

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 515275

API: 47 - 085 - 10093

Submission: Initial Amended

Notes: Add'l Inj test- 8.01

Correction to Production Cement Top
(MD)

APPROVED

NAME: *Jacqueline Thornton*

DATE: *6/1/2016*

RECEIVED
Office of Oil and Gas

DEC 21 2015

WV Department of
Environmental Protection

*AX WS 07/01/2016
06/28/16*

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

API 47-085-10093 County Ritchie District Clay
Quad Pennsboro Pad Name PEN15 Field/Pool Name _____
Farm name DEWAYNE BRITTON ET UX Well Number 515275
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 4,345,843.8 Easting 504,208.3
Landing Point of Curve Northing 4,346,218.9 Easting 505,297.7
Bottom Hole Northing 4,347,509.2 Easting 504,669.6

Elevation (ft) 1,119' 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 05/22/2014 Date drilling commenced 06/18/2014 Date drilling ceased 03/06/2015
Date completion activities began 6/10/2015 Date completion activities ceased 6/17/2015
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 86',166',245',397',773',876' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 1655',1946',2524' Void(s) encountered (Y/N) depths _____
Coal depth(s) ft 17',276',382',747' Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) N

Reviewed by: _____

API 47-085 - 10093 Farm name DEWAYNE BRITTON ET UX Well number 515275

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	26"	20"	40'	NEW	A-500 40LB/FT	NONE	Y
Surface	17.5"	13.375"	1,074'	NEW	J-55 54.5LB/FT	254', 581'	Y
Coal							
Intermediate 1	12.25"	9.625"	5,690'	NEW	P-110 40LB/FT	NONE	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	13,835'	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	1.19	45.22	0	8
Surface	CLASS A	907	15.6	1.19	1079.33	0	8
Coal							
Intermediate 1	CLASS A	360/310/1245	14.2/15.6/15.6	1.28/1.18/1.18	2298.7	0	8
Intermediate 2							
Intermediate 3							
Production	Class A / Class H	585/660	14.2/15.2	1.26/1.97	2037.3	4,942'	72
Tubing							

Drillers TD (ft) 13,847' MD Loggers TD (ft) N/A

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

Plug back procedure N/A

Kick off depth (ft) 3,253' 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: 1,11,24

INTERMEDIATE- RAN AT LEAST EVERY 500' FEET JOINTS: 1,12,24,36,48,60,72,84,96,108,120,132

Production- 222 Composite bodied centralizers on every joint from TD up to 4,383'

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- 085 - 10093 Farm name DEWAYNE BRITTON ET UX Well number 515275

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- 085 - 10093 Farm name DEWAYNE BRITTON ET UX Well number 515275

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6,381'</u>	<u>TVD</u>	<u>8,766'</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 1,350 psi Bottom Hole N/A psi DURATION OF TEST 110.5 hrs

OPEN FLOW Gas 7,372 mcfpd Oil N/A bpd NGL 83.3 bpd Water 714.2 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.

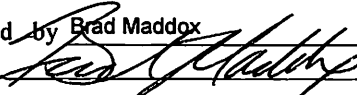
Drilling Contractor ALPHA HUNTER DRILLING (RIG 5)
Address P.O. BOX 430 City RENO State OH Zip 45773

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

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

Stimulating Company Stingray
Address 66680 Executive Drive City Saint Clairsville State TX Zip 43950

