

**APPROVED**

NAME: *John C. Fu*

DATE: *2/10/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 515730

API: 47 - 017 - 06575

Submission:  Initial  Amended

Notes: Inj tests- 1.01, 1.02, 7.02

Correction to Production Cement Top  
(MD)

RECEIVED  
Office of Oil and Gas

DEC 21 2015

WV Department of  
Environmental Protection

*AX ws 03/03/2016*

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

API 47 - 017 - 06575 County Doddridge District West Union  
Quad West Union 7.5' Pad Name WEU51 Field/Pool Name \_\_\_\_\_  
Farm name Mary H. Holland Estate/Jane M. Hardin Well Number 515730  
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 4,345,201 Easting 520,426  
Landing Point of Curve Northing 4,345,571 Easting 521,544  
Bottom Hole Northing 4,344,872 Easting 521,884

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 \_\_\_\_\_  
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 10/20/2014 Date drilling commenced 10/16/2014 Date drilling ceased 12/06/2014  
Date completion activities began 4/23/2015 Date completion activities ceased 4/28/2015  
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 - 06575

Farm name Mary H. Holland Estate/Jane M. Hardin Well number 515730

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	26"	40'	New	82.6#/ft	None	Y
Surface	17-1/2"	13-3/8"	1,174'	New	54.5#/ft	None	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	5,363'	New	40#/ft	None	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	11,698'	New	20#/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	49	15.6	1.18	58	0	8
Surface	Class A	925	15.6	1.19	1100	0	8
Coal							
Intermediate 1	Class A	375/340/1140	14.2/15.6/15.6	1.28/1.18/1.18	2226	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	726/360	14.2/15.2	1.26/1.97	1624	4,609'	72
Tubing							

Drillers TD (ft) 11,710' Loggers TD (ft) N/A

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

Plug back procedure N/A

Kick off depth (ft) 5,438'

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- Joints: 2, 14, 26

Intermediate- RAN AT LEAST EVERY 500' FEET JOINTS: .. 14, 26, 38, 51, 64 76, 88, 100, 114, 126

Production- Composite bodied centralizers on every joint from TD up to 4,870'

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 47-017-06575

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
Fresh Water Zone	0	0	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	1,484	1,484
MAXTON	1,484	1,484	1,880	1,880
Big Lime	1,880	1,880	1,949	1,949
KEENER	1,949	1,949	2,179	2,178
Weir	2,179	2,178	2,375	2,374
BEREA	2,375	2,374	2,381	2,380
Gantz	2,381	2,380	2,495	2,494
Fifty foot	2,495	2,494	2,585	2,584
Thirty foot	2,585	2,584	2,729	2,727
Forth Sand	2,729	2,727	2,922	2,920
Bayard	2,922	2,920	3,239	3,236
Warren	3,239	3,236	3,300	3,297
Speechley	3,300	3,297	3,971	3,965
Balltown A	3,971	3,965	4,247	4,239
Benson	4,247	4,239	5,137	5,098
Alexander	5,137	5,098	7,847	6,311
Sonyea	7,847	6,311	8,314	6,468
Middlesex	8,314	6,468	8,492	6,528
Genesee	8,492	6,528	8,725	6,607
Geneseo	8,725	6,607	8,812	6,637
Tully	8,812	6,637	8,923	6,666
Hamilton	8,923	6,666	9,102	6,695
Marcellus	9,102	6,695	11,710	6,748

03/25/2016

# **EQT Production - Marcellus**

**Doddridge County, WV Grid**

**Doddridge County 515730**

**Well #515730**

**Main Wellbore**

**Design: 515730 As Drilled Surveys**

## **Standard Survey Report**

**08 December, 2014**



# Phoenix Technologies

## Survey Report

<b>Database:</b> EDM 5000 1 Single User Do <b>Company:</b> EDT Production - Marcellus <b>Project:</b> Doddridge County, WV Grid <b>Site:</b> Doddridge County 515730 <b>Well:</b> Well #515730 <b>Wellbore:</b> Main Wellbore <b>Design:</b> 515730 As Drilled Surveys	<b>Local Co-ordinate Reference:</b> <b>TVD Reference:</b> <b>MD Reference:</b> <b>North Reference:</b> <b>Survey Calculation Method:</b>	Site Doddridge County 515730 KB @ 1224.0usft KB @ 1224.0usft Grid Minimum Curvature
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<b>Project</b> Doddridge County, WV Grid			
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	West Virginia North 4701		Using geodetic scale factor

<b>Site</b> Doddridge County 515730			
<b>Site Position:</b>		<b>Northing:</b>	277 796 40 usft
<b>From:</b>	Map	<b>Easting:</b>	1 642,237 90 usft
<b>Position Uncertainty:</b>	0 0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	39 26
		<b>Longitude:</b>	-80 76
		<b>Grid Convergence:</b>	-0 81 °

<b>Well</b> Well #515730						
<b>Well Position</b>	+N/-S	0 0 usft	<b>Northing:</b>	277,796 40 usft	<b>Latitude:</b>	39° 15' 20 910 N
	+E/-W	0 0 usft	<b>Easting:</b>	1 642 237 90 usft	<b>Longitude:</b>	80° 45' 48 343 W
<b>Position Uncertainty</b>		0 0 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,208 0 usft

<b>Wellbore</b> Main Wellbore					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	11/10/2014	-8 50	66 74	52,225

<b>Design</b> 515730 As Drilled Surveys					
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**Audit Notes:**

<b>Version:</b>	1 0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	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	103 66

<b>Survey Program</b>		<b>Date</b>	12/8/2014		
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	4,150.0	515730 Gyrodata Gyro (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
0 00	11,710 0	515730 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3 standard declination	

