

APPROVED

NAME: *Jul A Fluh*

DATE: *2/10/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513342

API: 47 - 017 - 06572

Submission: Initial Amended

Notes: Correction to Production Cement Top (MD)

RECEIVED
Office of Oil and Gas
DEC 21 2015
WV Department of
Environmental Protection

AX WS 03/25/16
04/01/2016

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

API 47 - 017 - 06572 County DODDRIDGE District WEST UNION
Quad WEST UNION 7.5' Pad Name WEU6 Field/Pool Name _____
Farm name FRANKLIN BUTLER & KEY OIL COMPANY Well Number 513342
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 4,349,015 Easting 521,253
Landing Point of Curve Northing 4,348,242 Easting 520,714
Bottom Hole Northing 4,346,915 Easting 521,093

Elevation (ft) 1260 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 13.5 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 10/21/2014 Date drilling commenced 10/28/2014 Date drilling ceased 01/10/2015
Date completion activities began 4/20/2015 Date completion activities ceased 4/26/2015
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 353',465',508',967',1031' Open mine(s) (Y/N) depths N
Salt water depth(s) ft NONE Void(s) encountered (Y/N) depths N
Coal depth(s) ft 188' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

04/01/2016

API 47-017 - 06572

Farm name FRANKLIN BUTLER & KEY OIL COMPANY

Well number 513342

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"	1131'	NEW	J-55 54.5LB/FT	282',494'	Y
Coal							
Intermediate 1	12.375"	9.625"	3100'	NEW	A-500 40LB/FT	1197',1535'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	12,741'	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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	890	15.6	1.19	1059.1	0	8
Coal							
Intermediate 1	CLASS A	1135	15.6	1.18	1339.3	0	8
Intermediate 2							
Intermediate 3							
Production	CLASS A / CLASS H	1050/655	15.2/15.6	1.07/1.86	2341.8	2,592'	72
Tubing							

Drillers TD (ft) 12,741' MD _____ Loggers TD (ft) N/A _____

Deepest formation penetrated Marcellus _____ Plug back to (ft) 1463' _____

Plug back procedure DRILLED TO 1823' THEN PLUGGED BACK FOR SIDETRACK. TRIPPED IN OPEN ENDED AND PUMPED 85 BBLS 16.4PPG CLASS H CEMENT WITH 3% CACL. TOP OF CEMENT WAS 1463'.

Kick off depth (ft) 3,458' MD _____

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- JOINTS: 1,12,24 _____

INTERMEDIATE- RAN AT LEAST EVERY 500' FEET _____

Production- Composite bodied centralizers on every joint from TD up to 2,500' _____

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 - 06572 Farm name FRANKLIN BUTLER & KEY OIL COMPANY Well number 513342

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 - 06572 Farm name FRANKLIN BUTLER & KEY OIL COMPANY Well number 513342

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6,843'</u>	<u>TVD</u>	<u>7,977'</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 2,123 psi Bottom Hole N/A psi DURATION OF TEST 129.0 hrs

OPEN FLOW Gas 11,090 mcfpd Oil 0 bpd NGL 134.7 bpd Water 504.0 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.

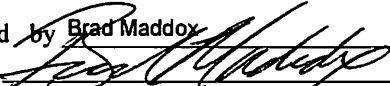
Drilling Contractor ALPHA HUNTER DRILLING (RIG 4)
Address P.O. BOX 430 City RENO State OH Zip 45773

Logging Company GYRODATA INC.
Address 601 MAYER ST. City BRIDGEVILLE State PA Zip 15017

Cementing Company NABORS
Address 2504 SMITH CREEK ROAD City WAYNESBURG State PA Zip 15370

Stimulating Company Keane
Address 2121 Sage Road City Houston State TX Zip 77056

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 - 06572 Farm name FRANKLIN BUTLER & KEY OIL COMPANY Well number 513342

Drilling Contractor Savanna Drilling
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company HOSSCO SERVICES LLC
Address 614 TROTTERS LANE City CHARLESTON State WV Zip 25312

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company _____
Address _____ City _____ State _____ Zip _____

API 47 - 017 - 06572

Formations				
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	1,034	1,034
SAND / SHALE	0	0	191	191
COAL	191	191	194	194
SAND / SHALE	194	194	2,307	2,303
BEREA	2,307	2,303	2,575	2,571
GANTZ	2,575	2,571	2,665	2,661
50F	2,665	2,661	2,763	2,759
30F	2,763	2,759	2,830	2,826
GORDON	2,830	2,826	2,899	2,895
4TH	2,899	2,895	3,051	3,047
5TH	3,051	3,047	3,441	3,437
WARREN	3,441	3,437	3,505	3,501
SPEECHLEY	3,505	3,501	4,576	4,368
BRADFORD	4,576	4,368	5,557	5,105
BENSON	5,557	5,105	5,998	5,438
ALEXANDER	5,998	5,438	7,378	6,481
SONYEA	7,378	6,481	7,570	6,622
MIDDLESEX	7,570	6,622	7,658	6,681
GENESSEE	7,658	6,681	7,795	6,760
GENESE0	7,795	6,760	7,852	6,789
TULLY	7,852	6,789	7,910	6,815
HAMILTON	7,910	6,815	7,977	6,843
MARCELLUS	7,977	6,843	12,741	6,886

04/01/2016

API 47 - 017 - 06572

EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 513342

Well #513342

513342 ST01

Design: 513342 ST01 As Drilled Surveys

Standard Survey Report

20 January, 2015

04/01/2016

Phoenix Technologies

Survey Report

Database: EDM 5000 1 Single User Db Company: EQ1 Production - Marcellus Project: Doddridge County WV Grid Site: Doddridge County 513342 Well: Well #513342 Wellbore: 513342 ST01 Design: 513342 ST01 As Drilled Surveys	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Site Doddridge County 513342 KB @ 15 ft @ 1276.0usft KB @ 16 ft @ 1276.0usft Grid Minimum Curvature
--	--	--

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 513342					
Site Position:		Northing:	290 267 60 usft	Latitude:	39 29
From: Map		Easting:	1 645 159.80 usft	Longitude:	-80 75
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0 80 °

Well Well #513342						
Well Position	+N/-S	0 0 usft	Northing:	290,267 60 usft	Latitude:	39° 17' 24 570 N
	+E/-W	0.0 usft	Easting:	1 645 159.80 usft	Longitude:	80 45' 13 413 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	1,260 0 usft

Wellbore 513342 ST01					
-----------------------------	--	--	--	--	--

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	12/15/2014	-8 52	66 76	52 229

Design 513342 ST01 As Drilled Surveys					
--	--	--	--	--	--

Audit Notes:

Version: 1 0 Phase: ACTUAL Tie On Depth: 3 0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	185 31

