

APPROVED

NAME: *Paul C. Hunt*

DATE: *2/16/2016*

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513147

API: 47 - 017 - 06461

Submission: Initial Amended

Notes: Reperf Stg 31.1

Correction to Production Cement Top
(MD)

RECEIVED
Office of Oil and Gas

DEC 21 2015

WV Department of
Environmental Protection

04/01/2016
AK 04/01/16

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

API 47-017-06461 County DODDRIDGE District WEST UNION
Quad OXFORD 7.5' Pad Name OXFORD 157 Field/Pool Name _____
Farm name JUSTIN L. HENDERSON ET AL Well Number 513147
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 4,343,000 Easting 520,173
Landing Point of Curve Northing 4,343,215 Easting 520,619
Bottom Hole Northing 4,345,418 Easting 519,547

Elevation (ft) 970 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 04/18/2014 Date drilling commenced 08/18/2014 Date drilling ceased 1/16/2015
Date completion activities began 4/25/2015 Date completion activities ceased 5/3/2015
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 144 Open mine(s) (Y/N) depths N
Salt water depth(s) ft - Void(s) encountered (Y/N) depths N
Coal depth(s) ft 337 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

04/01/2016

API 47-017 - 06461 Farm name JUSTIN L. HENDERSON ET AL Well number 513147

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"	63'	NEW	A-500 40LB/FT	NONE	Y
Surface	17.5"	13.375"	942'	NEW	J-55 54.5LB/FT	267'	Y
Coal							
Intermediate 1	12.375"	9.625"	5,020'	NEW	P-110 40LB/FT	1249',2957',4073'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	16,008'	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	61	15.6	1.18	71.98	0	8
Surface	CLASS A	790	15.6	1.19	940.1	0	8
Coal							
Intermediate 1	CLASS A / CLASS A	360 / 340	14.2 / 15.6	1.28 / 1.18	862	0	8
Intermediate 2							
Intermediate 3							
Production	Class A / Class H	525 / 1,065	14.2 / 15.2	1.26 / 1.97	2,760	4,094'	8
Tubing							

Drillers TD (ft) 16,019' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,277'

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: 1,12,20
 INTERMEDIATE- RAN AT LEAST EVERY 500' FEET JOINTS: 1,12,24,36,48,60,72,84,96,108,120
 PRODUCTION- Composite Body Centralizers run every joint from bottom to 4,255'.

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 - 6461

Farm name JUSTIN L. HENDERSON ET AL

Well number 513147

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.

04/01/2016

API 47- 017 - 06461 Farm name JUSTIN L. HENDERSON ET AL Well number 513147

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6,400'</u>	<u>TVD</u>	<u>7,941'</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 2,416 psi Bottom Hole N/A psi DURATION OF TEST 95.0 hrs

OPEN FLOW Gas 13,327 mcfpd Oil N/A bpd NGL 63.7 bpd Water 840.0 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.

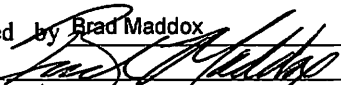
Drilling Contractor ALPHA HUNTER DRILLING (RIG 4)
Address P.O. BOX 430 City RENO State OH Zip 45773

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

Cementing Company NABORS CEMENTING SERVICES
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

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

WR-35
Rev. 8/23/13

Page ___ of ___

API 47- 017 - 6461 Farm name JUSTIN L. HENDERSON ET AL Well number 513147

Drilling Contractor Patterson UTI (Rig 252)
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

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

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company _____
Address _____ City _____ State _____ Zip _____

513147 Final Formations API#47-017-06461

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1		154	
SAND/SHALE	1		347	
PITTSBURGH COAL SEAM	347		351	
SAND/SHALE	351		1,599.00	
BIG LIME	1,599.00		1,884.00	
WEIR	1,884.00		2,089.00	
BEREA	2,089.00		2,093.00	
GANTZ	2,093.00		2,204.00	
50F	2,204.00		2,294.00	
30F	2,294.00		2,349.00	
GORDON	2,349.00		2,438.00	
4TH	2,438.00		2,660.00	
BAYARD	2,660.00		2,933.00	
WARREN	2,933.00		3,010.00	
SPEECHLEY	3,010.00		3,499.00	
BALLTOWN A	3,499.00		4,146.00	
RILEY	4,146.00		4,596.00	
BENSON	4,596.00		4,849.00	
ALEXANDER	4,849.00		6,592.00	6,014.50
SONYEA	6,592.00	6,014.50	6,971.00	6,151.80
MIDDLESEX	6,971.00	6,151.80	7,131.00	6,211.00
GENESEE	7,131.00	6,211.00	7,348.00	6,289.40
GENESEO	7,348.00	6,289.40	7,525.00	6,338.70
TULLY	7,525.00	6,338.70	7,638.00	6,366.60
HAMILTON	7,638.00	6,366.60	7,780.00	6,400.20
MARCELLUS	7,780.00	6,400.20		

EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 513147

Well #513147

513147 ST01

Design: 513147 ST01 As Drilled Surveys

Standard Survey Report

19 January, 2015

04/01/2016

Phoenix Technologies
Survey Report

Database: EDM 5000 1 Single User Db	Local Co-ordinate Reference: Site Data: Doddridge County 513147
Company: EQ1 Production - Mercallus	TVD Reference: KB @ 991.0usft
Project: Doddridge County, WV Grid	MD Reference: KB @ 991.0usft
Site: Doddridge County 513147	North Reference: Grid
Well: Well #513147	Survey Calculation Method: Minimum Curvature
Wellbore: 513147 ST01	
Design: 513147 ST01 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 513147		
Site Position:	Northing: 270 587.59 usft	Latitude: 39 24
From: Map	Easting: 1 641,288.20 usft	Longitude: -80 77
Position Uncertainty: 0 0 usft	Slot Radius: 13-3/16 "	Grid Convergence: -0 81 °

Well: Well #513147			
Well Position +N-S	0 0 usft	Northing: 270,587.59 usft	Latitude: 39° 14' 9.531 N
+E-W	0 0 usft	Easting: 1,641,288.20 usft	Longitude: 80 45' 59.123 W
Position Uncertainty	0 0 usft	Wellhead Elevation: usft	Ground Level: 968 0 usft

Wellbore: 513147 ST01

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	12/22/2014	-8.50	66.72	52,203

Design: 513147 ST01 As Drilled Surveys

Audit Notes:

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

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	346.43

Survey Program	Date	From (')	To (usft)	Survey (Wellbore)	Tool Name	Description
	1/19/2015	0 00	5 130 0	513147 ST01 Gyrodata Gyro (513147 ST01)	GYD_DP_MS	Gyrodata gyro-compassing and drop
		0 00	16 019 0	513147 ST01 PHX MWD (513147 ST01)	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	-991.0	0 0	0 0	0 0	0 00	0 00	0 00
110 0	0 95	203 02	110 0	-881 0	-0 8	-0 4	-0 7	0 86	0 86	0 00
210 0	0 52	209 38	210 0	-781 0	-2 0	-0 9	-1 7	0 44	-0 43	6 36
310 0	0 23	228 78	310 0	-681 0	-2 5	-1 3	-2 2	0 31	-0 29	19 40
410 0	0 17	258 37	410 0	-581 0	-2 7	-1 6	-2 2	0 12	-0 06	29 59
510 0	0 14	237 28	510 0	-481 0	-2 8	-1 8	-2 3	0 06	-0 03	-21 09
610 0	0 06	311 28	610 0	-381 0	-2 8	-2 0	-2 3	0 14	-0 08	74 00
710 0	0 13	311 68	710 0	-281 0	-2 7	2 1	-2 1	0 07	0 07	0 40