<b>Survey</b>											
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 26	91.24	100 0	-1,124.0	0.0	0 2	0 2	0 26	0 26	0 00	
200 0	0 52	138.20	200 0	-1,024.0	-0.3	0 8	0 8	0 39	0 26	46 96	
300 0	0 78	140.31	300 0	-924.0	-1.2	1 5	1 7	0 26	0 26	2 11	
400 0	0 51	132.13	400 0	-824.0	-2.0	2 3	2 7	0 28	-0 27	-8 18	
500 0	0 39	134 04	500 0	-724 0	-2.6	2 8	3 4	0 12	-0 12	1 91	
600 0	0 23	154 58	600 0	-624 0	-3.0	3 2	3 8	0 19	-0 16	20 54	
700 0	0 16	161 68	700 0	-524 0	-3.3	3 3	4 0	0 07	-0 07	7 10	



**Phoenix Technologies**  
Survey Report

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Site Doddridge County 515730
<b>Company:</b>	EQT Production - Marcellus	<b>TVD Reference:</b>	KB @ 1224.0usft
<b>Project:</b>	Doddridge County, WV Grid	<b>MD Reference:</b>	KB @ 1224.0usft
<b>Site:</b>	Doddridge County 515730	<b>North Reference:</b>	Grid
<b>Well:</b>	Well #s 15730	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Main Wellbore		
<b>Design:</b>	515730 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	0.22	168.31	800.0	-424.0	-3.6	3.4	4.1	0.06	0.06	6.63
900.0	0.20	194.49	900.0	-324.0	-4.0	3.4	4.2	0.10	-0.02	26.18
1,000.0	0.19	186.65	1,000.0	-224.0	-4.3	3.3	4.2	0.02	-0.01	-5.84
1,100.0	0.29	155.32	1,100.0	-124.0	-4.7	3.4	4.4	0.17	0.10	-33.33
1,200.0	0.62	118.62	1,200.0	-24.0	-5.2	4.0	5.1	0.42	0.33	-36.50
1,300.0	0.81	118.54	1,300.0	76.0	-5.8	5.1	6.3	0.19	0.19	-0.28
1,400.0	1.25	121.10	1,399.9	175.9	-6.7	6.6	8.0	0.44	0.44	2.56
1,500.0	1.76	120.05	1,499.9	275.9	-8.0	8.9	10.5	0.51	0.51	-1.05
1,600.0	1.88	121.11	1,599.9	375.9	-9.6	11.6	13.6	0.12	0.12	-1.06
1,700.0	2.09	120.29	1,699.8	475.8	-11.4	14.6	16.9	0.21	0.21	-0.82
1,800.0	2.32	121.84	1,799.7	575.7	-13.4	17.9	20.5	0.24	0.23	1.55
1,900.0	2.69	122.29	1,899.6	675.6	-15.7	21.6	24.7	0.37	0.37	0.45
2,000.0	2.89	122.30	1,999.5	775.5	-18.3	25.7	29.3	0.20	0.20	0.01
2,100.0	3.10	122.79	2,099.4	875.4	-21.1	30.1	34.2	0.21	0.21	0.49
2,200.0	3.00	119.16	2,199.2	975.2	-23.9	34.7	39.3	0.22	-0.10	-3.63
2,300.0	3.31	119.15	2,299.1	1,075.1	-26.6	39.5	44.6	0.31	0.31	-0.01
2,400.0	3.48	116.39	2,398.9	1,174.9	-29.3	44.7	50.4	0.24	0.17	-2.76
2,500.0	3.44	113.90	2,498.7	1,274.7	-31.9	50.2	56.3	0.16	-0.04	-2.49
2,600.0	3.40	114.15	2,598.5	1,374.5	-34.3	55.6	62.1	0.04	-0.04	0.25
2,700.0	3.37	113.21	2,698.4	1,474.4	-36.7	61.0	68.0	0.06	-0.03	-0.94
2,800.0	3.38	113.72	2,798.2	1,574.2	-39.0	66.4	73.8	0.03	0.01	0.51
2,900.0	3.35	112.46	2,898.0	1,674.0	-41.3	71.8	79.6	0.08	-0.03	-1.26
3,000.0	3.64	112.18	2,997.8	1,773.8	-43.6	77.5	85.6	0.29	0.29	-0.28
3,100.0	4.01	112.14	3,097.6	1,873.6	-46.1	83.6	92.2	0.37	0.37	-0.04
3,200.0	4.71	109.58	3,197.3	1,973.3	-48.8	90.8	99.7	0.73	0.70	-2.56
3,300.0	5.23	109.07	3,297.0	2,073.0	-51.7	98.9	108.3	0.52	0.52	-0.51
3,400.0	5.76	109.17	3,396.5	2,172.5	-54.8	108.0	117.9	0.53	0.53	0.10
3,500.0	5.93	108.98	3,496.0	2,272.0	-58.2	117.6	128.0	0.17	0.17	-0.19
3,600.0	6.16	110.20	3,595.4	2,371.4	-61.7	127.5	138.5	0.26	0.23	1.22
3,700.0	6.03	111.11	3,694.9	2,470.9	-65.4	137.5	149.0	0.16	-0.13	0.91
3,800.0	5.86	113.74	3,794.3	2,570.3	-69.4	147.0	159.3	0.32	-0.17	2.63
3,900.0	5.68	117.41	3,893.8	2,669.8	-73.7	156.1	169.1	0.41	-0.18	3.67
4,000.0	5.25	122.48	3,993.4	2,769.4	-78.5	164.3	178.2	0.65	-0.43	5.07
4,100.0	4.97	128.80	4,093.0	2,869.0	-83.6	171.6	186.5	0.63	-0.28	6.32
<b>Gyro Tie In - 4150' MD</b>										
4,150.0	4.88	132.30	4,142.8	2,918.8	-86.4	174.8	190.3	0.63	-0.18	7.00
4,185.0	5.00	134.10	4,177.6	2,953.6	-88.5	177.0	192.9	0.56	0.34	5.14
4,248.0	5.10	135.00	4,240.4	3,016.4	-92.4	181.0	197.7	0.20	0.16	1.43
4,279.0	5.10	135.80	4,271.3	3,047.3	-94.3	182.9	200.0	0.23	0.00	2.58
4,311.0	5.30	136.10	4,303.1	3,079.1	-96.4	184.9	202.5	0.63	0.63	0.94
4,342.0	5.60	132.80	4,334.0	3,110.0	-98.5	187.0	205.0	1.40	0.97	-10.65
4,373.0	6.30	119.90	4,364.8	3,140.8	-100.4	189.6	208.0	4.85	2.26	-41.61
4,405.0	7.20	109.40	4,396.6	3,172.6	-101.9	193.0	211.6	4.76	2.81	-32.81