Survey Program	Date	From (°)	To (usft)	Survey (Wellbore)	Tool Name	Description
	1/20/2015	0 00	3,278 0	Gyrodata Gyro (513342 ST01)	GYD_DP_MS	Gyrodata gyro-compassing and drop
		0 00	12 741 0	513342 PHX MWD (Curve and Lateral) (51	MWD+IGRF	MWD+IGRF v3 standard declination

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 0	0 00	0.00	0 0	-1,276 0	0 0	0 0	0 0	0 00	0 00	0 00
103 0	0 10	281 88	103.0	-1,173 0	0 0	-0 1	0 0	0 10	0 10	0 00
203 0	0 28	258 32	203 0	-1,073 0	0 0	-0 4	0 1	0 19	0 18	-23 56
303 0	0 24	244 71	303 0	-973 0	-0 2	-0 8	0 2	0 07	-0 04	-13 61
403 0	0 17	208 15	403 0	-873 0	-0 4	-1 1	0 5	0 14	-0 07	-36 56
503 0	0 17	165 32	503 0	-773 0	-0 6	-1 1	0 7	0 12	0 00	-42 83
603 0	0 15	158 80	603 0	-673 0	-0 9	-1 0	1 0	0 03	-0 02	-6 52
703 0	0 16	150 91	703 0	-573 0	-1 2	-0 9	1 2	0 02	0 01	-7 89

Phoenix Technologies

Survey Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513342
Company:	EDT Production - Marcellus	TVD Reference:	KB@16 ft @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@16 ft @ 1276.0usft
Site:	Doddridge County 513342	North Reference:	Grid
Well:	Well #513342	Survey Calculation Method:	Minimum Curvature
Wellbore:	513342 ST01		
Design:	513342 ST01 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)
803.0	0.21	131.27	803.0	-473.0	-1.4	-0.7	1.5	0.08	0.05	-19.64
903.0	0.16	132.38	903.0	-373.0	-1.6	-0.5	1.7	0.05	-0.05	1.11
1,003.0	0.17	129.95	1,003.0	-273.0	-1.8	-0.3	1.8	0.01	0.01	-2.43
1,103.0	0.24	124.11	1,103.0	-173.0	-2.0	0.0	2.0	0.07	0.07	-5.84
1,203.0	0.76	126.23	1,203.0	-73.0	-2.5	0.7	2.4	0.52	0.52	2.12
1,303.0	1.24	134.53	1,303.0	27.0	-3.7	2.0	3.5	0.50	0.48	8.30
1,403.0	1.30	133.21	1,403.0	127.0	-5.2	3.6	4.9	0.07	0.06	-1.32
1,503.0	0.90	149.24	1,502.9	226.9	-6.7	4.9	6.2	0.50	-0.40	16.03
1,603.0	3.12	271.76	1,602.9	326.9	-7.3	2.5	7.0	3.68	2.22	122.52
1,703.0	8.18	284.72	1,702.4	426.4	-5.4	-7.1	6.0	5.19	5.06	12.96
1,803.0	9.35	281.35	1,801.2	525.2	-2.0	-21.9	4.0	1.28	1.17	-3.37
1,903.0	7.69	254.23	1,900.1	624.1	-2.2	-36.3	5.5	4.30	-1.66	-27.12
2,003.0	4.85	230.03	1,999.5	723.5	-6.7	-46.0	10.9	3.82	-2.84	-24.20
2,103.0	2.20	202.21	2,099.4	823.4	-11.2	-50.0	15.8	3.08	-2.65	-27.82
2,203.0	1.11	189.59	2,199.3	923.3	-13.9	-50.9	18.6	1.14	-1.09	-12.62
2,303.0	1.26	193.38	2,299.3	1,023.3	-16.0	-51.3	20.6	0.17	0.15	3.79
2,403.0	1.31	190.44	2,399.3	1,123.3	-18.2	-51.7	22.9	0.08	0.05	-2.94
2,503.0	1.23	186.02	2,499.2	1,223.2	-20.3	-52.1	25.1	0.13	-0.08	-4.42
2,603.0	1.21	183.64	2,599.2	1,323.2	-22.5	-52.2	27.2	0.05	-0.02	-2.38
2,703.0	1.01	167.84	2,699.2	1,423.2	-24.4	-52.1	29.1	0.36	-0.20	-15.80
2,803.0	0.86	167.04	2,799.2	1,523.2	-26.0	-51.8	30.7	0.15	-0.15	-0.80
2,903.0	0.90	165.51	2,899.2	1,623.2	-27.5	-51.4	32.1	0.05	0.04	-1.53
3,003.0	0.88	169.24	2,999.2	1,723.2	-29.0	-51.1	33.6	0.06	-0.02	3.73
3,103.0	0.93	159.26	3,099.1	1,823.1	-30.5	-50.6	35.1	0.17	0.05	-9.98
3,203.0	1.03	158.45	3,199.1	1,923.1	-32.1	-50.0	36.6	0.10	0.10	-0.81
Gyro Tie In=3278' MD										
3,278.0	0.94	166.29	3,274.1	1,998.1	-33.3	-49.6	37.8	0.22	-0.12	10.45
3,464.0	4.10	207.30	3,459.9	2,183.9	-40.7	-52.3	45.4	1.85	1.70	22.05
3,496.0	7.30	212.40	3,491.8	2,215.8	-43.4	-53.9	48.2	10.11	10.00	15.94
3,527.0	9.80	213.10	3,522.4	2,246.4	-47.3	-56.4	52.3	8.07	8.06	2.26
3,559.0	12.10	214.60	3,553.8	2,277.8	-52.4	-59.8	57.7	7.24	7.19	4.69
3,590.0	14.40	217.80	3,584.0	2,308.0	-58.1	-64.0	63.8	7.78	7.42	10.32
3,622.0	16.70	220.10	3,614.8	2,338.8	-64.7	-69.4	70.9	7.44	7.19	7.19
3,653.0	18.90	219.70	3,644.3	2,368.3	-72.0	-75.5	78.7	7.11	7.10	-1.29
3,685.0	21.50	219.00	3,674.4	2,398.4	-80.6	-82.5	87.8	8.16	8.13	-2.19
3,716.0	24.00	218.20	3,703.0	2,427.0	-89.9	-90.0	97.9	8.13	8.06	-2.58
3,747.0	26.50	218.00	3,731.0	2,455.0	-100.3	-98.1	109.0	8.07	8.06	-0.65
3,779.0	28.80	216.70	3,759.3	2,483.3	-112.1	-107.1	121.6	7.43	7.19	-4.06
3,810.0	31.40	216.00	3,786.2	2,510.2	-124.7	-116.3	134.9	8.46	8.39	-2.26
3,842.0	34.30	215.40	3,813.0	2,537.0	-138.8	-126.5	149.9	9.12	9.06	-1.88
3,905.0	40.50	216.50	3,863.1	2,587.1	-169.7	-148.9	182.8	9.90	9.84	1.75
3,968.0	40.90	216.10	3,910.8	2,634.8	-202.8	-173.3	218.0	0.76	0.63	-0.63
4,031.0	40.70	215.60	3,958.5	2,682.5	-236.2	-197.4	253.4	0.61	-0.32	-0.79

