

APPROVED

NAME: *Chad A. Fluk*

DATE: *2/10/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514665

API: 47 - 017 - 06383

Submission: Initial Amended

Notes: Inj Test 1.01; 16.01

Correction to Production Cement Top
(MD)

RECEIVED
Office of Oil and Gas

DEC 21 2015

WV Department of
Environmental Protection

AX WS *03/24/16*
03/25/2016

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

API 47-017-06383 County Doddridge District West Union
Quad West Union 7.5' Pad Name WEU51 Field/Pool Name _____
Farm name Jane Hardin Trustee/Mary Well Number 514665
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 4,345,193 Easting 520,431
Landing Point of Curve Northing 4,345,366 Easting 521,064
Bottom Hole Northing 4,344,163 Easting 521,649

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)
SBM 12.5ppg – powdered hydrocarbon resin, calcium carbonate, ground almond hulls, barium sulfate, calcium chloride, lecithin liquid, organophillic 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 9/19/2014
Date completion activities began 4/11/2015 Date completion activities ceased 4/17/2015
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 - 06383 Farm name Jane Hardin Trustee/Mary Well number 514665

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"	1178.72'	New	54.5#/ft	98.87', 506.41'	Y
Coal							
Intermediate 1	12-3/8"	9-5/8"	5303.02'	New	40#/ft	3955'	Y
Intermediate 2							
Intermediate 3							
Production	8-1/2"	5-1/2"	12,669	New	20lb/ft	N/A	N
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	49	15.6	1.18	57.82	0	8
Surface	Class A	920	15.6	1.19	1094	0	8
Coal							
Intermediate 1	Class A	375/340/1165	14.2/15.6/15.6	1.26/1.18/1.18	2248.4	0	8
Intermediate 2							
Intermediate 3							
Production	Class A/Class H	505/600	14.2/15.2	1.26/1.97	1818	4,797'	72
Tubing							

Drillers TD (ft) 12,670' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,522'

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 1131', 674', 219'
Intermediate-bow spring centralizers set at 5258', 4806', 4294', 3782', 3295', 2801', 2275', 1815', 1277'
 Production- Composite bodied centralizers on every joint from Shoe track up to 1,000' above KOP

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 - 6383

Farm name Jane Hardin Trustee/Mary

Well number 514665

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 - 06383 Farm name Jane Hardin Trustee/Mary Well number 514665

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6,687'</u>	<u>TVD</u>	<u>8,178'</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 1,932 psi Bottom Hole N/A psi DURATION OF TEST 69.5 hrs

OPEN FLOW Gas 7,945 mcfpd Oil 0 bpd NGL 12.2 bpd Water 1,039 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	<u>0</u>		<u>0</u>		

Please insert additional pages as applicable.

Drilling Contractor Alpha Hunter 4
Address 28407 State Route 7 City Marietta State OH Zip 45750

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

Cementing Company Nabors
Address 380 Southpointe Boulevard Suite 210 City Canonsburg State PA Zip 15317

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

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

Drilling Contractor: Savanna Drilling

Address: 2204 Timberloch Place Suite 230

City: Woodlands

State: TX

Zip: 77380

03/25/2016

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	1,478	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
Fifty foot	2,489	2,489	2,579	2,579
Thirty foot	2,579	2,579	2,723	2,723
Forth Sand	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	6,980	6,319
Sonyea	6,980	6,319	7,403	6,463
Middlesex	7,403	6,463	7,586	6,521
Genesee	7,586	6,521	7,817	6,591
Geneseo	7,817	6,591	7,940	6,630
Tully	7,940	6,630	8,066	6,660
Hamilton	8,066	6,660	8,178	6,687
Marcellus	8,178	6,687	12,670	6,744



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EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 514665

Well #514665

Main Wellbore

Design: 514665 As Drilled Surveys

Standard Survey Report

25 September, 2014



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03/25/2016



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Phoenix Technology Services Survey Report



Where energy meets innovation.

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514665
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514665	North Reference:	Grid
Well:	Well #514665	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514665 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 514665		
Site Position:		Northing:	277,770.00 usft
From:	Map	Easting:	1,642,252.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	39.26
		Longitude:	-80.76
		Grid Convergence:	-0.81 °

Well	Well #514665				
Well Position	+N-S	0.0 usft	Northing:	277,770.00 usft	
	+E-W	0.0 usft	Easting:	1,642,252.00 usft	
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,208.0 usft
			Latitude:	39° 15' 20.651 N	
			Longitude:	80° 45' 48.159 W	

Wellbore	Main Wellbore		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	9/2/2014	-8.49	66.76	52,248

Design	514665 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	131.16

Survey Program	Date	From (')	To (usft)	Survey (Wellbore)	Tool Name	Description
	9/25/2014	0.00	5,306.0	514665 Gyro Data Gyro (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop
		0.00	12,670.0	514665 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3 standard declination

Survey											
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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	0.20	352.20	100.0	-1,124.0	0.2	0.0	-0.1	0.20	0.20	0.00
200.0	0.13	82.08	200.0	-1,024.0	0.4	0.1	-0.2	0.24	-0.07	89.88
300.0	0.21	143.66	300.0	-924.0	0.2	0.3	0.1	0.19	0.08	61.58
400.0	0.20	130.06	400.0	-824.0	0.0	0.5	0.4	0.05	-0.01	-13.60
500.0	0.21	119.35	500.0	-724.0	-0.2	0.8	0.8	0.04	0.01	-10.71
600.0	0.14	126.37	600.0	-624.0	-0.4	1.1	1.1	0.07	-0.07	7.02
700.0	0.12	91.84	700.0	-524.0	-0.5	1.3	1.3	0.08	-0.02	-34.53



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Phoenix Technology Services
Survey Report



Where energy meets innovation.