**Phoenix Technologies**  
Survey Report

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<b>Site:</b> Doddridge County 515730	<b>North Reference:</b> Grid
<b>Well:</b> Well #515730	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Wellbore:</b> Main Wellbore	
<b>Design:</b> 515730 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)
4,437.0	8.00	102.80	4,428.3	3,204.3	-103.1	197.1	215.9	3.70	2.50	-20.63
4,468.0	8.70	99.40	4,459.0	3,235.0	-103.9	201.5	220.4	2.76	2.26	-10.97
4,499.0	9.30	94.40	4,489.6	3,265.6	-104.5	206.3	225.2	3.18	1.94	-16.13
4,531.0	9.70	87.80	4,521.2	3,297.2	-104.6	211.6	230.3	3.62	1.25	-20.63
4,562.0	10.00	81.50	4,551.7	3,327.7	-104.1	216.9	235.3	3.61	0.97	-20.32
4,593.0	10.40	76.80	4,582.2	3,358.2	-103.1	222.3	240.3	2.98	1.29	-15.16
4,625.0	10.70	74.00	4,613.7	3,389.7	-101.6	227.9	245.5	1.86	0.94	-8.75
4,656.0	11.30	72.70	4,644.1	3,420.1	-99.9	233.6	250.6	2.09	1.94	-4.19
4,688.0	12.00	71.30	4,675.5	3,451.5	-97.9	239.7	256.1	2.36	2.19	-4.38
4,719.0	12.80	71.00	4,705.8	3,481.8	-95.7	246.0	261.7	2.59	2.58	-0.97
4,751.0	13.80	70.20	4,736.9	3,512.9	-93.3	253.0	267.9	3.18	3.13	-2.50
4,782.0	15.30	69.20	4,766.9	3,542.9	-90.6	260.3	274.3	4.91	4.84	-3.23
4,814.0	16.70	69.50	4,797.7	3,573.7	-87.5	268.5	281.6	4.38	4.38	0.94
4,845.0	17.70	69.00	4,827.3	3,603.3	-84.2	277.1	289.2	3.26	3.23	-1.61
4,877.0	18.30	69.60	4,857.7	3,633.7	-80.7	286.4	297.3	1.96	1.88	1.88
4,908.0	18.70	70.10	4,887.1	3,663.1	-77.3	295.6	305.5	1.39	1.29	1.61
4,940.0	19.00	69.90	4,917.4	3,693.4	-73.8	305.3	314.1	0.96	0.94	-0.63
4,971.0	20.00	69.30	4,946.6	3,722.6	-70.2	315.0	322.7	3.29	3.23	-1.94
5,003.0	21.40	68.50	4,976.5	3,752.5	-66.1	325.6	332.0	4.46	4.38	-2.50
5,034.0	23.40	68.20	5,005.2	3,781.2	-61.8	336.5	341.6	6.46	6.45	-0.97
5,066.0	25.60	67.70	5,034.3	3,810.3	-56.8	348.8	352.4	6.91	6.88	-1.56
5,097.0	27.00	67.60	5,062.1	3,838.1	-51.6	361.5	363.5	4.52	4.52	-0.32
5,129.0	27.50	67.70	5,090.6	3,866.6	-46.0	375.1	375.3	1.57	1.56	0.31
5,160.0	27.70	68.10	5,118.0	3,894.0	-40.6	388.4	387.0	0.88	0.65	1.29
5,192.0	28.00	68.10	5,146.3	3,922.3	-35.0	402.3	399.2	0.94	0.94	0.00
5,223.0	28.60	68.00	5,173.6	3,949.6	-29.5	415.9	411.1	1.94	1.94	-0.32
5,255.0	29.10	67.70	5,201.6	3,977.6	-23.7	430.2	423.6	1.63	1.56	-0.94
5,318.0	29.50	67.50	5,256.6	4,032.6	-11.9	458.7	448.6	0.65	0.63	-0.32
5,349.0	29.50	67.50	5,283.6	4,059.6	-6.1	472.8	460.9	0.00	0.00	0.00
5,422.0	29.90	69.50	5,347.0	4,123.0	7.2	506.5	490.5	1.46	0.55	2.74
5,453.0	32.00	69.10	5,373.6	4,149.6	12.8	521.4	503.6	6.81	6.77	-1.29
5,484.0	34.60	69.50	5,399.5	4,175.5	18.8	537.3	517.7	8.42	8.39	1.29
5,516.0	37.70	70.20	5,425.3	4,201.3	25.3	555.0	533.3	9.77	9.69	2.19
5,547.0	40.90	70.60	5,449.3	4,225.3	31.9	573.5	549.8	10.35	10.32	1.29
5,579.0	44.20	70.10	5,472.9	4,248.9	39.2	593.9	567.8	10.37	10.31	-1.56
5,610.0	48.00	69.10	5,494.4	4,270.4	47.0	614.8	586.3	12.48	12.26	-3.23
5,641.0	51.00	68.50	5,514.5	4,290.5	55.5	636.8	605.7	9.79	9.68	-1.94
5,673.0	53.40	67.70	5,534.1	4,310.1	64.9	660.2	626.3	7.76	7.50	-2.50
5,704.0	54.90	67.20	5,552.3	4,328.3	74.5	683.4	646.5	5.01	4.84	-1.61
5,736.0	56.70	66.40	5,570.2	4,346.2	85.0	707.8	667.7	5.99	5.63	-2.50
5,767.0	59.20	65.20	5,586.7	4,362.7	95.7	731.7	688.4	8.71	8.06	-3.87
5,799.0	61.20	64.60	5,602.6	4,378.6	107.5	756.9	710.1	6.46	6.25	-1.88