Phoenix Technologies

Survey Report

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513342
Company:	EQT Production - Marcellus	TVD Reference:	KB@15 R @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@18 R @ 1276.0usft
Site:	Doddridge County 513342	North Reference:	Grid
Well:	Well #513342	Survey Calculation Method:	Minimum Curvature
Wellbore:	513342 ST01		
Design:	513342 ST01 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)
4,094.0	40.70	215.80	4,006.3	2,730.3	-269.5	-221.3	288.9	0.21 0.00	0.32	
4,156.0	40.70	215.40	4,053.3	2,777.3	-302.4	-244.9	323.8	0.42 0.00	-0.65	
4,220.0	40.50	215.30	4,101.9	2,825.9	-336.4	-269.0	359.8	0.33 -0.31	-0.16	
4,283.0	41.40	214.80	4,149.5	2,873.5	-370.2	-292.7	395.7	1.52 1.43	-0.79	
4,345.0	42.10	215.00	4,195.7	2,919.7	-404.1	-316.3	431.6	1.15 1.13	0.32	
4,408.0	42.20	214.60	4,242.4	2,966.4	-438.8	-340.4	468.4	0.45 0.16	-0.63	
4,440.0	42.10	215.30	4,266.1	2,990.1	-456.4	-352.7	487.1	1.50 -0.31	2.19	
4,472.0	41.70	219.40	4,290.0	3,014.0	-473.4	-365.7	505.2	8.65 -1.25	12.81	
4,535.0	41.10	224.50	4,337.2	3,061.2	-504.3	-393.5	538.6	5.44 -0.95	8.10	
4,598.0	40.70	224.70	4,384.9	3,108.9	-533.7	-422.5	570.5	0.67 -0.63	0.32	
4,662.0	40.10	224.00	4,433.6	3,157.6	-563.4	-451.5	602.7	1.18 -0.94	-1.09	
4,725.0	40.30	222.40	4,481.7	3,205.7	-593.0	-479.3	634.8	1.67 0.32	-2.54	
4,787.0	40.30	222.60	4,529.0	3,253.0	-622.6	-506.4	666.7	0.21 0.00	0.32	
4,850.0	41.40	224.10	4,576.7	3,300.7	-652.5	-534.7	699.2	2.34 1.75	2.38	
4,913.0	41.80	225.30	4,623.8	3,347.8	-682.2	-564.1	731.5	1.42 0.63	1.90	
4,976.0	41.50	223.80	4,670.8	3,394.8	-712.1	-593.5	763.9	1.65 -0.48	-2.38	
5,039.0	41.20	224.20	4,718.1	3,442.1	-742.0	-622.4	795.4	0.63 -0.48	0.63	
5,102.0	40.60	222.30	4,765.8	3,489.8	-772.1	-650.7	829.0	2.19 -0.95	-3.02	
5,165.0	41.40	223.50	4,813.3	3,537.3	-802.3	-678.8	861.7	1.78 1.27	1.90	
5,228.0	41.30	223.20	4,860.6	3,584.6	-832.6	-707.4	894.5	0.35 -0.16	-0.48	
5,291.0	41.10	222.50	4,908.0	3,632.0	-863.0	-735.6	927.4	0.80 -0.32	-1.11	
5,354.0	42.50	223.60	4,955.0	3,679.0	-893.7	-764.3	960.6	2.51 2.22	1.75	
5,417.0	42.50	223.50	5,001.4	3,725.4	-924.5	-793.6	994.0	0.11 0.00	-0.16	
5,480.0	42.50	223.20	5,047.9	3,771.9	-955.5	-822.8	1,027.5	0.32 0.00	-0.48	
5,543.0	41.00	224.40	5,094.9	3,818.9	-985.8	-851.8	1,060.4	2.70 -2.36	1.90	
5,606.0	40.50	224.80	5,142.6	3,866.6	-1,015.1	-880.7	1,092.2	0.90 -0.79	0.63	
5,669.0	40.30	224.30	5,190.6	3,914.6	-1,044.2	-909.3	1,123.8	0.60 -0.32	-0.79	
5,732.0	40.40	224.60	5,238.6	3,962.6	-1,073.3	-937.9	1,155.5	0.35 0.16	0.48	
5,795.0	41.10	225.50	5,286.3	4,010.3	-1,102.3	-967.0	1,187.1	1.45 1.11	1.43	
5,858.0	41.90	226.70	5,333.5	4,057.5	-1,131.3	-997.1	1,218.7	1.79 1.27	1.90	
5,920.0	42.00	226.90	5,379.6	4,103.6	-1,159.6	-1,027.3	1,249.7	0.27 0.16	0.32	
5,983.0	41.30	226.40	5,426.7	4,150.7	-1,188.4	-1,057.8	1,281.2	1.23 -1.11	-0.79	
6,046.0	41.50	226.70	5,473.9	4,197.9	-1,217.0	-1,088.0	1,312.5	0.45 0.32	0.48	
6,109.0	41.80	227.00	5,521.0	4,245.0	-1,245.7	-1,118.5	1,343.8	0.57 0.48	0.48	
6,171.0	40.50	224.80	5,567.7	4,291.7	-1,274.0	-1,147.8	1,374.8	3.14 -2.10	-3.55	
6,234.0	40.20	223.30	5,615.7	4,339.7	-1,303.4	-1,176.2	1,406.6	1.61 -0.48	-2.38	
6,297.0	40.50	223.90	5,663.7	4,387.7	-1,332.9	-1,204.3	1,438.6	0.78 0.48	0.95	
6,360.0	40.70	223.30	5,711.6	4,435.6	-1,362.6	-1,232.6	1,470.8	0.70 0.32	-0.95	
6,423.0	40.70	223.20	5,759.3	4,483.3	-1,392.5	-1,260.8	1,503.2	0.10 0.00	-0.16	
6,486.0	40.70	223.10	5,807.1	4,531.1	-1,422.5	-1,288.9	1,535.6	0.10 0.00	-0.16	
6,549.0	41.10	222.80	5,854.7	4,578.7	-1,452.7	-1,317.0	1,568.3	0.71 0.63	-0.48	
6,612.0	41.20	224.70	5,902.1	4,626.1	-1,482.6	-1,345.6	1,600.8	1.99 0.16	3.02	

Phoenix Technologies

Survey Report

Database:	COMPASS 5000 1 Single User DB	Local Co-ordinate Reference:	See Database Comments
Company:	301 Prosser - Marcellus	TVD Reference:	602.16 1.65 1.78 USK
Project:	Downsize County, WV Gas	MD Reference:	602.16 1.65 1.78 USK
Site:	Wellbore County 01992	North Reference:	See
Well:	WV 5015242	Survey Calculation Method:	Minimum Curvature
Wellbore:	12248-0201		
Design:	5000 5000 1 Build 56		