Phoenix Technologies
Survey Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 991.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 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)	
810.0	0.11	244.34	810.0	-181.0	-2.7	-2.3	-2.1	0.13	-0.02	-67.34	
910.0	0.14	228.73	910.0	-81.0	-2.8	-2.4	-2.1	0.05	0.03	-15.61	
1,010.0	0.31	244.70	1,010.0	19.0	-3.0	-2.8	-2.3	0.18	0.17	15.97	
1,110.0	0.62	262.05	1,110.0	119.0	-3.2	-3.6	-2.3	0.34	0.31	17.35	
1,210.0	0.75	262.21	1,210.0	219.0	-3.3	-4.7	-2.1	0.13	0.13	0.16	
1,310.0	0.88	267.28	1,310.0	319.0	-3.5	-6.2	-1.9	0.15	0.13	5.07	
1,410.0	0.89	267.82	1,409.9	418.9	-3.5	-7.7	-1.6	0.01	0.01	0.54	
1,510.0	0.84	274.44	1,509.9	518.9	-3.5	-9.2	-1.3	0.11	-0.05	6.62	
1,610.0	0.66	281.57	1,609.9	618.9	-3.3	-10.5	-0.8	0.20	-0.18	7.13	
1,710.0	0.65	286.68	1,709.9	718.9	-3.1	-11.6	-0.2	0.06	-0.01	5.11	
1,810.0	0.47	286.21	1,809.9	818.9	-2.8	-12.5	0.2	0.18	-0.18	-0.47	
1,910.0	0.36	287.46	1,909.9	918.9	-2.6	-13.2	0.6	0.11	-0.11	1.25	
2,010.0	0.29	280.61	2,009.9	1,018.9	-2.4	-13.8	0.9	0.08	-0.07	-6.85	
2,110.0	0.22	265.10	2,109.9	1,118.9	-2.4	-14.2	1.0	0.10	-0.07	-15.51	
2,210.0	0.11	281.48	2,209.9	1,218.9	-2.4	-14.5	1.1	0.12	-0.11	16.38	
2,310.0	0.08	287.37	2,309.9	1,318.9	-2.4	-14.7	1.2	0.03	-0.03	5.89	
2,410.0	0.11	284.80	2,409.9	1,418.9	-2.3	-14.8	1.2	0.03	0.03	-2.57	
2,510.0	0.11	263.19	2,509.9	1,518.9	-2.3	-15.0	1.3	0.04	0.00	-21.61	
2,610.0	0.12	293.76	2,609.9	1,618.9	-2.3	-15.2	1.4	0.06	0.01	30.57	
2,710.0	0.11	295.76	2,709.9	1,718.9	-2.2	-15.4	1.5	0.01	-0.01	2.00	
2,810.0	0.10	284.83	2,809.9	1,818.9	-2.1	-15.6	1.6	0.02	-0.01	-10.93	
2,910.0	0.09	274.39	2,909.9	1,918.9	-2.1	-15.7	1.7	0.02	-0.01	-10.44	
3,010.0	0.13	244.40	3,009.9	2,018.9	-2.1	-15.9	1.7	0.07	0.04	-29.99	
3,110.0	0.14	194.74	3,109.9	2,118.9	-2.3	-16.0	1.5	0.11	0.01	-49.66	
3,210.0	0.06	194.39	3,209.9	2,218.9	-2.5	-16.1	1.4	0.08	-0.06	-0.35	
3,310.0	0.06	201.57	3,309.9	2,318.9	-2.6	-16.1	1.3	0.01	0.00	7.18	
3,410.0	0.03	310.67	3,409.9	2,418.9	-2.6	-16.2	1.3	0.08	-0.03	109.10	
3,510.0	0.11	236.83	3,509.9	2,518.9	-2.6	-16.3	1.3	0.11	0.08	-73.84	
3,610.0	0.26	238.01	3,609.9	2,618.9	-2.8	-16.5	1.1	0.15	0.15	1.18	
3,710.0	0.45	242.83	3,709.9	2,718.9	-3.1	-17.1	1.0	0.19	0.19	4.82	
3,810.0	0.50	264.44	3,809.9	2,818.9	-3.3	-17.9	1.0	0.18	0.05	21.61	
3,910.0	0.68	274.57	3,909.9	2,918.9	-3.3	-18.9	1.2	0.21	0.18	10.13	
4,010.0	0.80	283.23	4,009.9	3,018.9	-3.1	-20.2	1.7	0.16	0.12	8.66	
4,110.0	0.96	290.34	4,109.9	3,118.9	-2.7	-21.6	2.5	0.19	0.16	7.11	
4,210.0	1.20	295.93	4,209.9	3,218.9	-1.9	-23.3	3.6	0.26	0.24	5.59	
4,310.0	1.45	296.42	4,309.8	3,318.8	-0.9	-25.4	5.1	0.25	0.25	0.49	
4,410.0	1.60	305.18	4,409.8	3,418.8	0.5	-27.7	7.0	0.28	0.15	8.76	
4,510.0	1.66	303.44	4,509.8	3,518.8	2.1	-30.0	9.1	0.08	0.06	-1.74	
4,610.0	0.92	321.58	4,609.7	3,618.7	3.5	-31.7	10.9	0.84	-0.74	18.14	
4,710.0	3.28	90.95	4,709.7	3,718.7	4.1	-29.4	10.9	3.93	2.36	129.38	
4,810.0	7.51	91.59	4,809.2	3,818.2	3.9	-20.0	8.4	4.23	4.23	0.63	
4,910.0	8.97	84.98	4,908.2	3,917.2	4.4	-5.7	5.6	1.74	1.46	-6.61	

Phoenix Technologies

Survey Report

Database:	EOM 5000 1 Single User DB	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EOT Production - Marcellus	TVD Reference:	KB @ 991.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 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)
5,010.0	3.64	102.09	5,007.6	4,016.6	4.4	5.2	3.0	5.59	-5.33	17.11
5,110.0	1.71	126.59	5,107.4	4,116.4	2.8	9.5	0.5	2.20	-1.93	24.50
Cyno Tr. In SB 130' MD										
5,130.0	1.65	126.42	5,127.4	4,136.4	2.5	10.0	0.1	0.30	-0.30	-0.85
5,192.0	1.50	130.20	5,189.4	4,198.4	1.4	11.3	-1.3	0.29	-0.24	6.10
5,223.0	1.70	127.20	5,220.4	4,229.4	0.9	12.0	-2.0	0.70	0.65	-9.68
5,255.0	1.90	131.00	5,252.4	4,261.4	0.2	12.8	-2.8	0.73	0.63	11.88
5,286.0	2.60	114.80	5,283.4	4,292.4	-0.4	13.8	-3.6	3.03	2.26	-52.26
5,318.0	4.40	106.40	5,315.3	4,324.3	-1.0	15.6	-4.7	5.83	5.63	-26.25
5,349.0	6.20	97.40	5,346.2	4,355.2	-1.6	18.4	-5.9	6.38	5.81	-29.03
5,381.0	8.20	92.20	5,377.9	4,386.9	-1.9	22.4	-7.1	6.57	6.25	-16.25
5,413.0	11.40	88.40	5,409.4	4,418.4	-1.9	27.9	-8.4	10.20	10.00	-11.88
5,444.0	14.50	89.40	5,439.6	4,448.6	-1.8	34.8	-9.9	10.03	10.00	3.23
5,476.0	17.30	91.70	5,470.4	4,479.4	-1.9	43.6	-12.0	8.97	8.75	7.19
5,508.0	20.60	95.10	5,500.7	4,509.7	-2.5	53.9	-15.1	10.87	10.31	10.63
5,539.0	22.90	98.20	5,529.5	4,538.5	-3.9	65.3	-19.1	8.29	7.42	10.00
5,571.0	26.10	97.50	5,558.6	4,567.6	-5.7	78.5	-23.9	10.04	10.00	-2.19
5,602.0	29.80	96.60	5,586.0	4,595.0	-7.5	92.9	-29.0	12.01	11.94	-2.90
5,634.0	33.30	94.20	5,613.2	4,622.2	-9.0	109.6	-34.5	11.62	10.94	-7.50
5,665.0	36.60	93.30	5,638.6	4,647.6	-10.2	127.3	-39.7	10.77	10.65	-2.90
5,697.0	39.80	94.60	5,663.8	4,672.8	-11.5	147.0	-45.7	10.31	10.00	4.06
5,728.0	43.00	95.00	5,687.0	4,696.0	-13.3	167.4	-52.2	10.36	10.32	1.29
5,760.0	46.10	94.40	5,709.8	4,718.8	-15.1	189.8	-59.2	9.78	9.69	-1.88
5,792.0	50.70	92.20	5,731.1	4,740.1	-16.4	213.7	-66.1	15.27	14.38	-6.88
5,823.0	53.80	92.70	5,750.1	4,759.1	-17.5	238.2	-72.9	10.08	10.00	1.61
5,855.0	57.40	92.90	5,768.1	4,777.1	-18.8	264.6	-80.3	11.26	11.25	0.63
5,886.0	61.90	92.60	5,783.8	4,792.8	-20.1	291.3	-87.8	14.54	14.52	-0.97
5,918.0	65.40	93.00	5,798.0	4,807.0	-21.5	319.9	-95.9	10.99	10.94	1.25
5,949.0	67.50	92.90	5,810.4	4,819.4	-22.9	348.3	-104.0	6.78	6.77	-0.32
5,981.0	71.40	92.40	5,821.6	4,830.6	-24.3	378.2	-112.4	12.27	12.19	-1.56
6,044.0	73.10	92.00	5,840.8	4,849.8	-26.6	438.2	-128.7	2.77	2.70	-0.63
6,139.0	73.30	94.50	5,868.3	4,877.3	-31.8	529.0	-155.0	2.53	0.21	2.63
6,234.0	74.50	94.30	5,894.6	4,903.6	-38.8	620.0	-183.1	1.28	1.26	-0.21
6,329.0	71.70	95.10	5,922.2	4,931.2	-46.2	710.5	-211.6	3.06	-2.95	0.84
6,423.0	69.50	93.40	5,953.5	4,962.5	-52.8	798.9	-238.8	2.90	-2.34	-1.81
6,518.0	68.40	93.50	5,987.6	4,995.6	-58.1	887.4	-264.7	1.16	-1.16	0.11
6,612.0	69.20	92.90	6,021.6	5,030.6	-63.0	974.9	-290.0	1.04	0.85	-0.64
6,707.0	68.30	93.10	6,056.0	5,065.0	-67.7	1,063.4	-315.2	0.97	-0.95	0.21
6,738.0	68.70	93.00	6,067.4	5,076.4	-69.2	1,092.2	-323.5	1.32	1.29	-0.32
6,770.0	68.90	92.90	6,078.9	5,087.9	-70.7	1,122.0	-332.0	0.69	0.63	-0.31
6,801.0	68.80	90.80	6,090.1	5,099.1	-71.7	1,150.9	-339.7	6.33	-0.32	-6.77
6,833.0	68.60	86.50	6,101.8	5,110.8	-71.0	1,180.7	-346.0	12.53	-0.63	-13.44
6,864.0	68.70	82.70	6,113.0	5,122.0	-68.2	1,209.4	-350.1	11.42	0.32	-12.26