**Phoenix Technologies**  
Survey Report

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Site Doddridge County 515730
<b>Company:</b>	EQT Production - Marcellus	<b>TVD Reference:</b>	KB @ 1224.0usft
<b>Project:</b>	Doddridge County, WV Grid	<b>MD Reference:</b>	KB @ 1224.0usft
<b>Site:</b>	Doddridge County 515730	<b>North Reference:</b>	Grid
<b>Well:</b>	Well #515730	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Main Wellbore		
<b>Design:</b>	515730 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)	
5,830.0	64.70	63.90	5,616.7	4,392.7	119.5	781.7	731.4	11.47	11.29	-2.26	
5,862.0	69.10	64.20	5,629.2	4,405.2	132.4	806.2	754.1	13.78	13.75	0.94	
5,925.0	72.60	64.30	5,649.9	4,425.9	158.3	861.8	800.1	5.56	5.56	0.16	
5,988.0	72.80	63.60	5,668.6	4,444.6	184.7	915.8	846.4	1.11	0.32	-1.11	
6,051.0	71.40	63.10	5,688.0	4,464.0	211.6	969.4	892.1	2.35	-2.22	-0.79	
6,113.0	70.30	63.80	5,708.3	4,484.3	237.7	1,021.8	936.8	2.07	-1.77	1.13	
6,177.0	72.10	64.20	5,729.0	4,505.0	264.3	1,076.3	983.4	2.87	2.81	0.63	
6,240.0	72.10	64.30	5,748.3	4,524.3	290.3	1,130.3	1,029.8	0.15	0.00	0.16	
6,303.0	69.20	64.10	5,769.2	4,545.2	316.2	1,183.8	1,075.7	4.61	-4.60	-0.32	
6,366.0	67.60	64.40	5,792.4	4,568.4	341.7	1,236.5	1,120.9	2.58	-2.54	0.48	
6,429.0	69.50	64.80	5,815.4	4,591.4	366.8	1,289.5	1,166.4	3.07	3.02	0.63	
6,491.0	71.40	65.30	5,836.2	4,612.2	391.4	1,342.5	1,212.1	3.16	3.06	0.61	
6,555.0	70.70	64.40	5,857.0	4,633.0	417.2	1,397.3	1,259.3	1.72	-1.09	-1.41	
6,618.0	67.80	63.80	5,879.3	4,655.3	442.9	1,450.2	1,304.7	4.69	-4.60	-0.95	
6,681.0	66.90	63.60	5,903.5	4,679.5	468.7	1,502.4	1,349.3	1.46	-1.43	-0.32	
6,744.0	68.80	64.10	5,927.3	4,703.3	494.4	1,554.7	1,394.1	3.10	3.02	0.79	
6,807.0	71.40	64.60	5,948.7	4,724.7	520.0	1,608.1	1,439.9	4.19	4.13	0.79	
6,870.0	73.50	64.80	5,967.7	4,743.7	545.7	1,662.4	1,486.6	3.35	3.33	0.32	
6,933.0	73.30	65.50	5,985.7	4,761.7	571.0	1,717.2	1,533.9	1.11	-0.32	1.11	
6,997.0	72.00	66.10	6,004.8	4,780.8	596.1	1,772.9	1,582.1	2.22	-2.03	0.94	
7,060.0	69.80	66.60	6,025.4	4,801.4	620.0	1,827.5	1,629.5	3.57	-3.49	0.79	
7,123.0	67.80	66.20	6,048.2	4,824.2	643.5	1,881.3	1,676.2	3.23	-3.17	-0.63	
7,185.0	68.00	66.10	6,071.5	4,847.5	666.7	1,933.8	1,721.8	0.36	0.32	-0.16	
7,249.0	68.80	65.30	6,095.1	4,871.1	691.2	1,988.1	1,768.7	1.71	1.25	-1.25	
7,312.0	69.30	64.50	6,117.6	4,893.6	716.2	2,041.3	1,814.6	1.43	0.79	-1.27	
7,375.0	69.90	63.60	6,139.6	4,915.6	742.0	2,094.4	1,860.1	1.64	0.95	-1.43	
7,438.0	68.60	65.10	6,161.9	4,937.9	767.5	2,147.5	1,905.7	3.04	-2.06	2.38	
7,501.0	68.10	64.00	6,185.1	4,961.1	792.7	2,200.4	1,951.1	1.81	-0.79	-1.75	
7,565.0	68.50	63.70	6,208.8	4,984.8	818.9	2,253.8	1,996.8	0.76	0.63	-0.47	
7,627.0	68.30	63.10	6,231.6	5,007.6	844.7	2,305.3	2,040.8	0.96	-0.32	-0.97	
7,690.0	68.50	63.80	6,254.8	5,030.8	870.9	2,357.7	2,085.5	1.08	0.32	1.11	
7,753.0	69.00	66.10	6,277.7	5,053.7	895.7	2,410.9	2,131.3	3.49	0.79	3.65	
7,816.0	69.40	66.80	6,300.0	5,076.0	919.2	2,464.9	2,178.2	1.22	0.63	1.11	
7,880.0	69.30	66.60	6,322.6	5,098.6	942.9	2,519.9	2,226.1	0.33	-0.16	-0.31	
7,943.0	70.50	65.70	6,344.2	5,120.2	966.9	2,574.0	2,273.0	2.33	1.90	-1.43	
8,006.0	71.70	66.00	6,364.7	5,140.7	991.2	2,628.4	2,320.1	1.96	1.90	0.48	
8,069.0	71.00	66.10	6,384.8	5,160.8	1,015.5	2,683.0	2,367.4	1.12	-1.11	0.16	
8,131.0	70.40	65.80	6,405.3	5,181.3	1,039.3	2,736.4	2,413.7	1.07	-0.97	-0.48	
8,194.0	69.60	66.40	6,426.8	5,202.8	1,063.3	2,790.5	2,460.6	1.55	-1.27	0.95	
8,258.0	70.20	65.90	6,448.8	5,224.8	1,087.6	2,845.5	2,508.3	1.19	0.94	-0.78	
8,321.0	70.10	65.10	6,470.2	5,246.2	1,112.2	2,899.4	2,554.9	1.20	-0.16	-1.27	
8,384.0	70.20	64.60	6,491.6	5,267.6	1,137.4	2,953.1	2,601.1	0.76	0.16	-0.79	
8,447.0	70.50	64.80	6,512.8	5,288.8	1,162.7	3,006.7	2,647.2	0.56	0.48	0.32	