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)
6,675.0	41.10	225.00	5,949.6	4,673.6	-1,512.0	-1,374.9	1,632.7	0.35	-0.16	0.48
6,737.0	41.20	225.50	5,996.3	4,720.3	-1,540.7	-1,403.8	1,664.0	0.55	0.16	0.81
6,801.0	41.30	225.00	6,044.4	4,768.4	-1,570.4	-1,433.8	1,696.4	0.54	0.16	-0.78
6,825.0	41.40	224.50	6,062.4	4,786.4	-1,581.7	-1,445.0	1,708.6	1.44	0.42	-2.08
6,887.0	41.50	224.70	6,108.9	4,832.9	-1,610.9	-1,473.8	1,740.4	0.27	0.16	0.32
6,951.0	41.10	223.30	6,157.0	4,881.0	-1,641.3	-1,503.1	1,773.4	1.57	-0.63	-2.19
7,013.0	40.90	223.20	6,203.7	4,927.7	-1,670.9	-1,531.0	1,805.4	0.34	-0.32	-0.16
7,076.0	40.80	221.90	6,251.4	4,975.4	-1,701.3	-1,558.9	1,838.2	1.36	-0.16	-2.06
7,139.0	40.90	222.70	6,299.1	5,023.1	-1,731.8	-1,586.6	1,871.1	0.85	0.16	1.27
7,202.0	40.80	223.70	6,346.7	5,070.7	-1,761.8	-1,614.8	1,903.7	1.05	-0.16	1.59
7,265.0	40.60	224.60	6,394.5	5,118.5	-1,791.3	-1,643.4	1,935.7	0.98	-0.32	1.43
7,328.0	40.40	224.20	6,442.4	5,166.4	-1,820.5	-1,672.0	1,967.4	0.52	-0.32	-0.63
7,390.0	40.40	223.50	6,489.6	5,213.6	-1,849.5	-1,699.9	1,998.6	0.73	0.00	-1.13
7,422.0	40.30	223.10	6,514.0	5,238.0	-1,864.6	-1,714.1	2,015.2	0.87	-0.31	-1.25
7,453.0	41.80	219.40	6,537.4	5,261.4	-1,879.9	-1,727.5	2,031.7	9.21	4.84	-11.94
7,484.0	42.90	215.40	6,560.3	5,284.3	-1,896.5	-1,740.2	2,049.3	9.39	3.55	-12.98
7,516.0	43.90	211.50	6,593.5	5,307.5	-1,914.8	-1,752.3	2,066.7	8.94	3.13	-12.19
7,547.0	44.70	208.00	6,605.7	5,329.7	-1,933.6	-1,763.0	2,088.4	8.30	2.58	-11.29
7,578.0	45.90	205.10	6,627.5	5,351.5	-1,953.3	-1,772.9	2,109.0	7.69	3.87	-9.35
7,610.0	47.60	203.70	6,649.5	5,373.5	-1,974.5	-1,782.5	2,131.0	6.19	5.31	-4.38
7,641.0	49.60	200.60	6,670.0	5,394.0	-1,996.1	-1,791.2	2,153.3	9.89	6.45	-10.00
7,672.0	51.70	198.40	6,689.6	5,413.6	-2,018.7	-1,799.2	2,176.5	8.72	6.77	-7.10
7,704.0	53.70	194.10	6,709.0	5,433.0	-2,043.1	-1,806.3	2,201.5	12.38	6.25	-13.44
7,735.0	55.50	191.90	6,727.0	5,451.0	-2,067.7	-1,812.0	2,226.5	8.20	5.81	-7.10
7,767.0	56.80	190.10	6,744.8	5,468.8	-2,093.8	-1,817.1	2,253.0	6.19	4.06	-5.63
7,798.0	58.20	187.10	6,761.5	5,485.5	-2,119.6	-1,821.0	2,279.1	9.33	4.52	-9.68
7,829.0	59.70	185.60	6,777.4	5,501.4	-2,146.0	-1,823.9	2,305.6	6.37	4.84	-4.84
7,861.0	62.70	184.20	6,792.9	5,516.9	-2,174.0	-1,826.3	2,333.6	10.13	9.38	-4.38
7,892.0	63.60	181.40	6,806.9	5,530.9	-2,201.6	-1,827.7	2,361.3	8.57	2.90	-9.03
7,924.0	63.70	180.10	6,821.1	5,545.1	-2,230.3	-1,828.0	2,389.9	3.65	0.31	-4.06
7,956.0	65.30	176.90	6,834.8	5,558.8	-2,259.1	-1,827.3	2,418.5	10.32	5.00	-10.00
8,019.0	71.30	174.80	6,858.1	5,582.1	-2,317.5	-1,823.0	2,476.2	10.01	9.52	-3.33
8,082.0	78.40	173.00	6,874.6	5,598.6	-2,377.9	-1,816.5	2,535.8	11.60	11.27	-2.86
Top of Marcellus @6813 TVD										
8,138.2	84.38	170.05	6,883.0	5,607.0	-2,432.9	-1,808.3	2,589.8	11.83	10.63	-5.25
DP=6145 MD/6883 TVD										
8,145.0	85.10	169.70	6,883.6	5,607.6	-2,439.5	-1,807.2	2,596.3	11.83	10.65	-5.17
Deepest Point of Well= 8108 MD/6886 TVD										
8,208.0	90.40	167.40	6,886.1	5,610.1	-2,501.2	-1,794.7	2,656.5	9.17	8.41	-3.65
8,271.0	92.70	168.00	6,884.4	5,608.4	-2,562.7	-1,781.3	2,716.5	3.77	3.65	0.95
8,334.0	94.50	166.60	6,880.4	5,604.4	-2,624.0	-1,767.4	2,776.3	3.62	2.86	-2.22
8,397.0	93.80	165.70	6,875.9	5,599.9	-2,685.0	-1,752.4	2,835.7	1.81	-1.11	-1.43
8,460.0	93.20	163.90	6,872.0	5,596.0	-2,745.7	-1,735.9	2,894.6	3.01	-0.95	-2.86