Phoenix Technologies
Survey Report

Database:		Local Co-ordinate Reference:	
Company:		TVD Reference:	
Project:		MD Reference:	
Site:		North Reference:	
Well:		Survey Calculation Method:	
Wellbore:			
Design:			

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,896.0	69.10	79.50	6,124.6	5,133.6	-63.6	1,238.9	-352.5	9.41	1.25	-10.00
6,928.0	68.90	75.70	6,136.0	5,145.0	-57.2	1,268.0	-353.1	11.10	-0.63	-11.88
6,960.0	68.50	71.80	6,147.7	5,156.7	-48.9	1,296.7	-351.7	11.42	-1.25	-12.19
6,991.0	67.90	67.90	6,159.2	5,168.2	-39.0	1,323.7	-348.4	11.84	-1.94	-12.58
7,023.0	67.50	64.20	6,171.3	5,180.3	-26.9	1,350.7	-343.1	10.77	-1.25	-11.56
7,055.0	68.50	60.90	6,183.3	5,192.3	-13.3	1,377.1	-336.0	10.06	3.13	-10.31
7,086.0	69.10	57.40	6,194.5	5,203.5	1.5	1,401.9	-327.4	10.70	1.94	-11.29
7,118.0	68.60	54.30	6,206.1	5,215.1	18.3	1,426.6	-316.9	9.17	-1.56	-9.69
7,150.0	67.40	51.40	6,218.1	5,227.1	36.2	1,450.2	-305.0	9.20	-3.75	-9.06
7,181.0	68.10	48.10	6,229.8	5,238.8	54.7	1,472.1	-292.2	10.11	2.26	-10.65
7,213.0	68.70	45.90	6,241.6	5,250.6	75.0	1,493.9	-277.5	6.66	1.88	-8.88
7,245.0	68.80	43.40	6,253.2	5,262.2	96.3	1,514.8	-261.8	7.29	0.31	-7.81
7,276.0	68.70	40.20	6,264.4	5,273.4	117.8	1,534.1	-245.4	9.63	-0.32	-10.32
7,308.0	69.40	36.30	6,275.9	5,284.9	141.3	1,552.6	-226.9	11.59	2.19	-12.19
7,340.0	71.00	32.00	6,286.7	5,295.7	166.2	1,569.5	206.7	13.60	5.00	-13.44
7,371.0	72.30	29.10	6,296.5	5,305.5	191.5	1,584.4	-185.6	9.82	4.19	-9.35
7,403.0	73.80	25.20	6,305.8	5,314.8	218.7	1,598.4	-162.4	12.56	4.69	-12.19
7,435.0	74.10	21.30	6,314.7	5,323.7	247.0	1,610.5	-137.8	11.75	0.94	-12.19
VS OA										
7,452.7	74.15	19.47	6,319.5	5,328.5	263.0	1,616.4	-123.6	9.94	0.29	-10.32
7,466.0	74.20	18.10	6,323.1	5,332.1	275.1	1,620.6	-112.8	9.94	0.37	-10.32
7,498.0	74.80	14.60	6,331.7	5,340.7	304.6	1,629.2	-86.1	10.71	1.88	-10.94
VS										
7,500.3	74.84	14.34	6,332.3	5,341.3	306.8	1,629.8	-84.1	11.08	1.86	-11.32
7,529.0	75.40	11.10	6,339.7	5,348.7	333.8	1,635.9	-59.3	11.08	1.94	-11.29
7,561.0	75.70	8.40	6,347.6	5,356.6	364.4	1,641.1	-30.8	8.22	0.94	-8.44
7,593.0	75.80	4.80	6,355.5	5,364.5	395.2	1,644.7	-1.7	10.91	0.31	-11.25
7,624.0	75.80	2.30	6,363.1	5,372.1	425.2	1,646.6	27.0	7.82	0.00	-8.06
7,656.0	75.90	359.90	6,371.0	5,380.0	456.2	1,647.2	57.0	7.28	0.31	-7.50
7,688.0	76.10	357.00	6,378.7	5,387.7	487.2	1,646.3	87.4	8.82	0.63	-9.06
7,719.0	75.90	354.20	6,386.2	5,395.2	517.2	1,644.0	117.1	8.79	-0.65	-9.03
7,751.0	76.60	352.00	6,393.8	5,402.8	548.1	1,640.3	147.9	7.03	2.19	-6.88
7,782.0	78.50	349.90	6,400.5	5,409.5	578.0	1,635.5	178.1	9.02	6.13	-6.77
7,814.0	80.20	346.70	6,406.4	5,415.4	608.8	1,629.1	209.5	11.17	5.31	-10.00
7,845.0	81.90	344.50	6,411.2	5,420.2	638.4	1,621.5	240.2	8.90	5.48	-7.10
7,877.0	84.00	342.00	6,415.2	5,424.2	668.8	1,612.4	271.9	10.16	6.56	-7.81
7,909.0	85.40	340.10	6,418.1	5,427.1	699.0	1,602.0	303.6	7.35	4.38	-5.94
B13147 LP 322 VS OA Plan 2										
7,933.5	86.32	339.18	6,419.9	5,428.9	721.8	1,593.5	327.8	5.30	3.75	-3.75
B13147 LP										
7,940.2	86.57	338.93	6,420.3	5,429.3	728.1	1,591.1	334.4	5.30	3.75	-3.75
7,941.0	86.60	338.90	6,420.3	5,429.3	728.8	1,590.8	335.3	5.30	3.75	-3.74
B13147 LP 334 VS										