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514685
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514685	North Reference:	Grid
Well:	Well #514685	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514685 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	0.07	113.40	800.0	-424.0	-0.5	1.4	1.4	0.06	-0.05	21.56	
900.0	0.06	63.06	900.0	-324.0	-0.5	1.5	1.5	0.06	-0.01	-50.34	
1,000.0	0.15	189.88	1,000.0	-224.0	-0.6	1.6	1.6	0.19	0.09	126.82	
1,100.0	0.24	112.79	1,100.0	-124.0	-0.8	1.7	1.8	0.25	0.09	-77.09	
1,200.0	0.52	76.49	1,200.0	-24.0	-0.8	2.4	2.3	0.36	0.28	-36.30	
1,300.0	0.69	70.25	1,300.0	76.0	-0.5	3.4	2.9	0.18	0.17	-6.24	
1,400.0	0.91	85.64	1,400.0	176.0	-0.2	4.7	3.7	0.31	0.22	15.39	
1,500.0	0.78	98.08	1,500.0	276.0	-0.3	6.2	4.8	0.22	-0.13	12.44	
1,600.0	0.76	108.68	1,600.0	376.0	-0.6	7.5	6.0	0.14	-0.02	10.60	
1,700.0	0.70	125.85	1,700.0	476.0	-1.1	8.8	7.2	0.23	-0.06	17.17	
1,800.0	0.65	139.26	1,799.9	575.9	-1.9	9.5	8.4	0.17	-0.05	13.41	
1,900.0	0.68	145.16	1,899.9	675.9	-2.8	10.2	9.6	0.07	0.03	5.90	
2,000.0	0.47	154.50	1,999.9	775.9	-3.7	10.7	10.5	0.23	-0.21	9.34	
2,100.0	0.44	160.30	2,099.9	875.9	-4.4	11.0	11.2	0.05	-0.03	5.80	
2,200.0	0.41	176.34	2,199.9	975.9	-5.1	11.2	11.8	0.12	-0.03	16.04	
2,300.0	0.43	184.37	2,299.9	1,075.9	-5.9	11.2	12.3	0.06	0.02	8.03	
2,400.0	0.40	185.37	2,399.9	1,175.9	-6.6	11.1	12.7	0.03	-0.03	1.00	
2,500.0	0.42	179.66	2,499.9	1,275.9	-7.3	11.1	13.2	0.05	0.02	-5.71	
2,600.0	0.43	186.09	2,599.9	1,375.9	-8.0	11.0	13.6	0.05	0.01	6.43	
2,700.0	0.43	189.74	2,699.9	1,475.9	-8.8	10.9	14.0	0.03	0.00	3.65	
2,800.0	0.41	185.34	2,799.9	1,575.9	-9.5	10.8	14.4	0.04	-0.02	-4.40	
2,900.0	0.46	185.51	2,899.9	1,675.9	-10.3	10.8	14.9	0.05	0.05	0.17	
3,000.0	0.48	183.00	2,999.9	1,775.9	-11.1	10.7	15.4	0.03	0.02	-2.51	
3,100.0	0.49	182.49	3,099.9	1,875.9	-11.9	10.7	15.9	0.01	0.01	-0.51	
3,200.0	0.54	182.74	3,199.9	1,975.9	-12.8	10.6	16.5	0.05	0.05	0.25	
3,300.0	0.49	179.68	3,299.9	2,075.9	-13.7	10.6	17.0	0.06	-0.05	-3.06	
3,400.0	0.54	178.82	3,399.9	2,175.9	-14.6	10.6	17.6	0.05	0.05	-0.86	
3,500.0	0.53	176.82	3,499.9	2,275.9	-15.6	10.7	18.3	0.02	-0.01	-2.00	
3,600.0	0.59	175.62	3,599.9	2,375.9	-16.5	10.7	19.0	0.06	0.06	-1.20	
3,700.0	0.60	177.70	3,699.9	2,475.9	-17.6	10.8	19.7	0.02	0.01	2.08	
3,800.0	0.62	173.36	3,799.9	2,575.9	-18.6	10.9	20.4	0.05	0.02	-4.34	
3,900.0	0.62	183.06	3,899.9	2,675.9	-19.7	10.9	21.2	0.10	0.00	9.70	
4,000.0	0.65	196.30	3,999.9	2,775.9	-20.8	10.7	21.8	0.15	0.03	13.24	
4,100.0	0.69	218.56	4,099.8	2,875.8	-21.8	10.2	22.0	0.26	0.04	22.26	
4,200.0	0.78	228.99	4,199.8	2,975.8	-22.7	9.3	22.0	0.16	0.09	10.43	
4,300.0	0.88	236.71	4,299.8	3,075.8	-23.6	8.1	21.7	0.15	0.10	7.72	
4,400.0	0.92	255.02	4,399.8	3,175.8	-24.2	6.7	21.0	0.29	0.04	18.31	
4,500.0	0.96	261.83	4,499.8	3,275.8	-24.6	5.1	20.0	0.12	0.04	6.81	
4,600.0	1.03	264.89	4,599.8	3,375.8	-24.8	3.4	18.8	0.09	0.07	3.06	
4,700.0	1.10	274.13	4,699.8	3,475.8	-24.8	1.5	17.5	0.19	0.07	9.24	
4,800.0	1.12	281.41	4,799.8	3,575.8	-24.5	-0.4	15.8	0.14	0.02	7.28	
4,900.0	1.19	287.95	4,899.7	3,675.7	-24.0	-2.3	14.0	0.15	0.07	6.54	



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Phoenix Technology Services

Survey Report



Where energy meets innovation.

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514665
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514665	North Reference:	Grid
Well:	Well #514665	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514665 As Drilled Surveys		

Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vortical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,000.0	1.23	282.67	4,999.7	3,775.7	-23.4	-4.4	12.1	0.12	0.04	-5.28	
5,100.0	1.35	294.36	5,099.7	3,875.7	-22.7	-6.5	10.1	0.29	0.12	11.69	
5,200.0	1.47	294.75	5,199.7	3,975.7	-21.7	-8.7	7.7	0.12	0.12	0.39	
5,300.0	1.35	299.94	5,299.6	4,075.6	-20.6	-10.9	5.3	0.18	-0.12	5.19	
Synthetic Infilling MD											
5,306.0	1.35	298.22	5,305.6	4,081.6	-20.5	-11.0	5.2	0.68	0.00	-28.67	
5,433.0	2.00	307.30	5,432.6	4,208.6	-18.4	-14.1	1.5	0.55	0.51	7.15	
5,496.0	2.60	336.10	5,495.5	4,271.5	-16.5	-15.6	-0.9	2.04	0.95	45.71	
5,528.0	3.70	2.70	5,527.5	4,303.5	-14.8	-15.8	-2.2	5.63	3.44	83.13	
5,559.0	5.50	18.50	5,558.4	4,334.4	-12.4	-15.3	-3.4	7.05	5.81	50.97	
5,591.0	7.70	29.60	5,590.2	4,366.2	-9.1	-13.7	-4.4	7.92	6.88	34.69	
5,622.0	10.50	41.80	5,620.8	4,396.8	-5.1	-10.8	-4.8	10.92	9.03	39.35	
5,654.0	13.50	44.70	5,652.1	4,428.1	-0.3	-6.3	-4.5	9.56	9.38	9.06	
5,685.0	16.90	46.00	5,682.0	4,458.0	5.4	-0.5	-3.9	11.02	10.97	4.19	
5,717.0	19.60	49.40	5,712.4	4,488.4	12.1	6.9	-2.7	9.07	8.44	10.63	
5,748.0	21.70	55.60	5,741.4	4,517.4	18.7	15.6	-0.6	9.77	6.77	20.00	
5,780.0	24.00	60.00	5,770.9	4,546.9	25.3	26.1	3.0	8.95	7.19	13.75	
5,811.0	26.50	60.90	5,798.9	4,574.9	31.9	37.7	7.4	8.16	8.06	2.90	
5,843.0	30.10	61.40	5,827.1	4,603.1	39.2	50.9	12.6	11.27	11.25	1.56	
5,875.0	33.90	61.40	5,854.2	4,630.2	47.3	65.8	18.4	11.88	11.88	0.00	
5,906.0	38.00	62.80	5,879.3	4,655.3	55.8	81.9	25.0	13.49	13.23	4.52	
5,938.0	42.20	63.50	5,903.8	4,679.8	65.1	100.3	32.7	13.20	13.13	2.19	
5,970.0	46.00	63.60	5,926.7	4,702.7	75.0	120.2	41.2	11.88	11.88	0.31	
6,001.0	48.40	63.60	5,947.8	4,723.8	85.1	140.6	49.8	7.74	7.74	0.00	
6,033.0	51.00	63.50	5,968.5	4,744.5	96.0	162.5	59.1	8.13	8.13	-0.31	
6,064.0	54.00	64.00	5,987.4	4,763.4	106.9	184.5	68.6	9.76	9.68	1.61	
6,096.0	56.80	63.90	6,005.5	4,781.5	118.4	208.2	78.8	8.75	8.75	-0.31	
6,127.0	59.60	64.70	6,021.9	4,797.9	129.9	231.9	89.1	9.29	9.03	2.58	
6,159.0	61.70	64.60	6,037.6	4,813.6	141.8	257.1	100.3	6.57	6.56	-0.31	
6,190.0	63.80	65.00	6,051.8	4,827.8	153.5	282.0	111.3	6.87	6.77	1.29	
6,222.0	66.70	65.10	6,065.1	4,841.1	165.8	308.4	123.1	9.07	9.06	0.31	
6,253.0	70.00	65.10	6,076.6	4,852.6	177.9	334.5	134.8	10.65	10.65	0.00	
6,316.0	71.80	65.00	6,097.2	4,873.2	203.0	388.5	158.9	2.86	2.86	-0.16	
6,379.0	72.40	64.90	6,116.6	4,892.6	228.4	442.8	183.1	0.96	0.95	-0.16	
6,442.0	71.60	65.20	6,136.0	4,912.0	253.7	497.1	207.3	1.35	-1.27	0.48	
6,505.0	69.90	65.40	6,156.8	4,932.8	278.5	551.2	231.7	2.72	-2.70	0.32	
6,568.0	70.30	65.20	6,178.2	4,954.2	303.3	605.0	255.9	0.70	0.63	-0.32	
6,631.0	70.00	65.70	6,199.6	4,975.6	327.9	658.9	280.3	0.89	-0.48	0.79	
6,694.0	69.10	64.80	6,221.6	4,997.6	352.6	712.5	304.4	1.96	-1.43	-1.43	
6,757.0	69.80	64.90	6,243.8	5,019.8	377.7	765.9	328.1	1.12	1.11	0.16	
6,820.0	70.00	65.10	6,265.4	5,041.4	402.7	819.5	352.0	0.44	0.32	0.32	
6,884.0	70.80	65.50	6,286.9	5,062.9	427.9	874.3	376.7	1.38	1.25	0.63	
6,947.0	70.40	66.80	6,307.8	5,083.8	451.9	928.6	401.8	2.05	-0.63	2.06	



Where energy meets innovation.

Phoenix Technology Services Survey Report



Where energy meets innovation.

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514865
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County - WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514865	North Reference:	Grid
Well:	Well #514865	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514865 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)
7,010.0	69.90	66.80	6,329.2	5,105.2	475.3	983.1	427.4	0.79	-0.79	0.00
7,073.0	70.40	64.70	6,350.6	5,126.6	499.6	1,037.1	452.1	3.23	0.79	-3.33
7,137.0	69.90	63.70	6,372.3	5,148.3	525.8	1,091.3	475.5	1.66	-0.78	-1.56
7,200.0	70.40	63.80	6,393.7	5,169.7	552.0	1,144.5	498.4	0.81	0.79	0.16
7,263.0	69.50	64.00	6,415.3	5,191.3	578.0	1,197.6	521.3	1.46	-1.43	0.32
7,326.0	69.90	62.60	6,437.2	5,213.2	604.6	1,250.4	543.6	2.18	0.63	-2.22
7,390.0	71.10	61.80	6,458.5	5,234.5	632.7	1,303.8	565.2	2.21	1.88	-1.25
7,453.0	71.50	64.30	6,478.7	5,254.7	659.8	1,356.9	587.5	3.81	0.63	3.97
7,484.0	71.70	65.80	6,488.5	5,264.5	672.2	1,383.6	599.4	4.64	0.65	4.84
7,516.0	71.50	68.10	6,498.6	5,274.6	684.1	1,411.6	612.6	6.85	-0.63	7.19
7,547.0	71.20	71.20	6,508.5	5,284.5	694.3	1,439.1	626.6	9.52	-0.97	10.00
7,578.0	71.00	74.20	6,518.6	5,294.6	703.0	1,467.1	641.9	9.18	-0.65	9.68
7,610.0	70.50	77.50	6,529.1	5,305.1	710.4	1,496.4	659.1	9.86	-1.56	10.31
7,641.0	70.90	80.40	6,539.4	5,315.4	716.0	1,525.1	677.1	8.92	1.29	9.35
7,673.0	72.00	83.20	6,549.6	5,325.6	720.3	1,555.1	696.8	8.98	3.44	8.75
7,704.0	72.90	85.80	6,558.9	5,334.9	723.2	1,584.5	717.1	8.51	2.90	8.39
7,736.0	73.90	88.50	6,568.1	5,344.1	724.7	1,615.2	739.2	8.67	3.13	8.44
7,768.0	74.30	91.50	6,576.8	5,352.8	724.7	1,645.9	762.3	9.10	1.25	9.38
7,799.0	73.10	93.50	6,585.5	5,361.5	723.4	1,675.6	785.6	7.30	-3.87	6.45
7,831.0	71.30	95.90	6,595.3	5,371.3	720.9	1,706.0	810.1	9.09	-5.63	7.50
7,862.0	71.00	98.70	6,605.3	5,381.3	717.2	1,735.1	834.4	8.60	-0.97	9.03
7,894.0	71.60	100.70	6,615.6	5,391.6	712.0	1,765.0	860.3	6.21	1.88	6.25
7,925.0	72.70	103.10	6,625.1	5,401.1	706.0	1,793.9	886.0	8.18	3.55	7.74
7,955.0	74.00	106.10	6,633.7	5,409.7	698.7	1,821.7	911.7	10.51	4.33	10.00
7,986.0	76.30	109.00	6,641.6	5,417.6	689.7	1,850.2	939.2	11.70	7.42	9.35
8,018.0	77.00	112.60	6,649.0	5,425.0	678.6	1,879.3	968.4	11.16	2.19	11.25
8,049.0	76.50	115.50	6,656.1	5,432.1	666.3	1,906.9	997.2	9.25	-1.61	9.35
8,080.0	76.50	119.20	6,663.4	5,439.4	652.5	1,933.6	1,026.5	11.61	0.00	11.94
8,112.0	75.90	123.10	6,671.0	5,447.0	636.4	1,960.2	1,057.1	11.98	-1.88	12.19
8,143.0	75.70	127.10	6,678.6	5,454.6	619.1	1,984.8	1,087.0	12.53	-0.65	12.90
8,175.0	76.40	130.00	6,686.3	5,462.3	599.8	2,009.1	1,118.0	9.06	2.19	9.06
8,206.0	77.90	132.80	6,693.2	5,469.2	579.8	2,031.8	1,148.2	10.05	4.84	9.03
8,238.0	80.00	136.20	6,699.4	5,475.4	557.8	2,054.2	1,179.5	12.32	6.56	10.63
8,269.0	80.70	140.00	6,704.6	5,480.6	535.0	2,074.6	1,209.9	12.29	2.26	12.26
8,301.0	81.60	144.00	6,709.5	5,485.5	510.1	2,094.0	1,240.9	12.67	2.81	12.50
8,333.0	81.80	148.40	6,714.1	5,490.1	483.8	2,111.6	1,271.5	13.62	0.63	13.75
8,364.0	82.40	152.10	6,718.4	5,494.4	457.2	2,126.9	1,300.5	11.98	1.94	11.94
8,396.0	83.60	154.50	6,722.3	5,498.3	428.8	2,141.1	1,329.9	8.34	3.75	7.50
8,428.0	85.70	155.80	6,725.3	5,501.3	399.9	2,154.5	1,359.0	7.71	6.56	4.06
8,459.0	88.30	155.90	6,726.9	5,502.9	371.6	2,167.2	1,387.1	8.39	8.39	0.32
8,491.0	90.40	155.90	6,727.2	5,503.2	342.4	2,180.3	1,416.2	6.56	6.56	0.00
8,522.0	90.70	156.00	6,726.9	5,502.9	314.1	2,192.9	1,444.3	1.02	0.97	0.32
8,585.0	90.90	156.60	6,726.1	5,502.1	256.4	2,218.2	1,501.4	1.00	0.32	0.95