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

API 47- 085 - 10093 Farm name DEWAYNE BRITTON ET UX Well number 515275

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

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

Logging Company _____
Address _____ City _____ State _____ Zip _____

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

API 47 - 085 - 10093

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	876	876
SAND/SHALE	0	0	17	17
WASHINGTON COAL	17	17	19	19
SAND/SHALE	19	19	276	276
COAL	276	276	284	284
SAND/SHALE	284	284	382	382
COAL	382	382	387	387
SAND/SHALE	387	387	747	747
COAL	747	747	751	751
SAND/SHALE	751	751	1,750	1,750
MAXTON	1,750	1,750	1,969	1,969
BIG LIME	1,969	1,969	2,037	2,037
KEENER	2,037	2,037	2,376	2,376
WEIR	2,376	2,376	2,581	2,581
GANTZ	2,581	2,581	2,721	2,721
50F	2,721	2,721	2,802	2,802
30F	2,802	2,802	2,846	2,846
GORDON	2,846	2,846	2,927	2,927
4TH	2,927	2,927	3,073	3,073
5TH	3,073	3,073	3,116	3,116
BAYARD	3,116	3,116	3,466	3,465
WARREN	3,466	3,465	3,549	3,547
SPEECHLEY	3,549	3,547	3,948	3,928
BALLTOWN A	3,948	3,928	4,764	4,579
RILEY	4,764	4,579	5,239	4,938
BENSON	5,239	4,938	5,591	5,204
ALEXANDER	5,591	5,204	5,626	5,232
ELKS	5,626	5,232	7,786	6,106
SONYEA	7,786	6,106	8,131	6,219
MIDDLESEX	8,131	6,219	8,310	6,274
GENESEE	8,310	6,274	8,514	6,331
GENESEO	8,514	6,331	8,639	6,358
TULLY	8,639	6,358	8,724	6,374
HAMILTON	8,724	6,374	8,766	6,381
MARCELLUS	8,766	6,381	13,847	6,433



EQT Production - Marcellus

**Ritchie County, WV
Ritchie County 515275
Well #515275**

Main Wellbore

Design: As Drilled Surveys

Standard Survey Report

04 March, 2015



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1135.0usft
Project:	Ritchie County, WV	MD Reference:	KB @ 1135.0usft
Site:	Ritchie County 515275	North Reference:	Grid
Well:	Well #515275	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Project Ritchie County, WV			
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 Ritchie County 515275			
Site Position:		Northing:	280,796.70 usft
From: Map		Easting:	1,589,053.20 usft
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16 "
		Latitude:	39 26
		Longitude:	-80 95
		Grid Convergence:	-0 93 °

Well Well #515275			
Well Position	+N/-S	0 0 usft	Northing: 280 796.70 usft
	+E/-W	0 0 usft	Easting: 1,589 053 20 usft
			Latitude: 39° 15' 42.619 N
			Longitude: 80° 57' 5 003 W
Position Uncertainty		0 0 usft	Wellhead Elevation: usft
			Ground Level: 1 119 0 usft

Wellbore Main Wellbore					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/2/2015	-8 33	66 78	52,209

Design As Drilled Surveys	
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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	16 44	

Survey Program		Date	3/4/2015
From (')	To (usft)	Survey (Wellbore)	Tool Name
0 00	3,168 0	515275 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS
0 00	13,847 0	515275 PHX MWD (Main Wellbore)	MWD+IGRF
			Description
			Gyrodata gyro-compassing and drop
			MWD+IGRF v3 standard declination