Phoenix Technologies

Survey Report

Database:	BDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQ1 Production - Marcellus	TVD Reference:	KB @ 981 0usft
Project:	Doddridge County, WV Gnd	MD Reference:	KB @ 981 0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 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)
7,954.3	86.85	338.90	6,421.1	5,430.1	741.3	1,586.0	348.5	1.88	1.88	0.00
513147 LP 322 VS OA										
7,957.6	86.91	338.90	6,421.3	5,430.3	744.4	1,584.9	351.7	1.88	1.88	0.00
7,973.0	87.20	338.90	6,422.1	5,431.1	758.7	1,579.3	367.0	1.88	1.88	0.00
8,036.0	87.40	337.50	6,425.0	5,434.0	817.1	1,556.0	429.2	2.24	0.32	-2.22
8,130.0	88.30	336.90	6,428.6	5,437.6	903.7	1,519.6	521.9	1.15	0.96	-0.64
LP 8226 MDIS011 TVD										
8,225.0	89.00	336.00	6,430.8	5,439.8	990.7	1,481.6	615.5	1.20	0.74	-0.95
8,320.0	90.80	334.80	6,431.0	5,440.0	1,077.1	1,442.1	708.7	2.28	1.89	-1.26
8,414.0	88.90	334.20	6,431.2	5,440.2	1,162.0	1,401.6	800.7	2.12	-2.02	-0.64
8,509.0	89.40	334.00	6,432.6	5,441.6	1,247.4	1,360.1	893.5	0.57	0.53	-0.21
8,603.0	90.60	333.90	6,432.6	5,441.6	1,331.9	1,318.8	985.3	1.28	1.28	-0.11
8,698.0	90.20	334.10	6,432.0	5,441.0	1,417.2	1,277.2	1,078.0	0.47	-0.42	0.21
8,792.0	92.30	335.30	6,429.9	5,438.9	1,502.2	1,237.0	1,170.0	2.57	2.23	1.28
8,887.0	90.70	334.40	6,427.4	5,436.4	1,588.2	1,196.7	1,263.1	1.93	-1.68	-0.95
8,981.0	91.40	332.80	6,425.7	5,434.7	1,672.3	1,154.9	1,354.7	1.86	0.74	-1.70
9,076.0	89.00	331.10	6,425.4	5,434.4	1,756.2	1,110.2	1,446.7	3.10	-2.53	-1.79
9,170.0	90.90	333.80	6,425.5	5,434.5	1,839.5	1,066.7	1,537.9	3.51	2.02	2.87
9,265.0	92.60	334.60	6,422.6	5,431.6	1,925.0	1,025.4	1,630.7	1.98	1.79	0.84
9,359.0	91.00	332.60	6,419.6	5,428.6	2,009.1	983.7	1,722.3	2.72	-1.70	-2.13
9,454.0	91.60	330.50	6,417.4	5,426.4	2,092.6	938.4	1,814.1	2.30	0.63	-2.21
9,548.0	87.40	329.50	6,418.3	5,427.3	2,174.0	891.4	1,904.2	4.59	-4.47	-1.06
9,642.0	87.40	332.70	6,422.5	5,431.5	2,256.2	846.0	1,994.7	3.40	0.00	3.40
9,736.0	88.30	333.50	6,426.1	5,435.1	2,340.0	803.5	2,086.1	1.28	0.96	0.85
9,831.0	89.90	334.70	6,427.5	5,436.5	2,425.4	762.1	2,178.9	2.11	1.68	1.26
9,925.0	90.70	333.20	6,427.1	5,436.1	2,509.9	720.8	2,270.7	1.81	0.85	-1.60
10,020.0	90.50	334.40	6,426.1	5,435.1	2,595.1	678.8	2,363.4	1.28	-0.21	1.26
10,114.0	89.50	336.50	6,426.1	5,435.1	2,680.6	639.8	2,455.7	2.47	-1.06	2.23
10,209.0	91.70	338.60	6,425.1	5,434.1	2,768.4	603.5	2,549.5	3.20	2.32	2.21
10,303.0	89.20	334.80	6,424.3	5,433.3	2,854.7	566.3	2,642.1	4.84	-2.66	-4.04
10,397.0	88.90	332.80	6,425.9	5,434.9	2,939.0	524.9	2,733.8	2.15	-0.32	-2.13
10,491.0	90.30	333.20	6,426.5	5,435.5	3,022.8	482.2	2,825.3	1.55	1.49	0.43
10,586.0	87.10	330.30	6,428.7	5,437.7	3,106.4	437.2	2,917.1	4.55	-3.37	-3.05
10,680.0	87.90	333.70	6,432.8	5,441.8	3,189.3	393.2	3,008.1	3.71	0.85	3.62
10,774.0	88.80	332.90	6,435.5	5,444.5	3,273.3	350.9	3,099.6	1.28	0.96	-0.85
10,869.0	89.20	330.30	6,437.2	5,446.2	3,356.8	305.8	3,191.4	2.77	0.42	-2.74
10,962.0	87.90	331.40	6,439.5	5,448.5	3,438.0	260.5	3,280.9	1.83	-1.40	1.18
11,057.0	87.00	333.70	6,443.7	5,452.7	3,522.2	216.7	3,373.1	2.60	-0.95	2.42
11,151.0	91.40	336.80	6,445.1	5,454.1	3,607.5	177.4	3,465.2	5.73	4.68	3.30
11,246.0	90.20	336.80	6,443.7	5,452.7	3,694.8	140.0	3,558.9	1.26	-1.26	0.00
11,340.0	90.50	335.80	6,443.2	5,452.2	3,780.9	102.2	3,651.4	1.11	0.32	-1.06
11,435.0	89.00	336.00	6,443.6	5,452.6	3,867.6	63.4	3,744.8	1.59	-1.58	0.21
11,529.0	88.70	333.20	6,445.5	5,454.5	3,952.5	23.1	3,836.8	3.00	-0.32	-2.98

