#) | [Dashboard](#)

**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 6/12/2015	Job End Date 6/19/2015	API Number 47-017-06504-00-00	State & County West Virginia --- Doddridge
Well Name 513155			
Longitude -80.762248	Latitude 39.207839	Datum NAD83	Federal/Tribal Well? 
True Vertical Depth (ft) 6693.6	Total Water Vol (gal) 8859564	Total Non Water Vol 0	Total Mass (lbs) 82875434



**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%	89.2098638269%	None	73933061.58
<input type="button" value="Edit"/>	Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100%	10.3560097526%	None	8582588
<input type="button" value="Edit"/>	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0582450109%	None	48270.805
<input type="button" value="Edit"/>	FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30%	.0246880239%	None	20460.307
				Alkyl Alcohol	Proprietary	10%	.0082293413%	None	6820.102
				Oxyalkylated alcohol A	Proprietary	5%	.0041146706%	None	3410.051
<input type="button" value="Edit"/>	Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0331306094%	None	27457.136
<input type="button" value="Edit"/>	HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55%	.0037090247%	None	3073.87
				Guar gum	9000-30-0	50%	.0033718406%	None	2794.428
				Clay	14808-60-7	2%	.0001348736%	None	111.777
				Surfactant	68439-51-0	2%	.0001348736%	None	111.777
<input type="button" value="Edit"/>	CS-500-51								



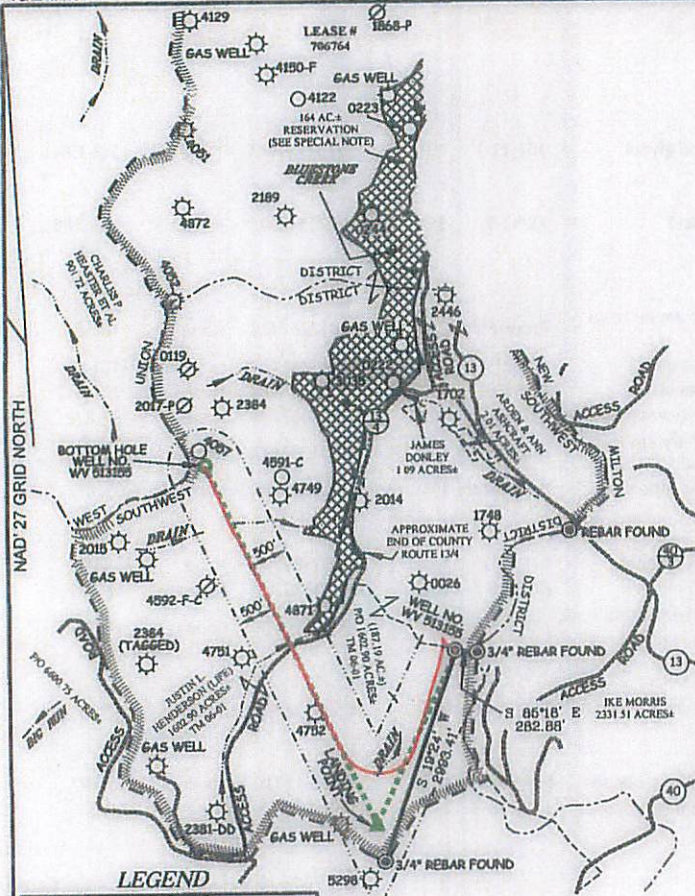
		FTS International	Scale inhibitor	Ethylene glycol	107-21-1	10%	.0024914994%	None	2064.841
<input type="button" value="Edit"/>	FE-100L	FTS International	Iron control	Citric acid	77-92-9	55%	.0007351869%	None	609.289
<input type="button" value="Edit"/>	CI-150	FTS International	Acid Corrosion Inhibitor	Organic amine resin salt	Proprietary	30%	.0001226142%	None	101.617
				Ethylene glycol	107-21-1	30%	.0001226142%	None	101.617
				Isopropanol	67-63-0	30%	.0001226142%	None	101.617
				Dimethylformamide	68-12-2	10%	.0000408714%	None	33.872
				Quaternary ammonium compound	Proprietary	10%	.0000408714%	None	33.872
				Aromatic aldehyde	Proprietary	10%	.0000408714%	None	33.872
<input type="button" value="Edit"/>	NE-100	FTS International	Non-emulsifier	2-Butoxyethanol	111-76-2	10%	.0000338934%	None	28.089
				2-Propanol	67-63-0	10%	.0000338934%	None	28.089
				Dodecylbenzenesulfonic acid	27176-87-0	5%	.0000169467%	None	14.045
<input type="button" value="Edit"/>	APB-1	FTS International	Breaker	Ammonium persulfate	7727-54-0	95%	.0000813872%	None	67.45
<input type="button" value="Edit"/>	B-10	FTS International	High pH buffer	Potassium carbonate	584-08-7	48%	.0000281103%	None	23.297
				Potassium hydroxide	1310-58-3	20%	.0000117126%	None	9.707