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)	
0 0	0 00	0 00	0 0	-1,135 0	0 0	0 0	0 0	0 00	0 00	0 00	
103 0	0 13	242 07	103 0	-1,032 0	-0 1	-0 1	-0 1	0 13	0 13	0 00	
203 0	0 16	255 66	203 0	-932 0	-0 1	-0 3	-0 2	0 05	0 03	13 59	
303 0	0 14	284 89	303 0	-832 0	-0 1	-0 6	-0 3	0 08	-0 02	29 23	
403 0	0 09	234 28	403 0	-732 0	-0 2	-0 8	-0 4	0 11	-0 05	-50 61	
503 0	0 04	218 30	503 0	-632 0	-0 2	-0 9	-0 5	0 05	-0 05	-15 98	
603 0	0 14	167 90	603 0	-532 0	-0 4	-0 9	-0 6	0 12	0 10	-50 40	
703 0	0 20	183 14	703 0	-432 0	-0 7	-0 8	-0 9	0 07	0 06	15 24	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
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Project:	Ritchie County, WV	MD Reference:	KB @ 1135.0usft
Site:	Ritchie County 515275	North Reference:	Grid
Well:	Well #515275	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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	0.22	177.42	803.0	-332.0	-1.0	-0.8	-1.2	0.03	0.02	-5.72
903.0	0.22	177.21	903.0	-232.0	-1.4	-0.8	-1.6	0.00	0.00	-0.21
1,003.0	0.18	184.47	1,003.0	-132.0	-1.8	-0.8	-1.9	0.05	-0.04	7.26
1,103.0	0.31	162.04	1,103.0	-32.0	-2.2	-0.8	-2.3	0.16	0.13	-22.43
1,203.0	0.59	162.60	1,203.0	68.0	-2.9	-0.5	-3.0	0.28	0.28	0.56
1,303.0	0.81	171.63	1,303.0	168.0	-4.1	-0.3	-4.0	0.25	0.22	9.03
1,403.0	0.81	168.89	1,403.0	268.0	-5.5	0.0	-5.3	0.04	0.00	-2.74
1,503.0	0.82	176.04	1,503.0	368.0	-6.9	0.2	-6.6	0.10	0.01	7.15
1,603.0	0.84	177.56	1,603.0	468.0	-8.4	0.2	-8.0	0.03	0.02	1.52
1,703.0	0.76	177.45	1,702.9	567.9	-9.8	0.3	-9.3	0.08	-0.08	-0.11
1,803.0	0.72	177.18	1,802.9	667.9	-11.1	0.4	-10.5	0.04	-0.04	-0.27
1,903.0	0.67	181.48	1,902.9	767.9	-12.3	0.4	-11.7	0.07	-0.05	4.30
2,003.0	0.58	194.34	2,002.9	867.9	-13.3	0.2	-12.7	0.17	-0.09	12.86
2,103.0	0.46	212.59	2,102.9	967.9	-14.2	-0.1	-13.6	0.20	-0.12	18.25
2,203.0	0.44	218.37	2,202.9	1,067.9	-14.8	-0.6	-14.4	0.05	-0.02	5.78