Phoenix Technologies

Survey Report

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 991.Dust
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.Dust
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well# 513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 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)
11,623.0	88.80	334.50	6,447.5	5,456.5	4,036.9	-18.3	3,928.5	1.39	0.11	1.38
11,717.0	90.60	332.80	6,448.0	5,457.0	4,121.1	-60.0	4,020.2	2.63	1.91	-1.81
11,811.0	89.90	334.00	6,447.6	5,456.6	4,205.1	-102.1	4,111.7	1.48	-0.74	1.28
11,905.0	90.60	336.20	6,447.2	5,456.2	4,290.4	-141.7	4,203.9	2.46	0.74	2.34
12,000.0	90.40	338.20	6,446.4	5,455.4	4,378.0	-178.5	4,297.7	2.12	-0.21	2.11
12,094.0	89.60	333.70	6,446.4	5,455.4	4,463.8	-216.8	4,390.1	4.86	-0.85	-4.79
12,188.0	87.10	332.50	6,449.1	5,458.1	4,547.6	-259.3	4,481.5	2.95	-2.66	-1.28
12,282.0	88.00	331.80	6,453.1	5,462.1	4,630.6	-303.2	4,572.5	1.21	0.96	-0.74
12,377.0	89.40	332.10	6,455.2	5,464.2	4,714.4	-347.8	4,664.5	1.51	1.47	0.32
12,471.0	91.80	334.30	6,454.2	5,463.2	4,798.3	-390.2	4,755.9	3.46	2.55	2.34
12,565.0	89.80	333.00	6,452.9	5,461.9	4,882.5	-431.9	4,847.6	2.54	-2.13	-1.38
12,660.0	88.70	334.40	6,454.2	5,463.2	4,967.7	-474.0	4,940.2	1.87	-1.16	1.47
12,754.0	87.50	334.40	6,457.3	5,466.3	5,052.4	-514.6	5,032.1	1.28	-1.28	0.00
12,848.0	88.00	333.30	6,461.0	5,470.0	5,136.7	-556.0	5,123.8	1.28	0.53	-1.17
12,942.0	87.90	335.80	6,464.3	5,473.3	5,221.5	-596.4	5,215.7	2.66	-0.11	2.66
13,036.0	88.20	333.10	6,467.5	5,476.5	5,306.3	-636.9	5,307.6	2.89	0.32	-2.87
13,131.0	88.00	336.10	6,470.7	5,479.7	5,392.1	-677.6	5,400.5	3.16	-0.21	3.16
13,225.0	89.30	336.80	6,472.9	5,481.9	5,478.2	-715.2	5,493.1	1.57	1.38	0.74
13,320.0	88.80	338.40	6,474.5	5,483.5	5,566.0	-751.4	5,586.9	1.76	-0.53	1.68
13,414.0	90.40	339.20	6,475.1	5,484.1	5,653.6	-785.3	5,680.1	1.90	1.70	0.85
13,508.0	87.30	335.80	6,477.0	5,486.0	5,740.5	-821.3	5,772.9	4.89	-3.30	-3.62
13,602.0	87.50	335.70	6,481.3	5,490.3	5,826.1	-859.9	5,865.2	0.24	0.21	-0.11
13,696.0	90.40	334.70	6,483.0	5,492.0	5,911.4	-899.3	5,957.4	3.26	3.09	-1.06
13,791.0	91.20	333.90	6,481.7	5,490.7	5,997.0	-940.5	6,050.2	1.19	0.84	-0.84
13,886.0	90.60	333.40	6,480.2	5,489.2	6,082.1	-982.6	6,142.9	0.82	-0.63	-0.53
13,980.0	88.70	332.40	6,480.8	5,489.8	6,165.8	-1,025.5	6,234.3	2.28	-2.02	-1.06
14,075.0	89.20	329.70	6,482.5	5,491.5	6,248.9	-1,071.4	6,325.8	2.89	0.53	-2.84
14,169.0	87.90	331.20	6,484.9	5,493.9	6,330.6	-1,117.8	6,416.2	2.11	-1.38	1.60
14,264.0	90.00	331.30	6,486.6	5,495.6	6,413.9	-1,163.5	6,507.8	2.21	2.21	0.11
14,358.0	88.20	330.50	6,488.1	5,497.1	6,496.0	-1,209.2	6,598.4	2.10	-1.91	-0.85
14,453.0	90.00	330.10	6,489.6	5,498.6	6,578.5	-1,256.2	6,689.6	1.94	1.89	-0.42
14,548.0	89.40	333.10	6,490.1	5,499.1	6,662.1	-1,301.4	6,781.4	3.22	-0.63	3.16
14,642.0	91.10	334.70	6,489.7	5,498.7	6,746.5	-1,342.8	6,873.2	2.48	1.81	1.70
14,737.0	89.10	336.70	6,489.5	5,498.5	6,833.0	-1,381.8	6,966.5	2.98	-2.11	2.11
14,831.0	87.00	336.30	6,492.7	5,501.7	6,919.2	-1,419.3	7,059.1	2.27	-2.23	-0.43
14,926.0	88.40	336.00	6,496.5	5,505.5	7,006.0	-1,457.7	7,152.5	1.51	1.47	-0.32
15,020.0	87.60	337.10	6,499.8	5,508.8	7,092.2	-1,495.1	7,245.0	1.45	-0.85	1.17
Deepest Point of Well = 15114 MD/ 6502' TVD										
15,114.0	89.70	337.40	6,502.0	5,511.0	7,178.8	-1,531.4	7,337.8	2.26	2.23	0.32
15,209.0	92.20	335.60	6,500.5	5,509.5	7,265.9	-1,569.3	7,431.3	3.24	2.63	-1.89
15,303.0	90.30	335.90	6,498.4	5,507.4	7,351.6	-1,607.9	7,523.7	2.05	-2.02	0.32
15,397.0	88.40	335.40	6,499.5	5,508.5	7,437.3	-1,646.6	7,616.0	2.09	-2.02	-0.53
15,492.0	90.40	336.10	6,500.5	5,509.5	7,523.9	-1,685.6	7,709.3	2.23	2.11	0.74

Phoenix Technologies

Survey Report

Database:	EDM 5000 1 Single User Lib	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 991.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 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)
15,587.0	89.40	333.80	6,500.6	5,509.6	7,609.9	-1,725.9	7,802.4	2.64	-1.05	-2.42
15,682.0	89.80	331.40	6,501.3	5,510.3	7,694.3	-1,769.6	7,894.7	2.56	0.42	-2.53
15,776.0	89.40	327.80	6,502.0	5,511.0	7,775.3	-1,817.1	7,984.6	3.85	-0.43	-3.83
15,871.0	90.80	326.70	6,501.8	5,510.8	7,855.2	-1,868.5	8,074.3	1.87	1.47	-1.16
Final Survey= 15965' MD/ 6499' TVD										
15,965.0	92.20	326.00	6,499.3	5,508.3	7,933.4	-1,920.6	8,162.6	1.67	1.49	-0.74
513147 Plk TD 2										
16,001.2	92.20	326.00	6,497.9	5,506.9	7,963.5	-1,940.8	8,196.5	0.00	0.00	0.00
Projection to TD= 16019' MD/6497' TVD										
16,019.0	92.20	326.00	6,497.3	5,506.3	7,978.2	-1,950.8	8,213.2	0.00	0.00	0.00

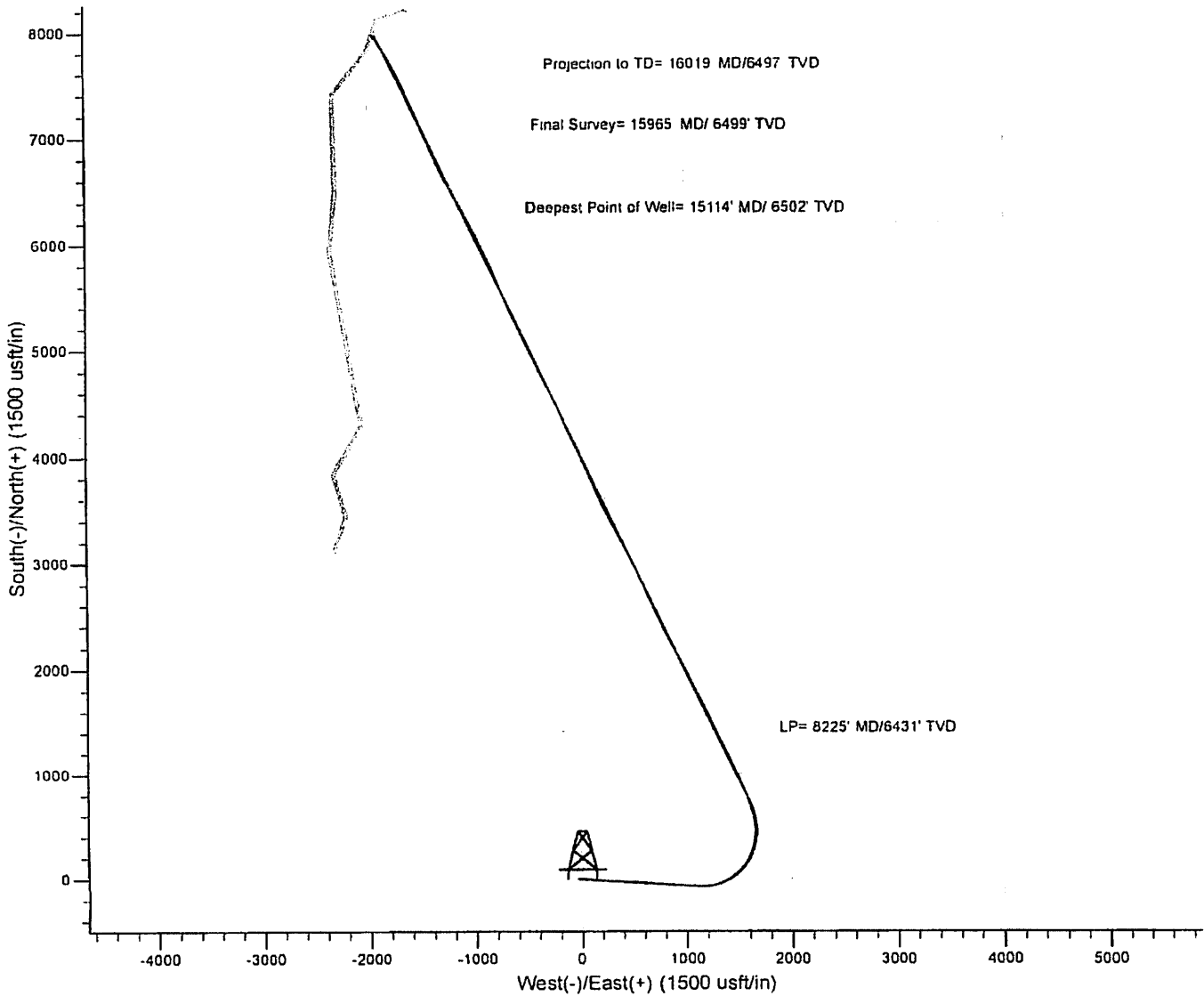
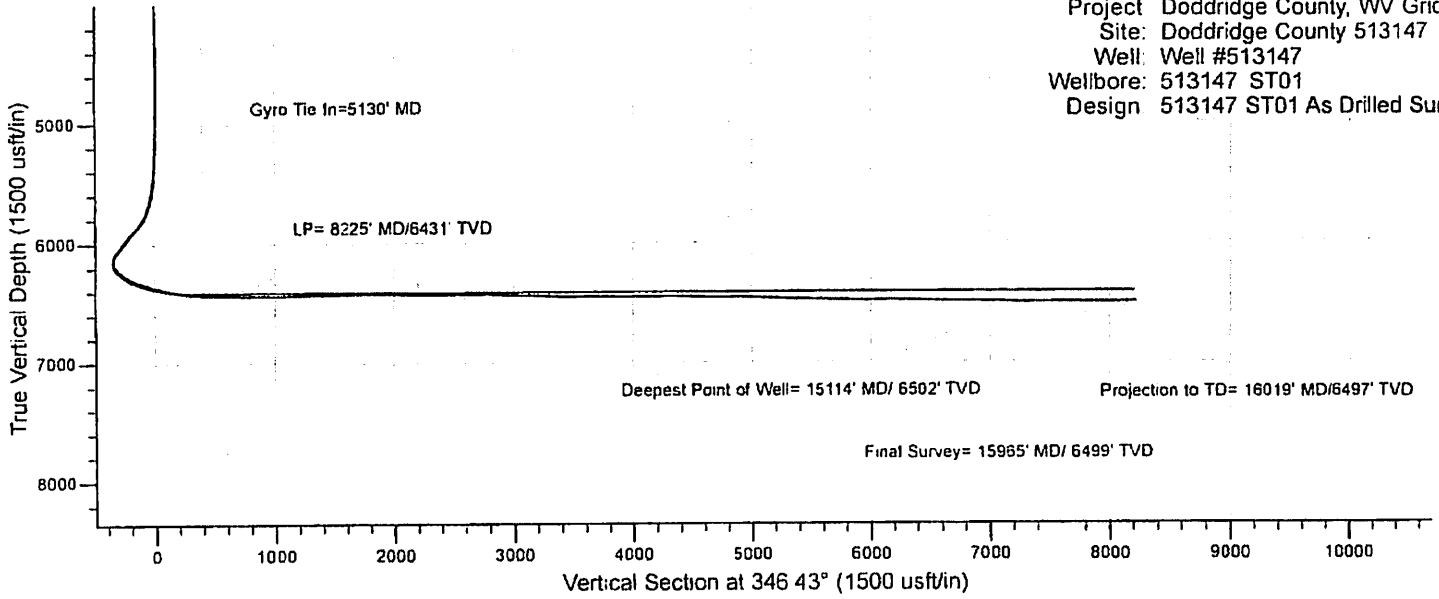
Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,130.0	5,127.4	2.5	10.0	Gyro Tie In=5130' MD
8,225.0	6,430.8	990.7	1,481.6	LP= 8225' MD/6431' TVD
15,114.0	6,502.0	7,178.8	-1,531.4	Deepest Point of Well= 15114' MD/ 6502' TVD
15,965.0	6,499.3	7,933.4	-1,920.6	Final Survey= 15965' MD/ 6499' TVD
16,019.0	6,497.3	7,978.2	-1,950.8	Projection to TD= 16019' MD/6497' TVD