Phoenix Technologies

Survey Report

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513342
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 16 ft @ 1276.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 16 ft @ 1276.0usft
Site:	Doddridge County 513342	North Reference:	Grid
Well:	Well #513342	Survey Calculation Method:	Minimum Curvature
Wellbore:	513342 ST01		
Design:	513342 ST01 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)
8,523.0	93.10	164.80	6,868.6	5,592.6	-2,806.3	-1,718.9	2,953.3	1.44	-0.16	1.43
8,586.0	93.00	165.30	6,865.2	5,589.2	-2,867.1	-1,702.7	3,012.3	0.61	-0.16	0.79
8,649.0	92.00	165.00	6,862.5	5,586.5	-2,927.9	-1,686.6	3,071.4	1.66	-1.59	-0.48
8,712.0	90.90	164.40	6,860.9	5,584.9	-2,988.7	-1,670.0	3,130.4	1.99	-1.75	-0.95
8,775.0	90.10	165.20	6,860.3	5,584.3	-3,049.4	-1,653.4	3,189.4	1.80	-1.27	1.27
8,838.0	90.40	165.20	6,860.0	5,584.0	-3,110.4	-1,637.3	3,248.5	0.48	0.48	0.00
8,901.0	90.50	164.50	6,859.6	5,583.6	-3,171.2	-1,620.9	3,307.5	1.12	0.16	-1.11
8,963.0	90.50	163.40	6,859.0	5,583.0	-3,230.7	-1,603.7	3,365.3	1.77	0.00	-1.77
9,026.0	90.80	162.80	6,858.3	5,582.3	-3,291.0	-1,585.4	3,423.6	1.06	0.48	-0.95
9,089.0	91.60	163.80	6,857.0	5,581.0	-3,351.3	-1,567.3	3,482.0	2.03	1.27	1.59
9,152.0	92.30	164.60	6,854.8	5,578.8	-3,411.9	-1,550.2	3,540.7	1.69	1.11	1.27
9,215.0	91.30	164.50	6,852.9	5,576.9	-3,472.6	-1,533.4	3,599.6	1.60	-1.59	-0.16
9,278.0	90.60	164.20	6,851.8	5,575.8	-3,533.3	-1,516.4	3,658.4	1.21	-1.11	-0.48
9,341.0	90.60	164.20	6,851.1	5,575.1	-3,593.9	-1,499.3	3,717.2	0.00	0.00	0.00
9,404.0	90.80	164.00	6,850.4	5,574.4	-3,654.5	-1,482.0	3,775.9	0.45	0.32	-0.32
9,466.0	90.80	162.30	6,849.5	5,573.5	-3,713.8	-1,464.0	3,833.3	2.74	0.00	-2.74
9,528.0	90.90	164.30	6,848.6	5,572.6	-3,773.2	-1,446.2	3,890.8	3.23	0.16	3.23
9,591.0	91.10	165.80	6,847.5	5,571.5	-3,834.0	-1,430.0	3,949.9	2.40	0.32	2.38
9,653.0	91.70	165.90	6,846.0	5,570.0	-3,894.1	-1,414.8	4,008.4	0.98	0.97	0.16
9,716.0	91.60	166.00	6,844.2	5,568.2	-3,955.2	-1,399.5	4,067.8	0.22	-0.16	0.16
9,779.0	91.30	166.60	6,842.6	5,566.6	-4,016.4	-1,384.6	4,127.3	1.06	-0.48	0.95
9,842.0	91.30	167.60	6,841.1	5,565.1	-4,077.8	-1,370.6	4,187.1	1.59	0.00	1.59
9,905.0	89.80	166.50	6,840.5	5,564.5	-4,139.2	-1,356.4	4,247.0	2.95	-2.36	-1.75
9,968.0	89.00	166.00	6,841.2	5,565.2	-4,200.4	-1,341.5	4,306.5	1.50	-1.27	-0.79
10,031.0	89.10	165.90	6,842.2	5,566.2	-4,261.5	-1,326.2	4,365.9	0.22	0.16	-0.16
10,094.0	89.80	166.90	6,842.8	5,566.8	-4,322.7	-1,311.4	4,425.5	1.94	1.11	1.59
10,156.0	89.50	165.40	6,843.2	5,567.2	-4,382.9	-1,296.5	4,484.1	2.47	-0.48	-2.42
10,219.0	89.60	166.10	6,843.7	5,567.7	-4,444.0	-1,281.0	4,543.5	1.12	0.16	1.11
10,282.0	89.80	164.80	6,844.1	5,568.1	-4,505.0	-1,265.2	4,602.7	2.09	0.32	-2.06
10,345.0	89.80	164.60	6,844.3	5,568.3	-4,565.7	-1,248.6	4,661.7	0.32	0.00	-0.32
10,408.0	89.70	163.90	6,844.5	5,568.5	-4,626.4	-1,231.5	4,720.5	1.12	-0.16	-1.11
10,471.0	89.40	163.50	6,845.0	5,569.0	-4,686.8	-1,213.8	4,779.0	0.79	-0.48	-0.63
10,534.0	89.60	164.70	6,845.6	5,569.6	-4,747.4	-1,196.5	4,837.8	1.93	0.32	1.90
10,597.0	90.60	164.80	6,845.5	5,569.5	-4,808.2	-1,180.0	4,896.8	1.60	1.59	0.16
10,660.0	90.90	164.50	6,844.7	5,568.7	-4,868.9	-1,163.3	4,955.7	0.67	0.48	-0.48
10,723.0	91.90	168.10	6,843.1	5,567.1	-4,930.1	-1,148.4	5,015.2	5.93	1.59	5.71
10,786.0	92.20	169.60	6,840.9	5,564.9	-4,991.9	-1,136.1	5,075.6	2.27	0.48	2.22
10,849.0	91.00	169.20	6,839.1	5,563.1	-5,053.8	-1,124.5	5,136.1	1.96	-1.90	-0.48
10,912.0	90.20	167.50	6,838.4	5,562.4	-5,115.5	-1,111.8	5,196.4	2.98	-1.27	-2.70
10,975.0	90.70	169.20	6,837.9	5,561.9	-5,177.2	-1,099.1	5,256.7	2.81	0.79	2.70
11,038.0	91.20	170.10	6,836.9	5,560.9	-5,239.1	-1,087.7	5,317.3	1.63	0.79	1.43
11,101.0	90.60	167.70	6,835.9	5,559.9	-5,300.9	-1,075.6	5,377.7	3.93	-0.95	-3.81
11,163.0	89.80	166.20	6,835.7	5,559.7	-5,361.3	-1,061.6	5,436.6	2.74	-1.29	-2.42