2,303.0	0.48	207.18	2,302.9	1,167.9	-15.5	-1.0	-15.1	0.10	0.04	-11.19
2,403.0	0.50	218.35	2,402.9	1,267.9	-16.2	-1.4	-15.9	0.10	0.02	11.17
2,503.0	0.53	203.92	2,502.9	1,367.9	-17.0	-1.9	-16.8	0.13	0.03	-14.43
2,603.0	0.56	216.24	2,602.9	1,467.9	-17.8	-2.4	-17.7	0.12	0.03	12.32
2,703.0	0.60	217.95	2,702.9	1,567.9	-18.6	-3.0	-18.7	0.04	0.04	1.71
2,803.0	0.54	222.16	2,802.9	1,667.9	-19.4	-3.6	-19.6	0.07	-0.06	4.21
2,903.0	0.55	221.44	2,902.9	1,767.9	-20.1	-4.3	-20.4	0.01	0.01	-0.72
3,003.0	0.42	230.63	3,002.9	1,867.9	-20.7	-4.9	-21.2	0.15	-0.13	9.19
3,103.0	0.36	234.94	3,102.9	1,967.9	-21.1	-5.4	-21.7	0.07	-0.06	4.31
Gyro Tie line 3168' MD										
3,168.0	0.36	230.21	3,167.9	2,032.9	-21.3	-5.7	-22.1	0.05	0.00	-7.28
3,183.0	0.40	231.30	3,182.9	2,047.9	-21.4	-5.8	-22.1	0.27	0.27	7.27
3,214.0	0.30	218.30	3,213.9	2,078.9	-21.5	-5.9	-22.3	0.41	-0.32	-41.94
3,246.0	0.40	92.50	3,245.9	2,110.9	-21.6	-5.9	-22.4	1.95	0.31	-393.13
3,278.0	1.60	83.40	3,277.9	2,142.9	-21.5	-5.3	-22.2	3.77	3.75	-28.44
3,309.0	2.90	81.50	3,308.8	2,173.8	-21.4	-4.1	-21.7	4.20	4.19	-6.13
3,341.0	4.40	82.40	3,340.8	2,205.8	-21.1	-2.1	-20.8	4.69	4.69	2.81
3,372.0	5.70	83.00	3,371.7	2,236.7	-20.7	0.6	-19.7	4.20	4.19	1.94
3,404.0	7.10	83.30	3,403.5	2,268.5	-20.3	4.1	-18.3	4.38	4.38	0.94
3,435.0	8.30	84.00	3,434.2	2,299.2	-19.9	8.3	-16.7	3.88	3.87	2.26
3,467.0	9.20	84.90	3,465.8	2,330.8	-19.4	13.1	-14.9	2.84	2.81	2.81
3,498.0	10.00	86.60	3,496.4	2,361.4	-19.0	18.3	-13.1	2.74	2.58	5.48
3,530.0	11.00	88.70	3,527.8	2,392.8	-18.8	24.1	-11.2	3.35	3.13	6.56
3,562.0	11.80	88.60	3,559.2	2,424.2	-18.6	30.4	-9.3	2.50	2.50	-0.31
3,593.0	12.30	87.80	3,589.5	2,454.5	-18.4	36.9	-7.2	1.70	1.61	-2.58
3,625.0	12.50	86.60	3,620.8	2,485.8	-18.1	43.8	-5.0	1.02	0.63	-3.75
3,656.0	12.90	86.00	3,651.0	2,516.0	-17.6	50.6	-2.6	1.36	1.29	-1.94
3,688.0	14.10	85.10	3,682.1	2,547.1	-17.1	58.0	0.0	3.81	3.75	-2.81