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Phoenix Technology Services Survey Report



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Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514865
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1224.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514865	North Reference:	Grid
Well:	Well #514865	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514865 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)
8,648.0	91.30	157.60	6,724.9	5,500.9	198.4	2,242.7	1,558.0	1.71	0.63	1.59
8,711.0	91.30	156.60	6,723.4	5,499.4	140.4	2,267.2	1,614.6	1.59	0.00	-1.59
8,774.0	91.20	156.50	6,722.0	5,498.0	82.6	2,292.3	1,671.5	0.22	-0.16	-0.16
8,837.0	91.30	156.40	6,720.7	5,496.7	24.9	2,317.5	1,728.5	0.22	0.16	-0.16
8,900.0	90.20	154.70	6,719.9	5,495.9	-32.5	2,343.5	1,785.9	3.21	-1.75	-2.70
8,963.0	89.80	153.50	6,719.9	5,495.9	-89.1	2,371.1	1,843.9	2.01	-0.63	-1.90
9,026.0	89.80	154.00	6,720.1	5,496.1	-145.6	2,398.9	1,902.0	0.79	0.00	0.79
9,089.0	89.60	153.20	6,720.4	5,496.4	-202.1	2,426.9	1,960.3	1.31	-0.32	-1.27
9,152.0	90.10	154.20	6,720.6	5,496.6	-258.5	2,454.8	2,018.4	1.77	0.79	1.59
9,215.0	90.70	154.70	6,720.1	5,496.1	-315.4	2,482.0	2,076.3	1.24	0.95	0.79
9,278.0	91.30	155.50	6,719.0	5,495.0	-372.5	2,508.5	2,133.9	1.59	0.95	1.27
9,341.0	91.20	154.50	6,717.7	5,493.7	-429.6	2,535.1	2,191.5	1.59	-0.16	-1.59
9,404.0	91.10	153.60	6,716.4	5,492.4	-486.2	2,562.7	2,249.5	1.44	-0.16	-1.43
9,467.0	89.80	153.70	6,715.9	5,491.9	-542.7	2,590.7	2,307.7	2.07	-2.06	0.16
9,529.0	90.00	154.50	6,716.0	5,492.0	-598.5	2,617.8	2,364.8	1.33	0.32	1.29
9,592.0	90.20	154.80	6,715.9	5,491.9	-655.4	2,644.7	2,422.6	0.57	0.32	0.48
9,654.0	90.10	154.50	6,715.7	5,491.7	-711.4	2,671.3	2,479.4	0.51	-0.16	-0.48
9,717.0	88.50	154.30	6,716.5	5,492.5	-768.2	2,698.5	2,537.3	2.56	-2.54	-0.32
9,780.0	88.20	154.10	6,718.3	5,494.3	-824.9	2,725.9	2,595.3	0.57	-0.48	-0.32
9,843.0	89.20	156.10	6,719.7	5,495.7	-882.0	2,752.4	2,652.8	3.55	1.59	3.17
9,906.0	89.60	155.60	6,720.4	5,496.4	-939.5	2,778.2	2,710.1	1.02	0.63	-0.79
9,969.0	89.40	155.50	6,721.0	5,497.0	-996.9	2,804.3	2,767.4	0.35	-0.32	-0.16
10,031.0	90.00	155.60	6,721.3	5,497.3	-1,053.3	2,829.9	2,823.9	0.98	0.97	0.16
10,093.0	90.60	155.60	6,721.0	5,497.0	-1,109.8	2,855.5	2,880.4	0.97	0.97	0.00
10,157.0	90.70	156.20	6,720.2	5,496.2	-1,168.2	2,881.7	2,938.5	0.95	0.16	0.94
10,220.0	89.90	155.40	6,719.9	5,495.9	-1,225.7	2,907.5	2,995.7	1.80	-1.27	-1.27
10,283.0	89.90	154.40	6,720.0	5,496.0	-1,282.7	2,934.2	3,053.4	1.59	0.00	-1.59
10,345.0	90.20	154.30	6,720.0	5,496.0	-1,338.6	2,961.1	3,110.4	0.51	0.48	-0.16
10,409.0	89.50	153.20	6,720.1	5,496.1	-1,396.0	2,989.4	3,169.5	2.04	-1.09	-1.72
10,472.0	89.50	152.50	6,720.7	5,496.7	-1,452.1	3,018.1	3,228.0	1.11	0.00	-1.11
10,535.0	89.60	151.90	6,721.2	5,497.2	-1,507.8	3,047.5	3,286.8	0.97	0.16	-0.95
10,598.0	90.00	154.70	6,721.4	5,497.4	-1,564.1	3,075.8	3,345.2	4.49	0.63	4.44
10,661.0	90.00	154.80	6,721.4	5,497.4	-1,621.0	3,102.7	3,402.9	0.16	0.00	0.16
10,724.0	90.20	154.70	6,721.3	5,497.3	-1,678.0	3,129.5	3,460.6	0.35	0.32	-0.16
10,787.0	89.00	152.70	6,721.7	5,497.7	-1,734.5	3,157.5	3,518.8	3.70	-1.90	-3.17
10,850.0	89.00	152.10	6,722.8	5,498.8	-1,790.3	3,186.6	3,577.5	0.95	0.00	-0.95
10,913.0	89.10	153.40	6,723.9	5,499.9	-1,846.3	3,215.5	3,636.1	2.07	0.16	2.06
10,976.0	88.80	155.30	6,725.0	5,501.0	-1,903.1	3,242.7	3,694.0	3.05	-0.48	3.02
11,040.0	89.10	156.10	6,726.2	5,502.2	-1,961.4	3,269.1	3,752.2	1.33	0.47	1.25
11,102.0	89.30	156.50	6,727.1	5,503.1	-2,018.2	3,294.0	3,808.3	0.72	0.32	0.65
11,166.0	89.30	157.10	6,727.8	5,503.8	-2,077.0	3,319.2	3,866.0	0.94	0.00	0.94
11,228.0	89.60	157.40	6,728.4	5,504.4	-2,134.2	3,343.2	3,921.7	0.68	0.48	0.48