Checked By: _____ Approved By: _____ Date: _____

EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513147
Well: Well #513147
Wellbore: 513147 ST01
Design: 513147 ST01 As Drilled Surveys



513176 - 47-017-06461-0000- 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	4/25/2015	13.4	8,841.00	9,945.00	4,560.00	0	2545	0
1	4/25/2015	94.2	8,791.00	9,191.00	4,560.00	364,160	7574	0
2	4/25/2015	95.8	8,376.00	9,054.00	5,277.00	362,980	9299	0
3	4/26/2015	99.7	8,791.00	9,190.00	5,192.00	361,660	9953	0
4	4/26/2015	99.8	8,613.00	9,105.00	5,435.00	360,620	9147	0
5	4/26/2015	98.5	8,215.00	9,052.00	5,295.00	364,480	9446	0
6	4/27/2015	94.9	8,671.00	9,476.00	5,288.00	272,420	8777	0
7	4/27/2015	100.4	8,436.00	9,121.00	5,042.00	359,840	8949	0
8	4/27/2015	98.5	8,474.00	8,995.00	5,195.00	359,320	8879	0
9	4/27/2015	99	8,617.00	8,963.00	5,204.00	360,260	9152	0
10	4/28/2015	98.3	8,545.00	9,060.00	4,839.00	362,340	10142	0
11	4/28/2015	97.4	8,808.00	9,282.00	5,135.00	329,700	8944	0
12	4/28/2015	95.5	8,712.00	9,472.00	5,343.00	359,820	10067	0
13	4/28/2015	99	8,787.00	9,187.00	5,218.00	364,380	9240	0
14	4/28/2015	98.2	8,443.00	9,056.00	5,001.00	362,460	10330	0
15	4/29/2015	99.3	8,231.00	8,441.00	5,262.00	361,520	9319	0
16	4/29/2015	100.3	8,264.00	8,497.00	5,023.00	361,940	9191	0
17	4/29/2015	96.4	8,807.00	9,301.00	5,070.00	315,220	8582	0
18	4/29/2015	100.5	8,462.00	8,853.00	4,736.00	361,280	9072	0
19	4/29/2015	99.9	8,010.00	8,296.00	4,859.00	362,460	9236	0
20	4/30/2015	100	8,091.00	8,748.00	4,945.00	361,100	10053	0
21	4/30/2015	99.9	8,272.00	8,834.00	5,308.00	359,920	9045	0
22	4/30/2015	97.6	8,180.00	8,981.00	5,250.00	361,680	9255	0
23	4/30/2015	93.4	8,453.00	8,799.00	5,145.00	360,720	10219	0
24	4/30/2015	99.6	8,429.00	8,753.00	5,025.00	364,780	9483	0
25	4/30/2015	99.7	8,021.00	8,538.00	5,156.00	362,160	9048	0
26	5/1/2015	100.1	7,666.00	7,812.00	4,876.00	360,320	8913	0
27	5/1/2015	100.1	7,927.00	9,518.00	5,477.00	347,780	10239	0
28	5/1/2015	99.8	8,185.00	8,866.00	5,341.00	361,880	8772	0
29	5/1/2015	100.1	7,959.00	8,152.00	4,965.00	359,660	9214	0
30	5/1/2015	99.80	7,909.00	8,393.00	4,870	357,660	8,752	0
31	5/2/2015	85.70	8,332.00	9,133.00	5,349	120,000	12,909	0
31.1	5/2/2015	87.00	8,214.00	9,133.00	5,113	112,160	170	0
32	5/2/2015	99.50	8,180.00	9,008.00	5,443	497,760	11,333	0
33	5/2/2015	99.70	7,715.00	9,542.00	5,203	359,120	8,808	0
34	5/2/2015	99.20	7,633.00	8,364.00	5,245	358,840	8,945	0
35	5/2/2015	94.70	7,252.00	7,683.00	5,173	361,060	10,680	0
36	5/3/2015	97.90	7,873.00	9,347.00	4,721	308,060	8,404	0