**Phoenix Technologies**  
Survey Report

<b>Database:</b> EDM 5000.1 Single User Db <b>Company:</b> EQT Production - Marcellus <b>Project:</b> Doddridge County, WV Grid <b>Site:</b> Doddridge County 515730 <b>Well:</b> Well #515730 <b>Wellbore:</b> Main Wellbore <b>Design:</b> 515730 As Drilled Surveys	<b>Local Co-ordinate Reference:</b> <b>TVD Reference:</b> <b>MD Reference:</b> <b>North Reference:</b> <b>Survey Calculation Method:</b>	Site Doddridge County 515730 KB @ 1224.0usft KB @ 1224.0usft Grid Minimum Curvature
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**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)
8,509.0	70.00	64.50	6,533.8	5,309.8	1,187.7	3,059.4	2,692.6	0.93	-0.81	-0.46
8,541.0	70.40	66.00	6,544.6	5,320.6	1,200.3	3,086.8	2,716.2	4.58	1.25	4.69
8,573.0	71.10	70.40	6,555.2	5,331.2	1,211.5	3,114.8	2,740.8	13.16	2.19	13.75
8,604.0	71.60	74.40	6,565.1	5,341.1	1,220.4	3,142.8	2,765.9	12.33	1.61	12.90
8,636.0	70.60	78.60	6,575.4	5,351.4	1,227.5	3,172.2	2,792.8	12.80	-3.13	13.13
8,667.0	69.40	80.30	6,586.0	5,362.0	1,232.8	3,200.9	2,819.4	6.44	-3.87	5.48
8,699.0	68.40	83.20	6,597.6	5,373.6	1,237.1	3,230.4	2,847.0	9.01	-3.13	9.06
8,730.0	68.50	87.40	6,609.0	5,385.0	1,239.5	3,259.1	2,874.4	12.61	0.32	13.55
8,761.0	70.30	90.70	6,619.9	5,395.9	1,239.9	3,288.1	2,902.5	11.53	5.81	10.65
8,793.0	71.00	94.20	6,630.5	5,406.5	1,238.6	3,318.3	2,932.1	10.55	2.19	10.94
8,824.0	71.10	96.00	6,640.5	5,416.5	1,236.0	3,347.5	2,961.1	5.50	0.32	5.81
8,856.0	73.20	97.80	6,650.3	5,426.3	1,232.4	3,377.7	2,991.3	8.47	6.56	5.63
8,887.0	76.40	101.20	6,658.5	5,434.5	1,227.4	3,407.2	3,021.2	14.78	10.32	10.97
8,919.0	79.40	104.50	6,665.2	5,441.2	1,220.5	3,437.7	3,052.4	13.77	9.38	10.31
8,950.0	81.10	108.50	6,670.4	5,446.4	1,211.6	3,467.0	3,082.9	13.85	5.48	12.90
8,982.0	81.50	111.90	6,675.3	5,451.3	1,200.9	3,495.7	3,114.4	10.58	1.25	10.63
9,013.0	80.90	114.60	6,680.0	5,456.0	1,188.8	3,524.8	3,144.6	8.82	-1.94	8.71
9,045.0	80.70	117.60	6,685.1	5,461.1	1,174.9	3,553.2	3,175.4	9.28	-0.63	9.38
9,077.0	80.50	121.00	6,690.4	5,466.4	1,159.4	3,580.7	3,205.8	10.50	-0.63	10.63
9,107.0	80.20	123.50	6,695.4	5,471.4	1,143.6	3,605.7	3,233.8	8.28	-1.00	8.33
9,138.0	80.20	125.80	6,700.7	5,476.7	1,126.3	3,630.9	3,262.4	7.31	0.00	7.42
9,170.0	80.00	129.10	6,706.2	5,482.2	1,107.1	3,655.9	3,291.2	10.18	-0.63	10.31
9,201.0	80.00	133.70	6,711.6	5,487.6	1,086.9	3,678.8	3,318.2	14.61	0.00	14.84
9,233.0	80.20	137.20	6,717.1	5,493.1	1,064.5	3,700.9	3,345.0	10.79	0.63	10.94
9,264.0	82.20	139.50	6,721.8	5,497.8	1,041.6	3,721.3	3,370.2	9.77	6.45	7.42
9,295.0	84.50	142.00	6,725.4	5,501.4	1,017.7	3,740.7	3,394.7	10.92	7.42	8.06
9,327.0	84.90	146.50	6,728.4	5,504.4	991.9	3,759.3	3,418.9	14.06	1.25	14.06
9,358.0	85.30	149.30	6,731.0	5,507.0	965.7	3,775.8	3,441.0	9.09	1.29	9.03
9,389.0	84.30	150.90	6,733.8	5,509.8	939.0	3,791.1	3,462.3	6.07	-3.23	5.16
9,452.0	86.20	156.00	6,739.0	5,515.0	882.8	3,819.2	3,502.8	8.61	3.02	8.10
L# = 3816 MD/0741 TVB										
9,515.0	90.10	155.50	6,741.1	5,517.1	825.4	3,845.0	3,541.5	6.24	6.19	-0.79
9,578.0	90.90	155.90	6,740.5	5,516.5	768.0	3,871.0	3,580.2	1.42	1.27	0.63
9,642.0	91.70	154.80	6,739.1	5,515.1	709.9	3,897.7	3,619.9	2.12	1.25	-1.72
9,704.0	90.20	154.80	6,738.0	5,514.0	653.8	3,924.1	3,658.8	2.42	-2.42	0.00
9,767.0	89.90	155.40	6,738.0	5,514.0	596.6	3,950.6	3,698.1	1.06	-0.48	0.95
9,830.0	90.80	155.10	6,737.6	5,513.6	539.4	3,977.0	3,737.2	1.51	1.43	-0.48
9,893.0	91.30	154.10	6,736.4	5,512.4	482.5	4,004.0	3,776.9	1.77	0.79	-1.59
9,957.0	88.00	153.10	6,736.8	5,512.8	425.2	4,032.4	3,818.1	5.39	-5.16	-1.56
10,020.0	87.30	153.00	6,739.4	5,515.4	369.1	4,061.0	3,859.0	1.12	-1.11	-0.16
10,083.0	87.30	152.40	6,742.4	5,518.4	313.2	4,089.8	3,900.3	0.95	0.00	-0.95
10,145.0	89.00	154.00	6,744.4	5,520.4	257.9	4,117.8	3,940.5	3.76	2.74	2.58