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514665
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Project:	Doddridge County, WV Gnd	MD Reference:	KB @ 1224.0usft
Site:	Doddridge County 514665	North Reference:	Gnd
Well:	Well #514665	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514665 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)
11,291.0	89.70	157.10	6,728.8	5,504.6	-2,192.3	3,367.5	3,978.2	0.50	0.16	-0.48
11,354.0	89.60	156.20	6,729.2	5,505.2	-2,250.1	3,392.5	4,035.1	1.44	-0.16	-1.43
11,417.0	89.70	156.10	6,729.6	5,505.6	-2,307.7	3,418.0	4,092.2	0.22	0.16	-0.16
11,481.0	89.10	154.80	6,730.3	5,506.3	-2,365.9	3,444.6	4,150.5	2.24	-0.94	-2.03
11,544.0	88.00	153.80	6,731.8	5,507.8	-2,422.7	3,471.9	4,208.4	2.36	-1.75	-1.59
11,607.0	88.00	154.10	6,734.0	5,510.0	-2,479.2	3,499.5	4,266.5	0.48	0.00	0.48
11,670.0	88.30	153.60	6,736.1	5,512.1	-2,535.8	3,527.3	4,324.6	0.93	0.48	-0.79
11,733.0	88.10	153.40	6,738.1	5,514.1	-2,592.1	3,555.4	4,382.8	0.45	-0.32	-0.32
11,796.0	89.70	155.40	6,739.3	5,515.3	-2,648.9	3,582.6	4,440.7	4.06	2.54	3.17
11,859.0	90.40	154.90	6,739.2	5,515.2	-2,706.1	3,609.1	4,498.2	1.37	1.11	-0.79
11,922.0	90.60	155.40	6,738.7	5,514.7	-2,763.3	3,635.5	4,555.8	0.85	0.32	0.79
11,986.0	90.10	155.20	6,738.3	5,514.3	-2,821.4	3,662.3	4,614.2	0.84	-0.78	-0.31
12,048.0	90.70	155.80	6,737.8	5,513.8	-2,877.8	3,688.0	4,670.7	1.37	0.97	0.97
12,111.0	89.30	155.90	6,737.8	5,513.8	-2,935.3	3,713.8	4,727.9	2.23	-2.22	0.16
12,174.0	89.10	154.70	6,738.7	5,514.7	-2,992.5	3,740.1	4,785.4	1.93	-0.32	-1.90
12,238.0	88.90	154.80	6,739.8	5,515.8	-3,050.4	3,767.4	4,844.0	0.35	-0.31	0.16
12,301.0	89.20	156.10	6,740.9	5,516.9	-3,107.7	3,793.6	4,901.5	2.12	0.48	2.06
12,364.0	90.00	157.20	6,741.3	5,517.3	-3,165.5	3,818.5	4,958.3	2.16	1.27	1.75
12,427.0	90.60	157.40	6,741.0	5,517.0	-3,223.7	3,842.8	5,014.9	1.00	0.95	0.32
12,491.0	89.10	156.40	6,741.2	5,517.2	-3,282.5	3,867.9	5,072.5	2.82	-2.34	-1.56
12,554.0	88.90	156.00	6,742.3	5,518.3	-3,340.2	3,893.4	5,129.6	0.71	-0.32	-0.63
Last Survey=12617' MD/ 6743' TVD										
12,617.0	89.30	155.60	6,743.2	5,519.2	-3,397.6	3,919.2	5,186.8	0.90	0.63	-0.63
Projection to TD=12670' MD/ 6744' TVD										
12,670.0	89.30	155.60	6,743.9	5,519.9	-3,445.9	3,941.1	5,235.1	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,306.0	5,305.6	-20.5	-11.0	Gyro Tie In=5306' MD
12,617.0	6,743.2	-3,397.6	3,919.2	Last Survey=12617' MD/ 6743' TVD
12,670.0	6,743.9	-3,445.9	3,941.1	Projection to TD=12670' MD/ 6744' TVD