513176 - 47-017-06461-0000- Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation:Sleeve	3/28/2015			10	MARCELLUS
1	4/25/2015	15,800.00	15,937.00	32	MARCELLUS
2	4/25/2015	15,576.00	15,758.00	40	MARCELLUS
3	4/26/2015	15,351.00	15,533.00	40	MARCELLUS
4	4/26/2015	15,126.00	15,308.00	40	MARCELLUS
5	4/26/2015	14,901.00	15,083.00	40	MARCELLUS
6	4/27/2015	14,676.00	14,861.00	40	MARCELLUS
7	4/27/2015	14,451.00	14,633.00	40	MARCELLUS
8	4/27/2015	14,226.00	14,408.00	40	MARCELLUS
9	4/27/2015	14,001.00	14,183.00	40	MARCELLUS
10	4/27/2015	13,776.00	13,958.00	40	MARCELLUS
11	4/28/2015	13,551.00	13,733.00	40	MARCELLUS
12	4/28/2015	13,328.00	13,508.00	40	MARCELLUS
13	4/28/2015	13,101.00	13,279.00	40	MARCELLUS
14	4/28/2015	12,876.00	13,058.00	40	MARCELLUS
15	4/28/2015	12,651.00	12,833.00	40	MARCELLUS
16	4/28/2015	12,426.00	12,608.00	40	MARCELLUS
17	4/29/2015	12,201.00	12,383.00	40	MARCELLUS
18	4/29/2015	11,976.00	12,158.00	40	MARCELLUS
19	4/29/2015	11,751.00	11,933.00	40	MARCELLUS
20	4/29/2015	11,526.00	11,708.00	40	MARCELLUS
21	4/30/2015	11,301.00	11,483.00	40	MARCELLUS
22	4/30/2015	11,076.00	11,258.00	40	MARCELLUS
23	4/30/2015	10,853.00	11,033.00	40	MARCELLUS
24	4/30/2015	10,626.00	10,808.00	40	MARCELLUS
25	4/30/2015	10,401.00	10,583.00	40	MARCELLUS
26	5/1/2015	10,176.00	10,358.00	40	MARCELLUS
27	5/1/2015	9,951.00	10,133.00	40	MARCELLUS
28	5/1/2015	9,726.00	9,908.00	40	MARCELLUS
29	5/1/2015	9,501.00	9,683.00	40	MARCELLUS
30	5/1/2015	9,276.00	9,458.00	40	MARCELLUS
31	5/1/2015	9,051.00	9,233.00	40	MARCELLUS
31.1	5/2/2015	9,073.50	9,118.50	40	MARCELLUS
32	5/2/2015	8,830.00	9,008.00	40	MARCELLUS
33	5/2/2015	8,601.00	8,783.00	40	MARCELLUS
34	5/2/2015	8,376.00	8,558.00	40	MARCELLUS
35	5/2/2015	8,151.00	8,333.00	40	MARCELLUS
36	5/3/2015	7,926.00	8,108.00	40	MARCELLUS

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/25/2015
Job End Date:	5/3/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06461-00-00
Operator Name:	EQT Production
Well Name and Number:	513147
Longitude:	-80.76642300
Latitude:	39.23598100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,400
Total Base Water Volume (gal):	14,367,612
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	90.04578	None
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00000	9.59920	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05635	None
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00000	0.02213	None
			Alkyl Alcohol	Proprietary	10.00000	0.00738	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00369	None
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02139	None
EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00120	None
FFR730	Keane Group	Friction Reducer	Oxyalkylated alcohol A	Proprietary	5.00000	0.00101	None
AI 600	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40.00000	0.00015	None

			N, N-Dimethylformamide	68-12-2	20.00000	0.00007	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00006	None
			Cinnamialdehyde	104-55-2	15.00000	0.00006	None
			2-Butoxyethanol	111-76-2	15.00000	0.00006	None
			Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega- hydroxy-, branched	127087-87-0	5.00000	0.00002	None
			1-Decanol	112-30-1	5.00000	0.00002	None
			Triethyl Phosphate	78-40-0	2.50000	0.00001	None
			1-Octanol	111-87-5	2.50000	0.00001	None
			isopropyl alcohol	67-63-0	2.50000	0.00001	None
LEB-10X	Keane Group	Gel Breaker	Ethylene Glycol	107-21-1	30.00000	0.00007	None

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

- * Total Water Volume sources may include fresh water, produced water, and/or recycled water
- ** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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



Submission to FracFocus using Excel Spreadsheets has been turned off.

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[ABOUT PROJECT PARTNERS](#)

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

Prepare Disclosure for FracFocus Submission

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i Disclosure has been submitted.

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

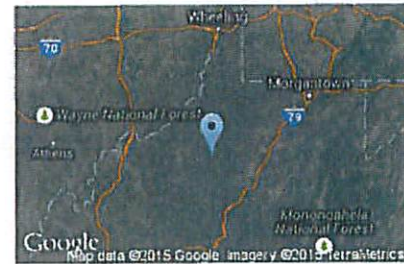
Hydraulic Fracturing Data

Job Start Date 4/25/2015 Job End Date 5/3/2015 API Number 47-017-06461-00-00 State & County West Virginia --- Doddridge

Well Name 513147

Longitude -80.766423 Latitude 39.235981 Datum NAD83 Federal/Tribal Well?

True Vertical Depth (ft) 6400 Total Water Vol (gal) 14367612 Total Non Water Vol 0 Total Mass (lbs) 133151966



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%	90.0457768234%	None	119897722.14
<input type="button" value="Edit"/>	Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100%	9.5991973562%	None	12781520
<input type="button" value="Edit"/>	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0563485261%	None	75029.17
<input type="button" value="Edit"/>	FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30%	.0221314593%	None	29468.473
				Alkyl Alcohol	Proprietary	10%	.0073771531%	None	9822.824
				Oxyalkylated alcohol A	Proprietary	5%	.0036885766%	None	4911.412
<input type="button" value="Edit"/>	Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0213936727%	None	28486.096
<input type="button" value="Edit"/>	EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5%	.001198983%	None	1596.469
<input type="button" value="Edit"/>	FFR730	Keane Group	Friction Reducer	Oxyalkylated alcohol A	Proprietary	5%	.0010061797%	None	1339.748
<input type="button" value="Edit"/>	AI 600								

<input type="button" value="Edit"/>	LEB-10X	Keane Group	Corrosion Inhibitor	Ethylene Glycol	107-21-1	40%	.0001495435%	None	199.12
				N, N-Dimethylformamide	68-12-2	20%	.0000747717%	None	99.56
				Tar bases, quinoline derivs, benzyl chloride-quatemized	72480-70-7	15%	.0000560788%	None	74.67
				Cinnamialdehyde	104-55-2	15%	.0000560788%	None	74.67
				2-Butoxyethanol	111-76-2	15%	.0000560788%	None	74.67
				Poly (oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl) .omega.-hydroxy-, branched	127087-87-0	5%	.0000186929%	None	24.89
				1-Decanol	112-30-1	5%	.0000186929%	None	24.89
				Triethyl Phosphate	78-40-0	2.5%	.0000093465%	None	12.445
				1-Octanol	111-87-5	2.5%	.0000093465%	None	12.445
				Isopropyl alcohol	67-63-0	2.5%	.0000093465%	None	12.445
		Keane Group	Gel Breaker	Ethylene Glycol	107-21-1	30%	.0000715447%	None	95.263

Non-MSDS Chemical Ingredients

Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
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****CELLS WITH BLUE BACKGROUND ARE THE ONLY CELLS TO BE EDITED****

Fracture Start Date/Time:	4/25/15 5:15
Fracture End Date/Time:	5/3/15 7:19
State:	West Virginia
County:	Doddridge
API Number:	47-017-06461-00-00
Operator Number:	E1210363
Well Name:	513147
Federal Well:	No
Longitude:	-80.766423
Latitude:	39.235981
Long/Lat Projection:	NAD83
True Vertical Depth (TVD):	6,400'
Total Clean Fluid Volume* (gal):	14,367,612



Additive	Specific Gravity	Additive Quantity	Mass (lbs)
Water	1.00	14,367,612	119,897,722
Sand (Proppant)	2.65	12,781,520	12,781,520
Hydrochloric Acid (15%)	1.07	21,268	189,907
AI 600	1.07	56	498
FFR760	1.09	10,799	98,228
FFR730	1.05	3,058	26,795
EC6330A	1.11	3,447	31,929
MC MX 437-5	1.33	11,246	125,049
LBB-10X	1.20	32	318