Phoenix Technologies

Survey Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site: Doddridge County 513342
Company:	EQT Production - Marcellus	TVD Reference:	KB@13 ft @ 1276 Bush
Project:	Doddridge County, WV Grid	MD Reference:	KB@13 ft @ 1276 Bush
Site:	Doddridge County 513342	North Reference:	One
Well:	Well #513342	Survey Calculation Method:	Minimum Curvature
Wellbore:	513342 ST01		
Design:	513342 ST01 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)
11,227.0	89.50	163.40	6,836.1	5,560.1	-5,423.1	-1,044.8	5,496.5	4.40	-0.47	-4.38
11,289.0	89.80	163.80	6,836.5	5,560.5	-5,482.6	-1,027.3	5,554.1	0.81	0.48	0.65
11,352.0	91.30	166.10	6,835.9	5,559.9	-5,543.4	-1,011.0	5,613.2	4.36	2.38	3.65
11,415.0	91.20	165.40	6,834.5	5,558.5	-5,604.4	-995.5	5,672.5	1.12	-0.16	-1.11
11,478.0	91.70	166.30	6,832.9	5,556.9	-5,665.5	-980.1	5,731.9	1.63	0.79	1.43
11,541.0	90.50	163.80	6,831.7	5,555.7	-5,726.4	-963.8	5,791.0	4.40	-1.90	-3.97
11,604.0	89.80	162.70	6,831.5	5,555.5	-5,786.7	-945.7	5,849.4	2.07	-1.11	-1.75
11,667.0	90.10	164.50	6,831.6	5,555.6	-5,847.1	-927.9	5,907.9	2.90	0.48	2.86
11,730.0	90.50	166.10	6,831.2	5,555.2	-5,908.1	-911.9	5,967.1	2.62	0.63	2.54
11,793.0	90.90	166.50	6,830.5	5,554.5	-5,969.3	-897.0	6,026.6	0.90	0.63	0.63
11,856.0	90.70	166.30	6,829.6	5,553.6	-6,030.5	-882.2	6,086.2	0.45	-0.32	-0.32
11,919.0	90.20	164.00	6,829.1	5,553.1	-6,091.4	-866.0	6,145.4	3.74	-0.79	-3.65
11,983.0	90.90	165.40	6,828.5	5,552.5	-6,153.1	-849.1	6,205.3	2.45	1.09	2.19
12,044.0	91.40	165.10	6,827.3	5,551.3	-6,212.1	-833.6	6,262.6	0.96	0.82	-0.49
12,107.0	91.40	164.50	6,825.7	5,549.7	-6,272.9	-817.1	6,321.6	0.95	0.00	-0.95
12,170.0	91.90	164.90	6,823.9	5,547.9	-6,333.6	-800.5	6,380.5	1.02	0.79	0.63
12,233.0	91.90	164.10	6,821.8	5,545.8	-6,394.3	-783.6	6,439.4	1.27	0.00	-1.27
12,296.0	91.10	164.90	6,820.2	5,544.2	-6,455.0	-766.8	6,498.2	1.80	-1.27	1.27
12,360.0	90.40	163.80	6,819.3	5,543.3	-6,516.6	-749.6	6,558.0	2.04	-1.09	-1.72
12,422.0	90.30	163.30	6,819.0	5,543.0	-6,576.0	-732.0	6,615.6	0.82	-0.16	-0.81
12,485.0	90.50	163.20	6,818.5	5,542.5	-6,636.4	-713.8	6,674.0	0.35	0.32	-0.16
12,548.0	91.40	164.50	6,817.5	5,541.5	-6,696.9	-696.3	6,732.6	2.51	1.43	2.06
12,611.0	90.80	163.20	6,816.3	5,540.3	-6,757.4	-678.6	6,791.2	2.27	-0.95	-2.06
Final Survey: 12673' MD/6816' TVD										
12,673.0	90.50	162.90	6,815.6	5,539.6	-6,816.7	-660.7	6,848.6	0.68	-0.48	-0.48
Projection to RD= 12741' MD/6815' TVD										
12,741.0	90.50	162.90	6,815.0	5,539.0	-6,881.7	-640.7	6,911.4	0.00	0.00	0.00

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
8 138 2	6 883 0	Top of Marcellus @6883' TVD		0 00	

Phoenix Technologies

Survey Report

Database: EDM 5000.1 Single User Db Company: EQT Production - Marcellus Project: Doddridge County, WV Grid Site: Doddridge County 513342 Well: Well #513342 Wellbore: 513342 ST01 Design: 513342 ST01 As Drilled Surveys	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Site Doddridge County 513342 KB @ 18 ft @ 1276.0usft KB @ 18 ft @ 1276.0usft Grid Minimum Curvature
---	--	---