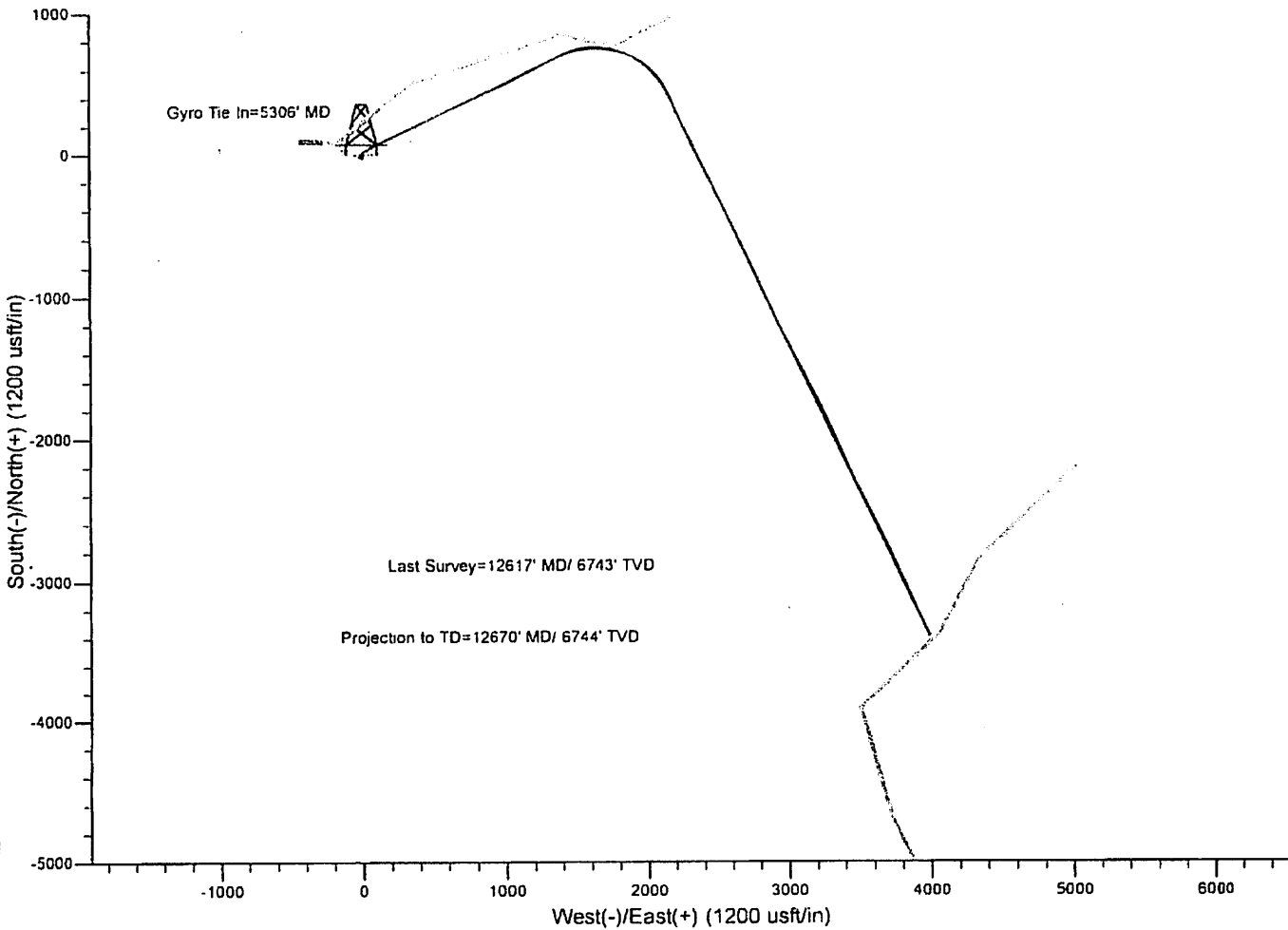
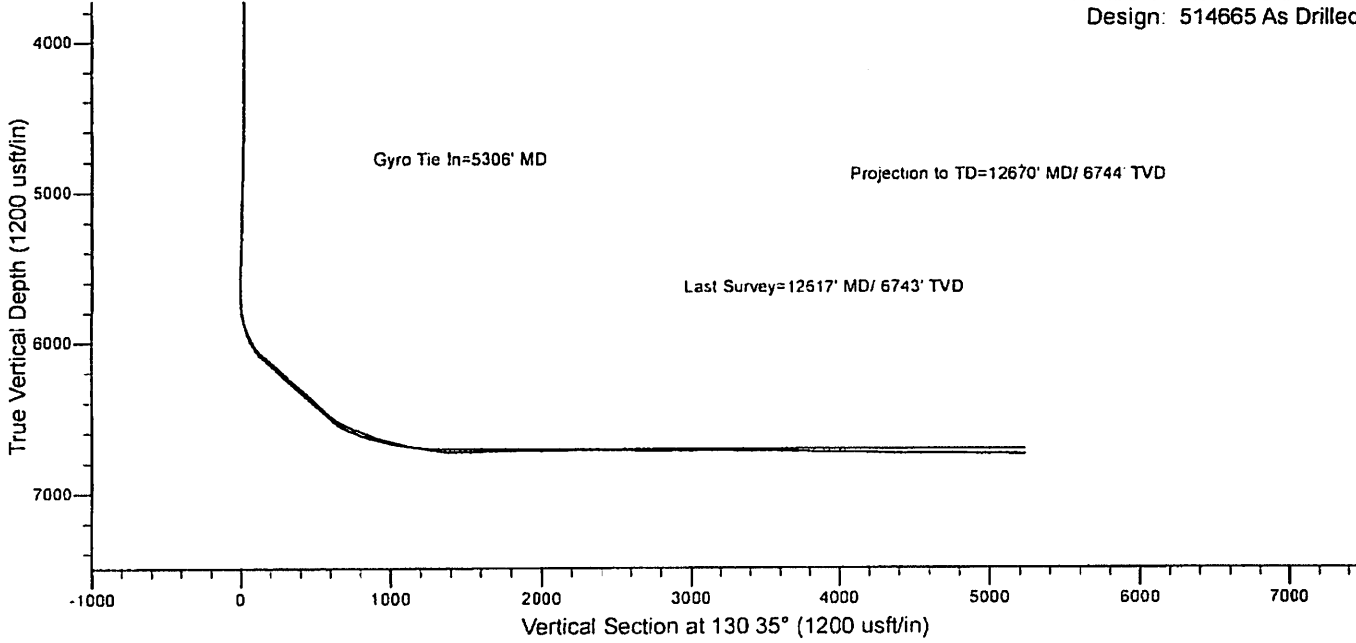
Checked By: _____ Approved By: _____ Date: _____

03/25/2016



EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 514665
Well: Well #514665
Wellbore: Main Wellbore
Design: 514665 As Drilled Surveys



514665 - 47-017-06383-0000 -- Stimulated Stages

Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	4/11/2015	8.1	5,735	6,971	5,443	0	1,373	0
1	4/12/2015	101.9	8,165	8,477	5,114	301,246	8,096	0
2	4/12/2015	98.6	8,151	8,621	5,136	307,932	8,091	0
3	4/12/2015	95.1	8,206	8,743	4,950	302,401	7,315	0
4	4/12/2015	95.5	8,046	8,916	5,122	300,396	7,344	0
5	4/12/2015	91.9	8,224	9,048	5,519	300,507	7,969	0
6	4/13/2015	98.4	7,979	8,235	4,550	301,795	7,919	0
7	4/13/2015	96.5	8,183	8,426	5,041	300,710	7,071	0
8	4/13/2015	103.5	8,248	8,478	5,154	298,788	7,034	0
9	4/13/2015	100.4	8,340	8,838	4,731	298,767	6,906	0
10	4/13/2015	100.0	8,137	8,438	4,913	302,990	7,811	0
11	4/14/2015	100.3	8,205	8,826	4,645	301,681	7,934	0
12	4/14/2015	100.6	7,598	8,466	4,841	304,501	7,703	0
13	4/14/2015	104.1	7,914	8,614	5,679	302,138	7,153	0
14	4/14/2015	101.2	7,831	8,952	4,674	301,077	7,146	0
15	4/14/2015	98.0	8,004	8,480	4,843	304,303	7,280	0
16	4/15/2015	98.8	7,443	8,021	5,161	301,803	10,930	0
17	4/15/2015	98.5	7,924	8,910	4,440	304,545	7,197	0
18	4/16/2015	100.3	7,872	8,391	4,936	302,386	7,204	0
19	4/16/2015	100.5	8,195	8,644	4,859	304,722	7,597	0
20	4/16/2015	99.3	7,724	8,176	5,092	299,733	6,842	0
21	4/16/2015	101.0	7,247	7,907	4,874	301,875	6,625	0
22	4/16/2015	100.3	7,311	7,729	4,998	303,146	7,049	0
23	4/16/2015	99.0	7,855	8,595	4,944	302,497	7,202	0
24	4/17/2015	100.5	7,355	8,170	4,954	300,931	6,664	0