## Phoenix Technologies Survey Report

<b>Database:</b> EDM 5000.1 Single User Db <b>Company:</b> EQT Production - Marcellus <b>Project:</b> Doddridge County, WV Grid <b>Site:</b> Doddridge County 515730 <b>Well:</b> Well #515730 <b>Wellbore:</b> Main Wellbore <b>Design:</b> 515730 As Drilled Surveys	<b>Local Co-ordinate Reference:</b> <b>TVD Reference:</b> <b>MD Reference:</b> <b>North Reference:</b> <b>Survey Calculation Method:</b>	<b>Site Doddridge County 515730</b> KB @ 1224.0usft KB @ 1224.0usft Grid Minimum Curvature
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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)	
10,208.0	89.30	153.10	6,745.3	5,521.3	201.5	4,145.8	3,981.1	1.51	0.48	-1.43	
10,271.0	89.40	153.70	6,746.0	5,522.0	145.1	4,174.0	4,021.8	0.97	0.16	0.95	
10,334.0	89.70	154.30	6,746.5	5,522.5	88.5	4,201.6	4,062.0	1.06	0.48	0.95	
10,397.0	90.50	153.40	6,746.4	5,522.4	32.0	4,229.4	4,102.3	1.91	1.27	-1.43	
10,460.0	90.70	150.80	6,745.8	5,521.8	-23.7	4,258.9	4,144.1	4.14	0.32	-4.13	
10,523.0	89.80	151.50	6,745.5	5,521.5	-78.9	4,289.3	4,186.7	1.81	-1.43	1.11	
10,586.0	88.70	153.20	6,746.3	5,522.3	-134.7	4,318.5	4,228.2	3.21	-1.75	2.70	
10,649.0	90.80	154.70	6,746.6	5,522.6	-191.3	4,346.2	4,268.5	4.10	3.33	2.38	
10,712.0	91.30	155.90	6,745.4	5,521.4	-248.5	4,372.5	4,307.6	2.06	0.79	1.90	
10,775.0	92.10	155.70	6,743.6	5,519.6	-305.9	4,398.3	4,346.2	1.31	1.27	-0.32	
10,838.0	90.50	156.80	6,742.1	5,518.1	-363.6	4,423.7	4,384.5	3.08	-2.54	1.75	
10,901.0	88.50	158.40	6,742.7	5,518.7	-421.8	4,447.7	4,421.5	4.07	-3.17	2.54	
10,964.0	88.40	159.00	6,744.4	5,520.4	-480.5	4,470.5	4,457.6	0.97	-0.16	0.95	
11,026.0	87.90	157.70	6,746.4	5,522.4	-538.1	4,493.4	4,493.4	2.25	-0.81	-2.10	
11,090.0	89.20	157.60	6,748.0	5,524.0	-597.3	4,517.7	4,531.0	2.04	2.03	-0.16	
11,153.0	92.60	156.70	6,747.0	5,523.0	-655.3	4,542.2	4,568.5	5.58	5.40	-1.43	
11,216.0	92.00	155.70	6,744.5	5,520.5	-712.9	4,567.6	4,606.8	1.85	-0.95	-1.59	
11,278.0	91.70	155.00	6,742.5	5,518.5	-769.2	4,593.4	4,645.2	1.23	-0.48	-1.13	
11,341.0	92.20	155.00	6,740.3	5,516.3	-826.3	4,620.1	4,684.5	0.79	0.79	0.00	
11,404.0	91.70	155.80	6,738.2	5,514.2	-883.5	4,646.3	4,723.5	1.50	-0.79	1.27	
11,467.0	90.00	156.40	6,737.3	5,513.3	-941.1	4,671.8	4,761.9	2.86	-2.70	0.95	
11,530.0	88.30	157.80	6,738.2	5,514.2	-999.2	4,696.3	4,799.4	3.50	-2.70	2.22	
11,593.0	88.30	158.90	6,740.1	5,516.1	-1,057.7	4,719.5	4,835.8	1.75	0.00	1.75	
Final Survey= 11656' MD/6742' TVD											
11,656.0	88.60	157.30	6,741.8	5,517.8	-1,116.1	4,743.0	4,872.4	2.58	0.48	-2.54	
Projection to TD= 11710' MD/6743' TVD											
11,710.0	88.60	157.30	6,743.1	5,519.1	-1,165.9	4,763.8	4,904.4	0.00	0.00	0.00	