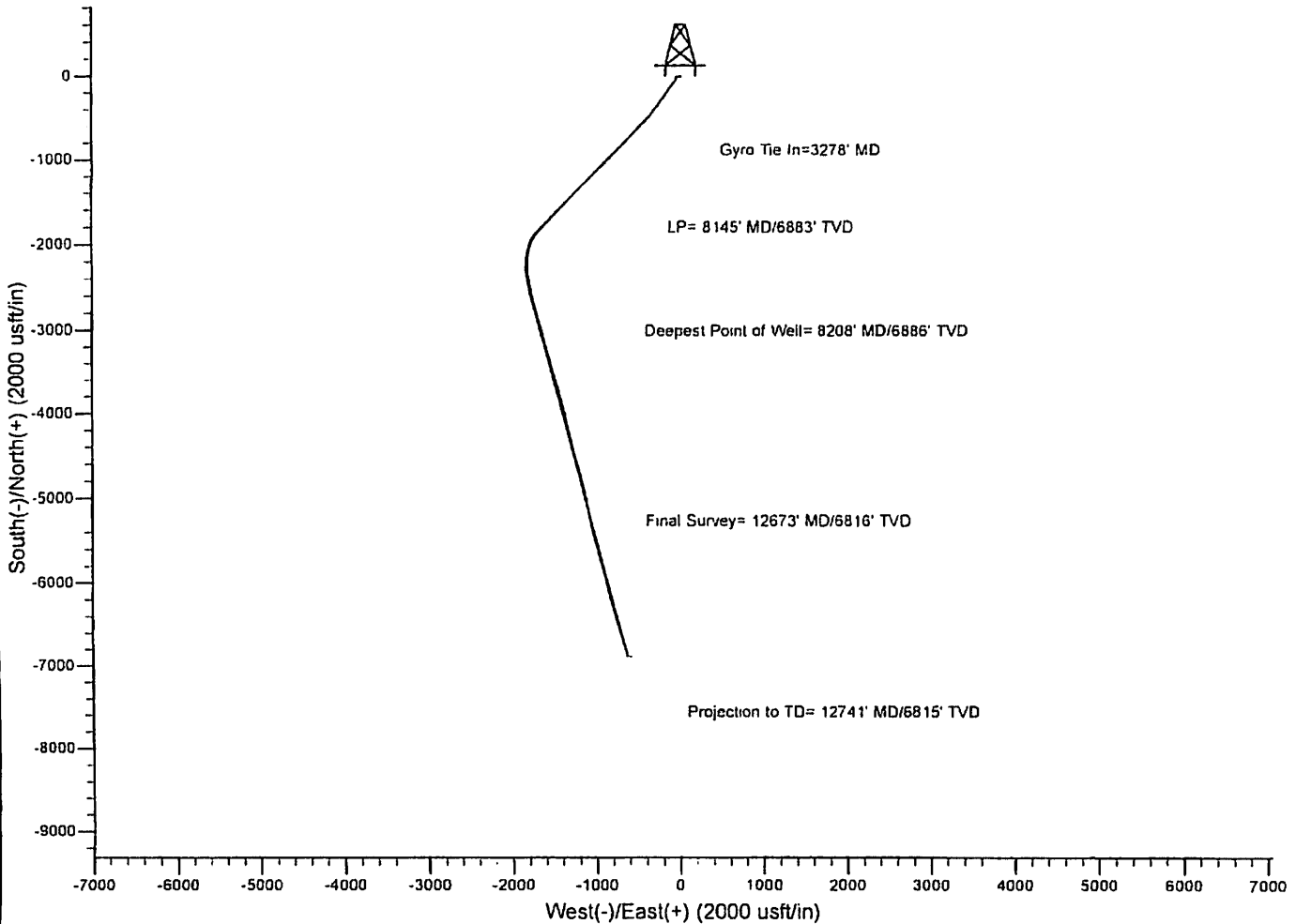
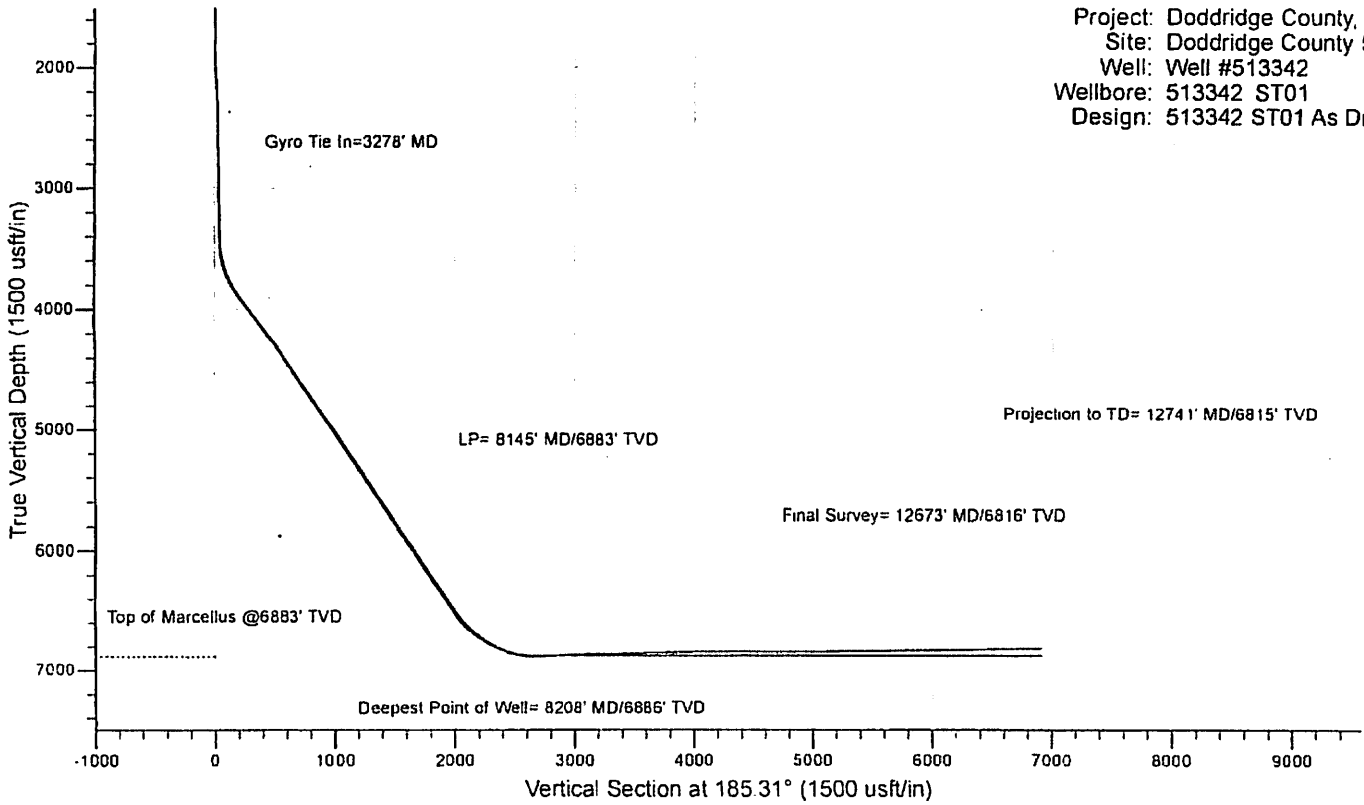
Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,278.0	3,274.1	-33.3	-49.6	Gyro Tie In=3278' MD
8,145.0	6,883.6	-2,439.5	-1,807.2	LP= 8145' MD/6883' TVD
8,208.0	6,886.1	-2,501.2	-1,794.7	Deepest Point of Well= 8208' MD/6886' TVD
12,673.0	6,815.6	-6,816.7	-660.7	Final Survey= 12673' MD/6816' TVD
12,741.0	6,815.0	-6,881.7	-640.7	Projection to TD= 12741' MD/6815' TVD

Checked By _____ Approved By: _____ Date _____

EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513342
Well: Well #513342
Wellbore: 513342 ST01
Design: 513342 ST01 As Drilled Surveys



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/20/2015
Job End Date:	4/26/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06572-00-00
Operator Name:	EQT Production
Well Name and Number:	513342
Longitude:	-80.75372600
Latitude:	39.29015800
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,886
Total Base Water Volume (gal):	8,525,328
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	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.79363	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	9.82940	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05769	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02744	None
FFR 730	Keane Group	Friction reducer	Oxyalkylated alcohol A	Proprietary	5.00000	0.00357	None
Greenskeeper LF	Keane Group	Solvent	Distillates, Petroleum, Hydrotreated Light	64742-47-8	100.00000	0.00293	None
EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00115	None
AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.00018	None
			N, N-Dimethylformamide	68-12-2	20.00000	0.00009	None
			Cinnamialdehyde	104-55-2	15.00000	0.00007	None

			2-Butoxyethanol	111-76-2	15.00000	0.00007	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00007	None
			1-Decanol	112-30-1	5.00000	0.00002	None
			Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega- hydroxy-branched	127087-87-0	5.00000	0.00002	None
			1-Octanol	111-87-5	2.50000	0.00001	None
			Isopropyl alcohol	67-63-0	2.50000	0.00001	None
			Triethyl Phosphate	78-40-0	2.50000	0.00001	None
LEB-10X	Keane Group	Gel Breaker					
			Ethylene Glycol	107-21-1	30.00000	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](#)

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 4/20/2015 Job End Date 4/26/2015 API Number 47-017-06572-00-00 State & County West Virginia --- Doddridge

Well Name 513342

Longitude -80.753726 Latitude 39.290158 Datum NAD83 Federal/Tribal Well?