**Non-MSDS Chemical Ingredients**

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

Use Terms | © Copyright GWPC & IOGCC, 2010





LATITUDE 39°12'30"

**SPECIAL NOTE**

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

**NOTES ON SURVEY**

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

**EQT PRODUCTION COMPANY  
LEEMAN MAXWELL LEASE  
2,164 ACRES ±  
WELL NO. WV 513155**

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

NAD27 S.P.C.(FT)	N. 260,322.0	E. 1,642,326.6
NAD27 GEO.	LAT-(N) 39.207839	LONG-(W) 80.762248
NAD83 UTM (M)	N. 4,339,877.5	E. 520,542.0

**LANDING POINT**

NAD27 S.P.C.(FT)	N. 257,902.4	E. 1,641,230.8
NAD27 GEO.	LAT-(N) 39.201401	LONG-(W) 80.765009
NAD83 UTM (M)	N. 4,339,162.2	E. 520,220.0

**BOTTOM HOLE**

NAD27 S.P.C.(FT)	N. 262,832.1	E. 1,638,974.0
NAD27 GEO.	LAT-(N) 39.214800	LONG-(W) 80.774204
NAD83 UTM (M)	N. 4,340,825.1	E. 519,507.8

**LEGEND**

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

**AS DRILLED COORDINATES  
FOR WELL NO. WV 513155**

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

NAD27 S.P.C.(FT)	N. 260,322.0	E. 1,642,326.6
NAD27 GEO.	LAT-(N) 39.207839	LONG-(W) 80.762248
NAD83 UTM (M)	N. 4,339,877.5	E. 520,542.0

**BOTTOM HOLE**

NAD27 S.P.C.(FT)	N. 262,824.9	E. 1,638,967.9
NAD27 GEO.	LAT-(N) 39.214580	LONG-(W) 80.774225
NAD83 UTM (M)	N. 4,340,822.9	E. 519,506.0

**Professional Energy Consultants**  
A DIVISION OF SLS SURVEYING, INC.

REGISTERED ENGINEERS  
ENVIRONMENTAL PROJECT MANAGERS  
(304) 485-6854 www.slsurveyors.com

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



P.S. 2288 *Earl N. Thompson*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE JANUARY 06, 20 14  
REVISED 3/17/14, 07/25/14 & 05/05/15  
OPERATORS WELL NO. WV 513155  
API WELL NO. 47-017-06504H  
STATE            COUNTY            PERMIT           

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7889AD513155  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

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

LOCATION: ELEVATION 1,274(GROUND) 1,252(PROPOSED) WATERSHED BLUESTONE CREEK  
DISTRICT SOUTHWEST COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'

SURFACE OWNER JUSTIN L. HENDERSON (LIFE) ACREAGE 187.19 OF 1,602.90±  
ROYALTY OWNER LEEMAN MAXWELL HRS ACREAGE 2,164± LEASE NO. 706764

PROPOSED WORK: DRILL X CONVERT            DRILL DEEPER            REDRILL            FRACTURE OR STIMULATE X 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 TVD 6,663'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY  
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

02/12/2016