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1135.0usft
Project:	Ritchie County, WV	MD Reference:	KB @ 1135.0usft
Site:	Ritchie County 515275	North Reference:	Grid
Well:	Well #515275	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
3,719.0	15.30	84.80	3,712.1	2,577.1	-16.4	65.8	2.9	3.88	3.87	-0.97
3,751.0	16.60	84.30	3,742.9	2,607.9	-15.5	74.6	6.2	4.09	4.06	-1.56
3,782.0	17.60	83.70	3,772.5	2,637.5	-14.6	83.7	9.7	3.28	3.23	-1.94
3,814.0	18.30	84.40	3,803.0	2,668.0	-13.6	93.5	13.4	2.29	2.19	2.19
3,846.0	19.20	83.70	3,833.3	2,698.3	-12.5	103.7	17.4	2.90	2.81	-2.19
3,877.0	20.50	83.10	3,862.4	2,727.4	-11.3	114.2	21.5	4.24	4.19	-1.94
3,909.0	22.20	84.10	3,892.2	2,757.2	-10.0	125.7	26.0	5.43	5.31	3.13
3,940.0	24.00	85.70	3,920.7	2,785.7	-8.9	137.8	30.5	6.15	5.81	5.16
3,972.0	25.60	85.70	3,949.8	2,814.8	-7.9	151.2	35.2	5.00	5.00	0.00
4,003.0	26.40	85.60	3,977.6	2,842.6	-6.9	164.8	40.0	2.58	2.58	-0.32
4,035.0	27.30	85.90	4,006.2	2,871.2	-5.8	179.2	45.1	2.84	2.81	0.94
4,066.0	28.00	85.60	4,033.7	2,898.7	-4.7	193.5	50.2	2.30	2.26	-0.97
4,098.0	29.00	85.00	4,061.8	2,926.8	-3.5	208.8	55.7	3.25	3.13	-1.88
4,130.0	29.80	84.20	4,089.7	2,954.7	-2.0	224.4	61.6	2.78	2.50	-2.50
4,161.0	30.90	84.50	4,116.4	2,981.4	-0.5	240.0	67.5	3.58	3.55	0.97
4,193.0	31.80	84.10	4,143.7	3,008.7	1.2	256.5	73.7	2.89	2.81	-1.25
4,225.0	32.70	84.10	4,170.8	3,035.8	2.9	273.5	80.2	2.81	2.81	0.00
4,256.0	33.50	83.80	4,196.8	3,061.8	4.7	290.4	86.7	2.63	2.58	-0.97
4,288.0	34.60	84.10	4,223.3	3,088.3	6.6	308.2	93.6	3.48	3.44	0.94
4,319.0	36.50	84.30	4,248.5	3,113.5	8.4	326.1	100.4	6.14	6.13	0.65
4,351.0	38.70	84.40	4,273.8	3,138.8	10.4	345.5	107.7	6.88	6.88	0.31
4,382.0	41.10	84.10	4,297.6	3,162.6	12.4	365.3	115.2	7.77	7.74	-0.97
4,414.0	43.50	84.20	4,321.3	3,186.3	14.6	386.7	123.4	7.50	7.50	0.31
4,445.0	43.90	85.00	4,343.7	3,208.7	16.6	408.1	131.4	2.20	1.29	2.58
4,508.0	43.60	86.60	4,389.2	3,254.2	19.8	451.5	146.7	1.82	-0.48	2.54
4,571.0	42.90	86.80	4,435.1	3,300.1	22.2	494.6	161.3	1.13	-1.11	0.32
4,634.0	42.00	86.50	4,481.6	3,346.6	24.7	537.1	175.7	1.46	-1.43	-0.48
4,697.0	41.20	86.70	4,528.7	3,393.7	27.2	578.8	189.9	1.29	-1.27	0.32
4,760.0	41.20	86.90	4,576.1	3,441.1	29.5	620.2	203.8	0.21	0.00	0.32
4,824.0	41.80	86.30	4,624.0	3,489.0	32.0	662.6	218.2	1.12	0.94	-0.94
4,887.0	41.30	85.30	4,671.2	3,536.2	35.1	704.2	233.0	1.32	-0.79	-1.59
4,950.0	41.30	83.60	4,718.5	3,583.5	39.1	745.6	248.5	1.78	0.00	-2.70
5,013.0	40.90	83.90	4,766.0	3,631.0	43.6	786.8	264.5	0.71	-0.63	0.48
5,076.0	40.70	83.00	4,813.7	3,678.7	48.3	827.7	280.6	0.99	-0.32	-1.43
5,139.0	40.40	82.70	4,861.6	3,726.6	53.4	868.3	297.0	0.57	-0.48	-0.48
5,202.0	40.40	83.00	4,909.5	3,774.5	58.5	908.8	313.3	0.31	0.00	0.48
5,265.0	41.10	83.30	4,957.3	3,822.3	63.4	949.7	329.6	1.15	1.11	0.48
5,328.0	41.40	83.20	5,004.6	3,869.6	68.3	990.9	345.9	0.49	0.48	-0.16
5,392.0	41.70	83.90	5,052.5	3,917.5	73.1	1,033.1	362.4	0.86	0.47	1.09
5,455.0	41.40	83.60	5,099.7	3,964.7	77.6	1,074.6	378.6	0.57	-0.48	-0.48
5,518.0	40.00	83.30	5,147.4	4,012.4	82.3	1,115.5	394.6	2.24	-2.22	-0.48
5,581.0	38.20	82.90	5,196.3	4,061.3	87.1	1,154.9	410.3	2.89	-2.86	-0.63