True Vertical Depth (ft) 6886 Total Water Vol (gal) 8525328 Total Non Water Vol 0 Total Mass (lbs) 79230407



MSDS Chemical Ingredients

	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
<input type="button" value="Edit"/>	Water	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100%	89.7936341918%	None	71143862.16
<input type="button" value="Edit"/>	Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100%	9.8293953784%	None	7787870
<input type="button" value="Edit"/>	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0576925275%	None	45710.025
<input type="button" value="Edit"/>	Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0274365572%	None	21738.096
<input type="button" value="Edit"/>	FFR 730	Keane Group	Friction reducer	Oxyalkylated alcohol A	Proprietary	5%	.0035711819%	None	2829.462
<input type="button" value="Edit"/>	Greenskeeper LF	Keane Group	Solvent	Distillates, Petroleum, Hydrotreated Light	64742-47-8	100%	.0029250215%	None	2317.506
<input type="button" value="Edit"/>	EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5%	.0011539053%	None	914.244
<input type="button" value="Edit"/>	AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40%	.0001829322%	None	144.938

N, N-Dimethylformamide	68-12-2	20%	.0000914661%	None	72.469
Cinnamialdehyde	104-55-2	15%	.0000685996%	None	54.352
2-Butoxyethanol	111-76-2	15%	.0000685996%	None	54.352
Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15%	.0000685996%	None	54.352
1-Decanol	112-30-1	5%	.0000228665%	None	18.117
Poly (oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl) .omega.-hydroxy-, branched	127087-87-0	5%	.0000228665%	None	18.117
1-Octanol	111-87-5	2.5%	.0000114333%	None	9.059
Isopropyl alcohol	67-63-0	2.5%	.0000114333%	None	9.059
Triethyl Phosphate	78-40-0	2.5%	.0000114333%	None	9.059

LEB-10X Keane Group Gel Breaker

Ethylene Glycol	107-21-1	30%	.0000065218%	None	5.167
-----------------	----------	-----	--------------	------	-------

Non-MSDS Chemical Ingredients

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

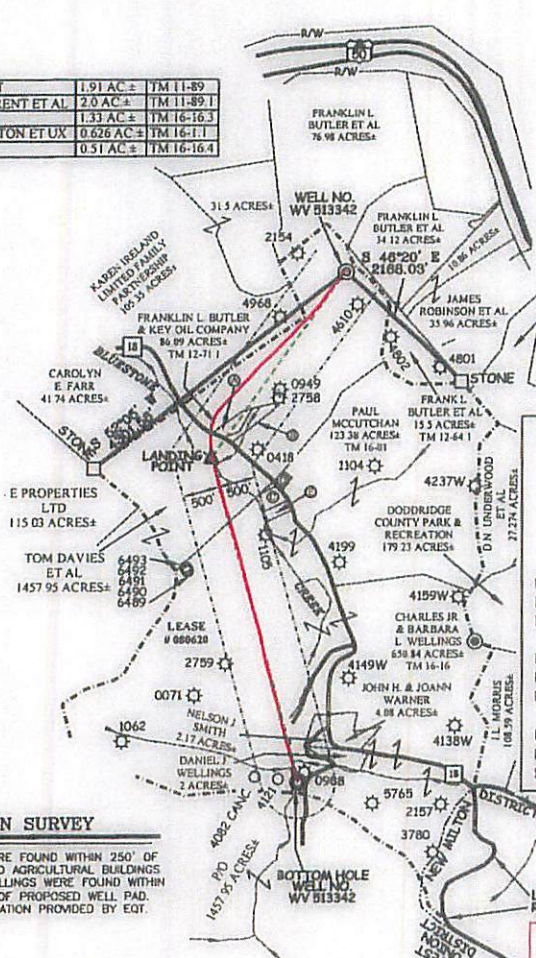
Use Terms | © Copyright GWPC & IOGCC, 2010

A	PHAMEY TRENT	1.91 AC ±	TM 11-89
B	WILLIAM L. TRENT ET AL	2.0 AC ±	TM 11-89.1
C	ACE FUELS	1.33 AC ±	TM 16-16.3
D	ALDEN C. SUTTON ET UX	0.626 AC ±	TM 16-11.1
E	ACE FUELS	0.51 AC ±	TM 16-16.4

LEGEND:

LEASE LINE	---
SURFACE LINE	----
PROPOSED PATH	----
AS DRILLED PATH	----
OFFSET LINE	----
TIE LINE	----
CREEK	----
ROAD	----
FENCE LINE	----
COUNTY ROUTE	----
STATE ROUTE	----
PROPOSED WELL	○
EXISTING WELL	○
PERMITTED WELL	○
TAX MAP--PARCEL	00-00

NAD 27 GRID NORTH



**EQT PRODUCTION COMPANY
LEWIS MAXWELL LEASE
640 ACRES ±
WELL NO. WV 513342**

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

NAD'27 S.P.C. (FT) N. 290,267.6 E. 1,645,159.8
 NAD'27 GEO. LAT. (N) 39.290158 LONG. (W) 80.753726
 NAD'83 UTM (M) N. 4,349,014.8 E. 521,252.9

LANDING POINT

NAD'27 S.P.C. (FT) N. 287,781.7 E. 1,643,347.8
 NAD'27 GEO. LAT. (N) 39.283209 LONG. (W) 80.780003
 NAD'83 UTM (M) N. 4,348,242.2 E. 520,713.6

BOTTOM HOLE

NAD'27 S.P.C. (FT) N. 283,386.1 E. 1,644,520.3
 NAD'27 GEO. LAT. (N) 39.271242 LONG. (W) 80.755845
 NAD'83 UTM (M) N. 4,346,015.1 E. 521,093.0

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.

**AS DRILLED COORDINATES
FOR WELL NO. WV 513342**

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

NAD'27 S.P.C. (FT) N. 290,267.6 E. 1,645,159.8
 NAD'27 GEO. LAT. (N) 39.290158 LONG. (W) 80.753726
 NAD'83 UTM (M) N. 4,349,014.8 E. 521,252.9

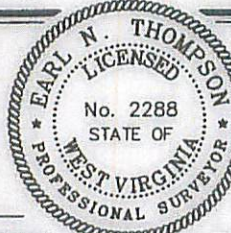
BOTTOM HOLE

NAD'27 S.P.C. (FT) N. 283,386.2 E. 1,644,519.1
 NAD'27 GEO. LAT. (N) 39.271242 LONG. (W) 80.755850
 NAD'83 UTM (M) N. 4,346,015.1 E. 521,092.7



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 JUNE 09, 20 14
 REVISED 08/01/14 & 01/21/15
 OPERATORS WELL NO. WV 513342
 API WELL NO. 47
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7831ASDRILLED513342
 SCALE 1" = 2000'
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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

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

LOCATION: ELEVATION 1,260' (PAD ELEVATION) WATERSHED BLUESTONE CREEK & MIDDLE ISLAND CREEK
 DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE WEST UNION 7.5'

SURFACE OWNER FRANKLIN L. BUTLER & KEY OIL COMPANY ACREAGE 86.09±
 ROYALTY OWNER LEWIS MAXWELL HEIRS ACREAGE 640±

PROPOSED WORK: LEASE NO. 080620
 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 TVD 6,854'

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