Ingredients Section:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass) ⁽¹⁾⁽²⁾	Mass per Component (LBS)	Maximum Ingredient Concentration in III ⁽¹⁾⁽²⁾ Fluid (% by mass) ⁽¹⁾⁽²⁾
Water	Keane Group	Carrier/Base Fluid	Water	7732-18-5	100.00%	119,897,722	90.04578%
Sand (Proppant)	Keane Group	Proppant	Silica Substrate	14808-60-7	100.00%	12,781,520	9.59920%
Hydrochloric Acid (15%)	Keane Group	Acidizing	Hydrochloric Acid	7647-01-0	15.00%	28,486	0.02139%
EC6330A	Keane Group	Scale Inhibitor	Sodium Phosphate, Tribasic	7601-54-9	5.00%	1,596	0.00126%
AI 600	Keane Group	Corrosion Inhibitor	Tar bases, quinoline derivs, benzyl chloride quaternized	72490-70-7	15.00%	75	0.00006%
			Ethylene Glycol	107-21-1	40.00%	199	0.00015%
			Cinnamaldehyde	104-55-2	15.00%	75	0.00006%
			1-Decanol	112-30-1	5.00%	25	0.00002%
			2-Butoxyethanol	111-76-2	15.00%	75	0.00006%
			Isopropyl alcohol	67-63-0	2.50%	12	0.00001%
			Triethyl Phosphate	78-40-0	2.50%	12	0.00001%
			N, N-Dimethylformamide	68-12-2	20.00%	100	0.00007%
			1-Octanol	111-87-5	2.50%	12	0.00001%
			Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00%	25	0.00002%
FFR730	Keane Group	Friction Reducer	Oxyalkylated alcohol A	Proprietary	5.00%	1,340	0.00101%
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00%	75,029	0.05635%
FFR760	Keane Group	Friction Reducer	Hydrotreated Light Distillate	64742-47-8	30.00%	29,468	0.02213%
			Alkyl Alcohol	Proprietary	10.00%	9,823	0.00735%
			Oxyalkylated alcohol A	Proprietary	5.00%	4,911	0.00369%
LBB-10X	Keane Group	Gel Breaker	Ethylene Glycol	107-21-1	30.00%	95	0.00007%

Total Slurry Mass (Lbs)
133,151,966

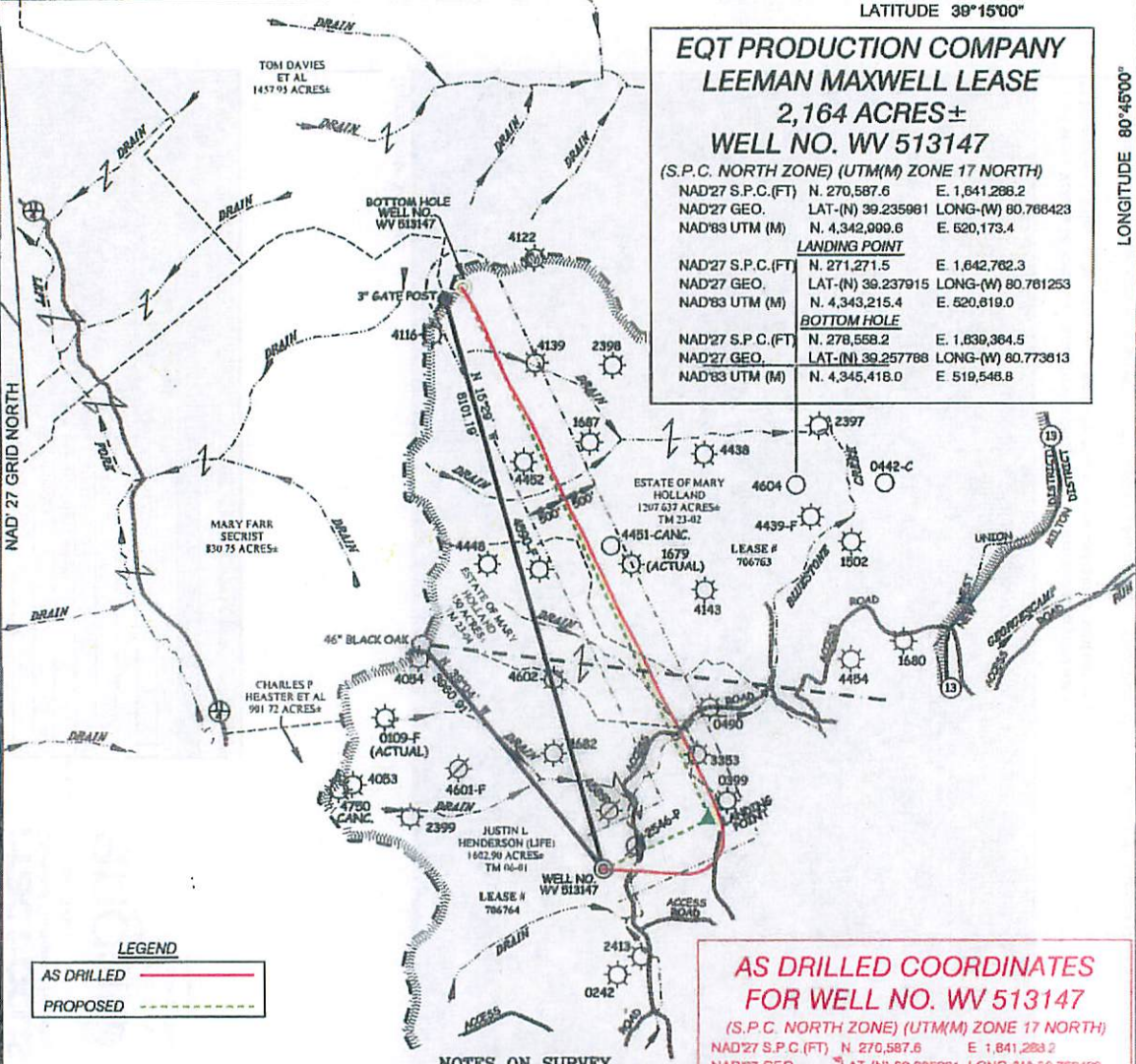
*Total Water Volume sources may include fresh water, produced water, and/or recycled water
 ** Information is based on the maximum potential for concentration and thus the total may be over 100%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

**EQT PRODUCTION COMPANY
LEEMAN MAXWELL LEASE
2,164 ACRES±
WELL NO. WV 513147**

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

NAD27 S.P.C.(FT)	N. 270,587.6	E. 1,841,288.2
NAD27 GEO.	LAT-(N) 39.235981	LONG-(W) 80.768423
NAD83 UTM (M)	N. 4,342,999.8	E. 520,173.4
LANDING POINT		
NAD27 S.P.C.(FT)	N. 271,271.5	E. 1,842,762.3
NAD27 GEO.	LAT-(N) 39.237915	LONG-(W) 80.761253
NAD83 UTM (M)	N. 4,343,215.4	E. 520,619.0
BOTTOM HOLE		
NAD27 S.P.C.(FT)	N. 278,558.2	E. 1,839,364.5
NAD27 GEO.	LAT-(N) 39.257788	LONG-(W) 80.773613
NAD83 UTM (M)	N. 4,345,418.0	E. 519,546.8

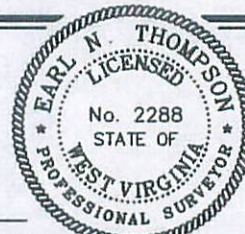


LEGEND
AS DRILLED ———
PROPOSED - - - - -

**AS DRILLED COORDINATES
FOR WELL NO. WV 513147**
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD27 S.P.C.(FT)	N. 270,587.6	E. 1,841,288.2
NAD27 GEO.	LAT-(N) 39.235981	LONG-(W) 80.768423
NAD83 UTM (M)	N. 4,342,999.8	E. 520,173.4
BOTTOM HOLE		
NAD27 S.P.C.(FT)	N. 278,558.5	E. 1,839,337.5
NAD27 GEO.	LAT-(N) 39.257807	LONG-(W) 80.773708
NAD83 UTM (M)	N. 4,345,420.1	E. 519,538.2

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 825' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.



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 APRIL 16, 20 13
REVISED 03/06/14 & 01/22/15
OPERATORS WELL NO. WV 513147
API WELL NO. 47-017-06461
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7889ASDRILLED513147
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

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

LOCATION:
ELEVATION 988'(GROUND) 988'(PROPOSED) WATERSHED BLUESTONE CREEK
DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'
SURFACE OWNER JUSTIN L. HENDERSON (LIFE) ACREAGE 1,602.90±
ROYALTY OWNER LEEMAN MAXWELL HRS ACREAGE (2,164±)(1,000±)
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 6399'

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

COUNTY NAME
PERMIT