514665 - 47-017-06383-0000 - Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	2/2/2015	12,667.00	12,669.00	10	MARCELLUS
1	4/11/2015	12,523.00	12,585.00	42	MARCELLUS
2	4/12/2015	12,343.00	12,462.00	42	MARCELLUS
3	4/12/2015	12,163.00	12,283.00	42	MARCELLUS
4	4/12/2015	11,986.00	12,105.00	42	MARCELLUS
5	4/12/2015	11,803.00	11,925.00	42	MARCELLUS
6	4/12/2015	11,623.00	11,745.00	42	MARCELLUS
7	4/13/2015	11,443.00	11,565.00	42	MARCELLUS
8	4/13/2015	11,263.00	11,384.00	42	MARCELLUS
9	4/13/2015	11,083.00	11,205.00	42	MARCELLUS
10	4/13/2015	10,903.00	11,025.00	42	MARCELLUS
11	4/13/2015	10,723.00	10,845.00	42	MARCELLUS
12	4/14/2015	10,543.00	10,665.00	42	MARCELLUS
13	4/14/2015	10,363.00	10,485.00	42	MARCELLUS
14	4/14/2015	10,183.00	10,307.00	42	MARCELLUS
15	4/14/2015	10,003.00	10,123.00	42	MARCELLUS
16	4/14/2015	9,824.00	9,945.00	42	MARCELLUS
17	4/15/2015	9,642.00	9,765.00	42	MARCELLUS
18	4/15/2015	9,463.00	9,585.00	42	MARCELLUS
19	4/16/2015	9,283.00	9,405.00	42	MARCELLUS
20	4/16/2015	9,103.00	9,225.00	42	MARCELLUS
21	4/16/2015	8,923.00	9,045.00	42	MARCELLUS
22	4/16/2015	8,743.00	8,865.00	42	MARCELLUS
23	4/16/2015	8,563.00	8,688.00	42	MARCELLUS
24	4/17/2015	8,383.00	8,505.00	42	MARCELLUS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/11/2015
Job End Date:	4/17/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06383-00-00
Operator Name:	EQT Production
Well Name and Number:	514665
Longitude:	-80.76337800
Latitude:	39.25573600
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,744
Total Base Water Volume (gal):	7,621,110
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	89.43106	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	10.19610	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05723	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.02237	None
			Alkyl Alcohol	Proprietary	10.00000	0.00746	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00373	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02543	None
CS-500-SI	FTS International	Scale inhibitor	Ethylene glycol	107-21-1	10.00000	0.00248	None
FRW-600	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.00149	None
			Ammonium acetate	631-61-8	6.00000	0.00030	None
B-10	FTS International	High pH buffer					

			Potassium carbonate	584-08-7	48.00000	0.00069	None
			Potassium hydroxide	1310-58-3	20.00000	0.00029	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00059	None
HVG-1	FTS International	Gelling agent					
			Petroleum distillate	64742-47-8	55.00000	0.00026	None
			Guar gum	9000-30-0	50.00000	0.00023	None
			Surfactant	68439-51-0	2.00000	0.00001	None
			Clay	14808-60-7	2.00000	0.00001	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Isopropanol	67-63-0	30.00000	0.00009	None
			Organic amine resin salt	Proprietary	30.00000	0.00009	None
			Ethylene glycol	107-21-1	30.00000	0.00009	None
			Aromatic aldehyde	Proprietary	10.00000	0.00003	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00003	None
			Dimethylformamide	68-12-2	10.00000	0.00003	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	0.00001	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	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]



Submission to FracFocus using Excel Spreadsheets has been turned off.

[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.

[Preview Disclosure PDF](#) [Validate Disclosure](#) [Submit To FracFocus](#)

Hydraulic Fracturing Data

[Edit](#)

Job Start Date 4/11/2015	Job End Date 4/17/2015	API Number 47-017-06383-00-00	State & County West Virginia --- Doddridge
Well Name 514665			
Longitude -80.763378	Latitude 39.255736	Datum NAD83	Federal/Tribal Well?
True Vertical Depth (ft) 6744	Total Water Vol (gal) 7621110	Total Non Water Vol 0	Total Mass (lbs) 71114181