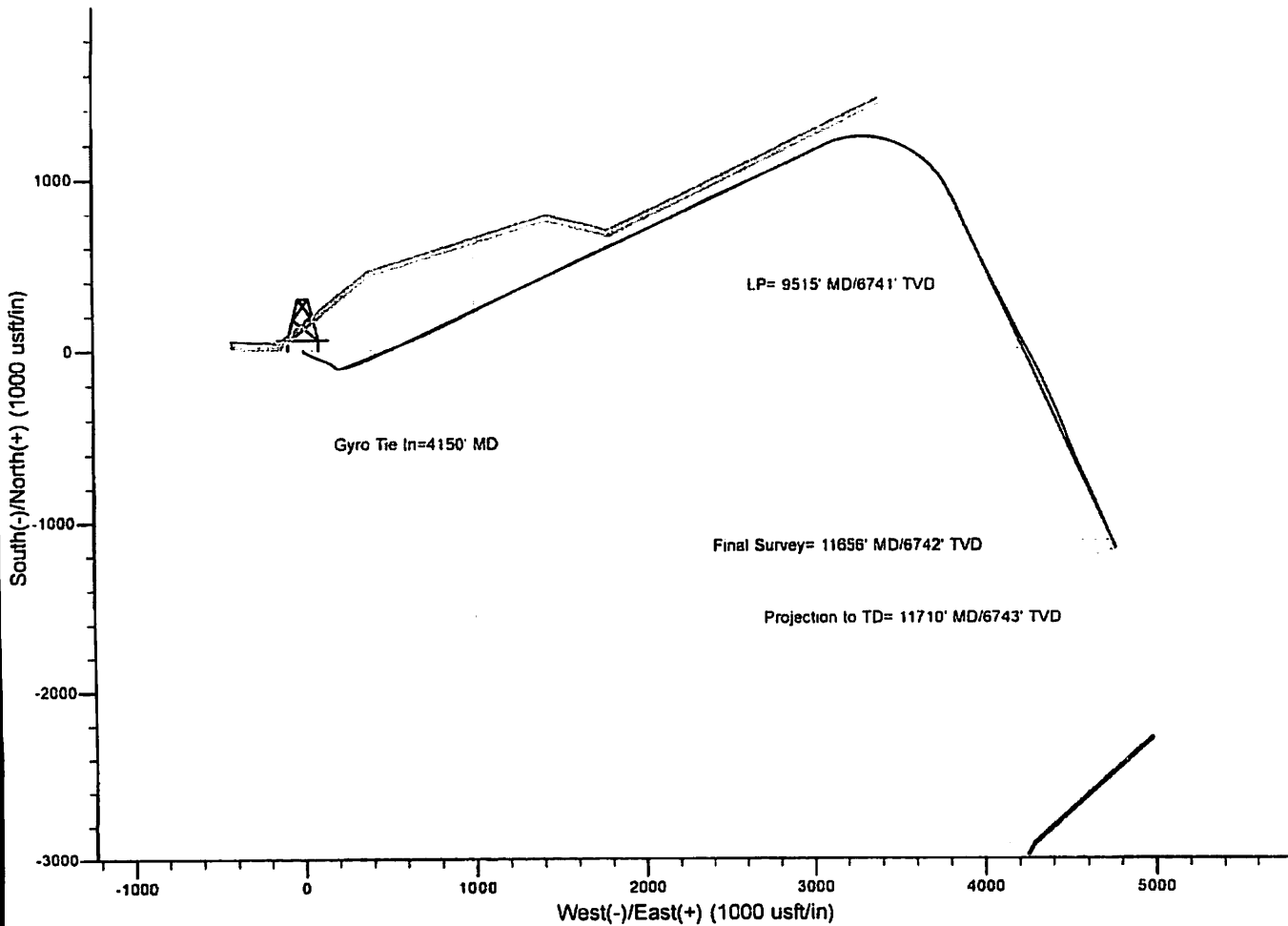
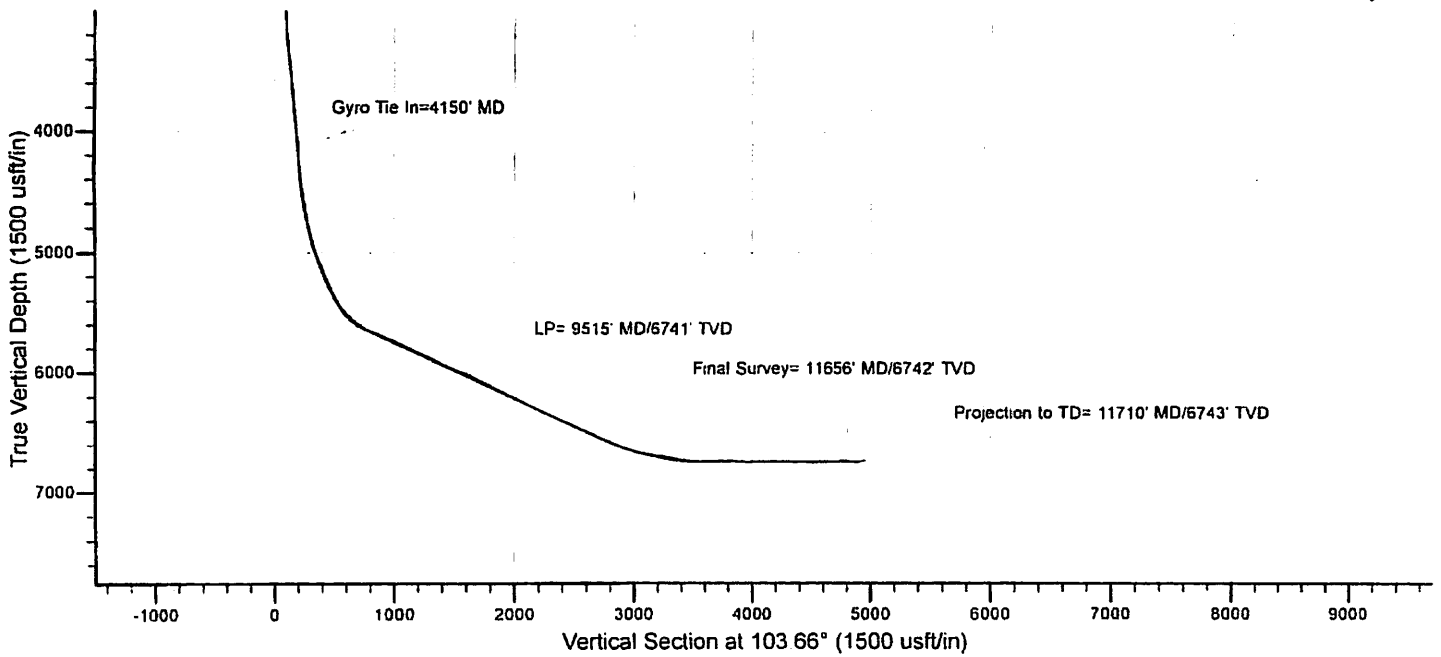
Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
4,150.0	4,142.8	-86.4	174.8	Gyro Tie In=4150' MD	
9,515.0	6,741.1	825.4	3,845.0	LP= 9515' MD/6741' TVD	
11,656.0	6,741.8	-1,116.1	4,743.0	Final Survey= 11656' MD/6742' TVD	
11,710.0	6,743.1	-1,165.9	4,763.8	Projection to TD= 11710' MD/6743' TVD	

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



# EQT Production - Marcellus

Project: Doddridge County, WV Grid  
Site: Doddridge County 515730  
Well: Well #515730  
Wellbore: Main Wellbore  
Design: 515730 As Drilled Surveys









# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/23/2015
Job End Date:	4/28/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06575-00-00
Operator Name:	EQT Production
Well Name and Number:	515730
Longitude:	-80.76342900
Latitude:	39.25580800
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,748
Total Base Water Volume (gal):	4,980,654
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	89.94501	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	9.66545	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05749	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.01938	None
			Alkyl Alcohol	Proprietary	10.00000	0.00646	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00323	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02754	None
FRW-600	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.00425	None
			Ammonium acetate	631-61-8	6.00000	0.00085	None
HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55.00000	0.00250	None
			Guar gum	9000-30-0	50.00000	0.00227	None

			Surfactant	68439-51-0	2.00000	0.00009	None
			Clay	14808-60-7	2.00000	0.00009	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	0.00070	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Organic amine resin salt	Proprietary	30.00000	0.00010	None
			Isopropanol	67-63-0	30.00000	0.00010	None
			Ethylene glycol	107-21-1	30.00000	0.00010	None
			Dimethylformamide	68-12-2	10.00000	0.00003	None
			Aromatic aldehyde	Proprietary	10.00000	0.00003	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00003	None
NE-100	FTS International	Non-emulsifier					
			2-Propanol	67-63-0	10.00000	0.00003	None
			2-Butoxyethanol	111-76-2	10.00000	0.00003	None
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00001	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	0.00006	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)

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**i** Disclosure has been submitted.

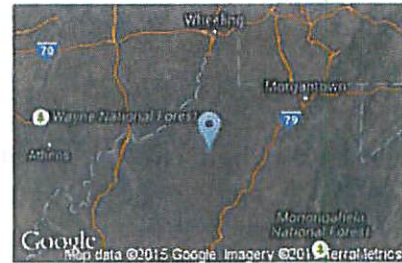
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**Hydraulic Fracturing Data**

[Edit](#)

Job Start Date 4/23/2015	Job End Date 4/28/2015	API Number 47-017-06575-00-00	State & County West Virginia --- Doddridge
Well Name 515730			
Longitude -80.763429	Latitude 39.255808	Datum NAD83	Federal/Tribal Well?
True Vertical Depth (ft) 6748	Total Water Vol (gal) 4980654	Total Non Water Vol 0	Total Mass (lbs) 46209966



**MSDS Chemical Ingredients**

[New Additive](#)  [Add Additive](#)

	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
<a href="#">Edit</a>	Water	FTS International	Carrier/Base Fluid	Water	7732-18-5	100%	89.9450085526%	None	41563557.63
<a href="#">Edit</a>	Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100%	9.6654518765%	None	4466402
<a href="#">Edit</a>	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0574886434%	None	26565.482
<a href="#">Edit</a>	FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30%	.0193751323%	None	8953.242
				Alkyl Alcohol	Proprietary	10%	.0064583774%	None	2984.414
				Ozyalkylated alcohol A	Proprietary	5%	.0032291887%	None	1492.207
<a href="#">Edit</a>	Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0275352698%	None	12724.039
<a href="#">Edit</a>	FRW-600	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30%	.0042496145%	None	1963.745
				Ammonium acetate	631-61-8	6%	.0008499229%	None	392.749
<a href="#">Edit</a>	HVG-1	FTS International	Gelling agent						



			Petroleum distillate	64742-47-8	55%	.0024984905%	None	1154.552
			Guar gum	9000-30-0	50%	.002271355%	None	1049.592
			Surfactant	68439-51-0	2%	.0000908542%	None	41.984
			Clay	14808-60-7	2%	.0000908542%	None	41.984
<input type="button" value="Edit"/>	CS-500-SI	FTS International	Scale inhibitor					
			Ethylene glycol	107-21-1	10%	.0024895604%	None	1150.425
<input type="button" value="Edit"/>	FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55%	.0007032126%	None	324.954
<input type="button" value="Edit"/>	CI-150	FTS International	Acid Corrosion Inhibitor					
			Organic amine resin salt	Proprietary	30%	.0001019062%	None	47.091
			Isopropanol	67-63-0	30%	.0001019062%	None	47.091
			Ethylene glycol	107-21-1	30%	.0001019062%	None	47.091
			Dimethylformamide	68-12-2	10%	.0000339687%	None	15.697
			Aromatic aldehyde	Proprietary	10%	.0000339687%	None	15.697
			Quaternary ammonium compound	Proprietary	10%	.0000339687%	None	15.697
<input type="button" value="Edit"/>	NE-100	FTS International	Non-emulsifier					
			2-Propanol	67-63-0	10%	.0000286053%	None	13.218
			2-Butoxyethanol	111-76-2	10%	.0000286053%	None	13.218
			Dodecylbenzenesulfonic acid	27176-87-0	5%	.0000143026%	None	6.609
<input type="button" value="Edit"/>	APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95%	.000061675%	None	28.5

**Non-MSDS Chemical Ingredients**

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