MSDS Chemical Ingredients

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

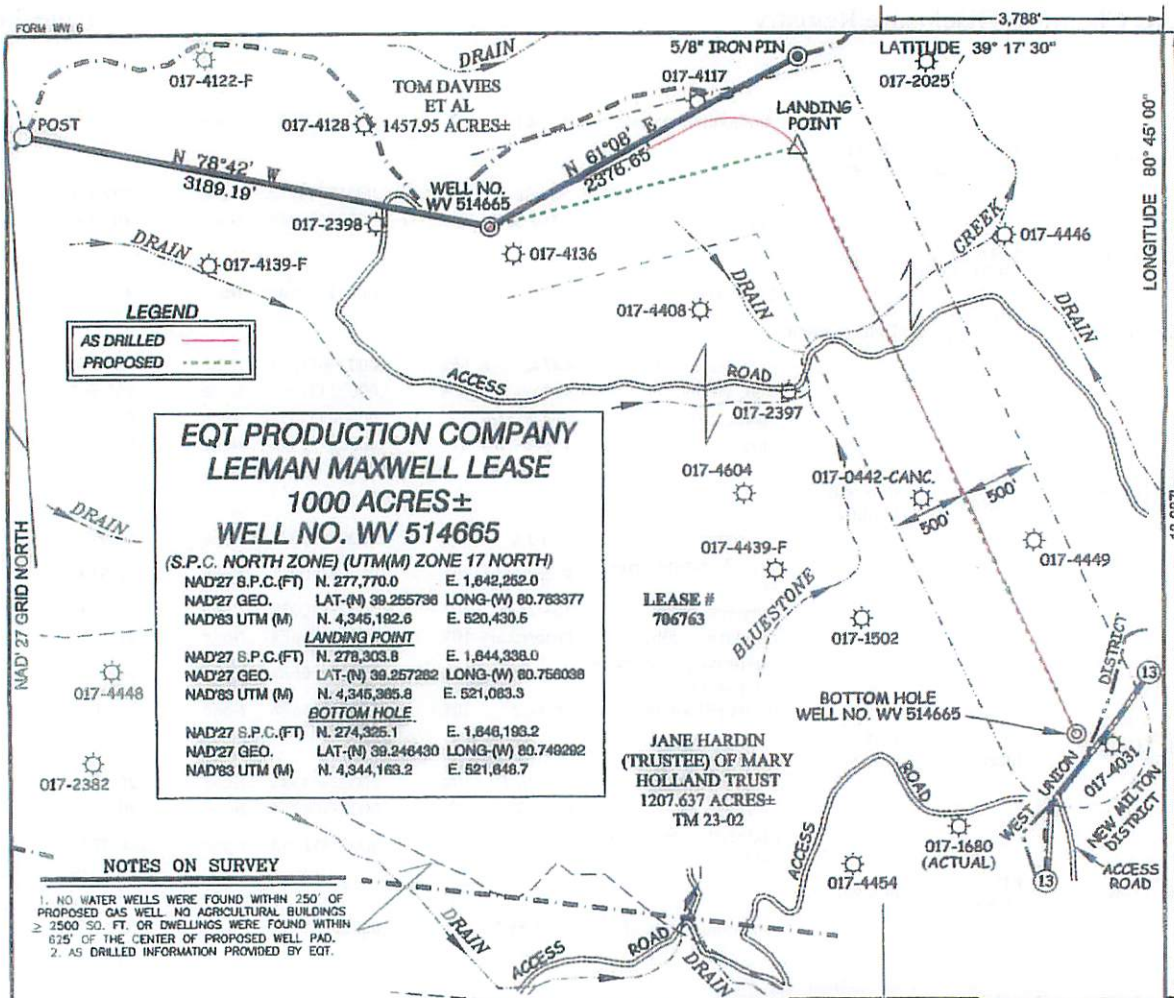
	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
Edit	Water	FTS International	Carrier/Base Fluid	Water	7732-18-5	100%	89.4310563211%	None	63598162.95
Edit	Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100%	10.1960958189%	None	7250870
Edit	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0572306134%	None	40699.082
Edit	FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30%	.0223672163%	None	15906.263
				Alkyl Alcohol	Proprietary	10%	.0074557388%	None	5302.088
				Oxyalkylated alcohol A	Proprietary	5%	.0037278694%	None	2651.044
Edit	Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0254260523%	None	18081.529
Edit	CS-500-SI	FTS International	Scale inhibitor	Ethylene glycol	107-21-1	10%	.0024843486%	None	1766.724
Edit	FRW-600	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30%	.0014889158%	None	1058.83

<input type="button" value="Edit"/>	B-10	FTS International	High pH buffer	Ammonium acetate	631-61-8	6%	.0002977832%	None	211.766
				Potassium carbonate	584-08-7	48%	.0006879471%	None	489.228
				Potassium hydroxide	1310-58-3	20%	.0002866446%	None	203.845
<input type="button" value="Edit"/>	FE-100L	FTS International	Iron control	Citric acid	77-92-9	55%	.0005940314%	None	422.441
<input type="button" value="Edit"/>	HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55%	.0002567101%	None	182.557
				Guar gum	9000-30-0	50%	.0002333728%	None	165.961
				Surfactant	68439-51-0	2%	.0000093349%	None	6.638
				Clay	14808-60-7	2%	.0000093349%	None	6.638
<input type="button" value="Edit"/>	CJ-150	FTS International	Acid Corrosion Inhibitor	Isopropanol	67-63-0	30%	.0000941002%	None	66.919
				Organic amine resin salt	Proprietary	30%	.0000941002%	None	66.919
				Ethylene glycol	107-21-1	30%	.0000941002%	None	66.919
				Aromatic aldehyde	Proprietary	10%	.0000313667%	None	22.306
				Quaternary ammonium compound	Proprietary	10%	.0000313667%	None	22.306
				Dimethylformamide	68-12-2	10%	.0000313667%	None	22.306
<input type="button" value="Edit"/>	NE-100	FTS International	Non-emulsifier	2-Butoxyethanol	111-76-2	10%	.0000290433%	None	20.654
				2-Propanol	67-63-0	10%	.0000290433%	None	20.654
				Dodecylbenzenesulfonic acid	27176-87-0	5%	.0000145216%	None	10.327
<input type="button" value="Edit"/>	APB-1	FTS International	Breaker	Ammonium persulfate	7727-54-0	95%	.0000080153%	None	5.7

Non-MSDS Chemical Ingredients

Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
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**EQT PRODUCTION COMPANY
LEEMAN MAXWELL LEASE
1000 ACRES±
WELL NO. WV 514665**
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
NAD27 S.P.C.(FT) N. 277,770.0 E. 1,642,252.0
NAD27 GEO. LAT-(N) 39.255736 LONG-(W) 80.763377
NAD83 UTM (M) N. 4,345,192.6 E. 520,430.5

LANDING POINT
NAD27 S.P.C.(FT) N. 278,303.8 E. 1,644,338.0
NAD27 GEO. LAT-(N) 39.257282 LONG-(W) 80.756038
NAD83 UTM (M) N. 4,345,365.8 E. 521,063.3

BOTTOM HOLE
NAD27 S.P.C.(FT) N. 274,325.1 E. 1,646,193.2
NAD27 GEO. LAT-(N) 39.246430 LONG-(W) 80.749292
NAD83 UTM (M) N. 4,344,163.2 E. 521,648.7

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

**JANE HARDIN (TRUSTEE) OF MARY HOLLAND TRUST
350 ACRES±
TM 23-04**

AS DRILLED INFORMATION

BOTTOM HOLE WELL NO. WV 514666		WELL NO. WV 514665	
STATE PLANE COORDINATES (NORTH ZONE) NAD 87		STATE PLANE COORDINATES (NORTH ZONE) NAD 87	
N. 274,325.1	E. 1,646,193.2	N. 277,770.0	E. 1,642,252.0
LAT=(N) 39.246430	LONG=(W) 80.749293	LAT=(N) 39.255736	LONG=(W) 80.763377
UTM (NAD83)(METERS)		UTM (NAD83)(METERS)	
N. 4,344,163.2	E. 521,648.7	N. 4,345,192.6	E. 520,430.5



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. 677 *Gregory A. Smith*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE SEPTEMBER 4, 20 13
REVISED 03/05/14 & 09/30/14
OPERATORS WELL NO. WV 514665
API WELL NO. 47
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 8051ASDRILLED514665
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)
SCALE 1" = 1,000'

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

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

LOCATION:
ELEVATION 1,225(GROUND) 1,208(PROPOSED) WATERSHED BLUESTONE CREEK
DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE WEST UNION 7.5'

SURFACE OWNER: JANE HARDIN (TRUSTEE) OF MARY HOLLAND TRUST ACREAGE 1207.637±
ROYALTY OWNER: LEEMAN MAXWELL HEIRS LEASE ACREAGE 1000± LEASE NO. 706763

PROPOSED WORK:
DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE PLUG OFF OLD ___
FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6661'

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

03/25/2016