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1135.0usft
Project:	Ritchie County, WV	MD Reference:	KB @ 1195.0usft
Site:	Ritchie County 515275	North Reference:	Grid
Well:	Well #515275	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
5,624.0	37.80	82.80	5,230.2	4,095.2	90.4	1,181.2	420.9	0.94	-0.93	-0.23
5,721.0	38.10	84.50	5,306.7	4,171.7	97.0	1,240.5	444.0	1.12	0.31	1.75
5,753.0	38.20	84.60	5,331.9	4,196.9	98.8	1,260.1	451.4	0.37	0.31	0.31
5,784.0	39.90	84.40	5,355.9	4,220.9	100.7	1,279.6	458.7	5.50	5.48	-0.65
5,816.0	41.50	84.80	5,380.2	4,245.2	102.7	1,300.3	466.5	5.07	5.00	1.25
5,847.0	44.40	84.90	5,402.9	4,267.9	104.6	1,321.4	474.2	9.36	9.35	0.32
5,878.0	47.30	84.90	5,424.5	4,289.5	106.5	1,343.5	482.4	9.35	9.35	0.00
5,910.0	50.20	85.90	5,445.6	4,310.6	108.5	1,367.5	491.0	9.36	9.06	3.13
5,941.0	53.20	86.10	5,464.8	4,329.8	110.2	1,391.8	499.5	9.69	9.68	0.65
5,973.0	56.50	86.30	5,483.2	4,348.2	111.9	1,417.9	508.6	10.33	10.31	0.63
6,005.0	59.00	87.10	5,500.3	4,365.3	113.4	1,444.9	517.7	8.09	7.81	2.50
6,036.0	61.60	86.50	5,515.6	4,380.6	115.0	1,471.8	526.8	8.55	8.39	-1.94
6,068.0	64.10	85.70	5,530.2	4,395.2	116.9	1,500.2	536.7	8.12	7.81	-2.50
6,099.0	67.10	84.90	5,543.0	4,408.0	119.2	1,528.3	546.8	9.96	9.68	-2.58
6,131.0	69.20	85.20	5,554.9	4,419.9	121.8	1,557.9	557.7	6.62	6.56	0.94
6,194.0	70.30	85.10	5,576.7	4,441.7	126.8	1,616.8	579.1	1.75	1.75	-0.16
6,257.0	70.80	84.30	5,597.7	4,462.7	132.3	1,675.9	601.1	1.44	0.79	-1.27
6,320.0	71.40	84.20	5,618.1	4,483.1	138.2	1,735.3	623.6	0.96	0.95	-0.16
6,383.0	71.10	83.10	5,638.4	4,503.4	144.8	1,794.5	646.7	1.72	-0.48	-1.75
6,446.0	71.40	82.60	5,658.6	4,523.6	152.2	1,853.7	670.6	0.89	0.48	-0.79
6,509.0	70.80	83.30	5,679.0	4,544.0	159.6	1,912.9	694.4	1.42	-0.95	1.11
6,572.0	69.60	84.30	5,700.4	4,565.4	166.0	1,971.8	717.2	2.42	-1.90	1.59
6,636.0	68.20	84.50	5,723.4	4,588.4	171.8	2,031.2	739.6	2.21	-2.19	0.31
6,699.0	68.40	84.20	5,746.7	4,611.7	177.6	2,089.5	761.6	0.54	0.32	-0.48
6,762.0	68.10	85.50	5,770.1	4,635.1	182.8	2,147.8	783.1	1.97	-0.48	2.06
6,825.0	68.60	85.90	5,793.3	4,658.3	187.2	2,206.2	803.9	0.99	0.79	0.63
6,888.0	68.80	86.00	5,816.2	4,681.2	191.3	2,264.7	824.4	0.35	0.32	0.16
6,951.0	69.10	85.90	5,838.8	4,703.8	195.5	2,323.4	845.0	0.50	0.48	-0.16
7,014.0	70.50	85.60	5,860.6	4,725.6	199.9	2,382.3	865.9	2.27	2.22	-0.48
7,077.0	70.80	85.40	5,881.4	4,746.4	204.5	2,441.6	887.1	0.56	0.48	-0.32
7,140.0	71.30	85.50	5,901.9	4,766.9	209.3	2,501.0	908.5	0.81	0.79	0.16
7,203.0	71.60	85.70	5,921.9	4,786.9	213.9	2,560.5	929.7	0.56	0.48	0.32
7,266.0	72.00	84.40	5,941.6	4,806.6	219.0	2,620.1	951.6	2.06	0.63	-2.06
7,329.0	72.30	84.30	5,960.9	4,825.9	224.9	2,679.8	974.1	0.50	0.48	-0.16
7,392.0	70.90	83.60	5,980.8	4,845.8	231.2	2,739.3	997.0	2.46	-2.22	-1.11
7,455.0	70.90	83.70	6,001.4	4,866.4	237.8	2,798.4	1,020.0	0.15	0.00	0.16
7,518.0	71.40	84.40	6,021.8	4,886.8	244.0	2,857.7	1,042.7	1.32	0.79	1.11
7,581.0	72.00	84.10	6,041.6	4,906.6	250.0	2,917.2	1,065.3	1.05	0.95	-0.48
7,645.0	72.40	84.50	6,061.1	4,926.1	256.0	2,977.9	1,088.3	0.86	0.63	0.63
7,708.0	71.40	84.10	6,080.7	4,945.7	262.0	3,037.5	1,110.9	1.70	-1.59	-0.63
7,771.0	70.40	83.50	6,101.3	4,966.3	268.4	3,096.6	1,133.8	1.82	-1.59	-0.95
7,834.0	70.50	83.30	6,122.4	4,987.4	275.2	3,155.6	1,157.0	0.34	0.16	-0.32
7,897.0	70.90	83.80	6,143.2	5,008.2	281.9	3,214.7	1,180.1	0.98	0.63	0.79

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1135.0usft
Project:	Ritchie County, WV	MD Reference:	KB @ 1135.0usft
Site:	Ritchie County 515275	North Reference:	Grid
Well:	Well #515275	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
7,929.0	70.80	81.40	6,153.7	5,018.7	285.8	3,244.7	1,192.3	7.09	-0.31	-7.50
7,960.0	70.50	78.60	6,164.0	5,029.0	290.9	3,273.5	1,205.4	8.58	-0.97	-9.03
7,992.0	70.50	75.80	6,174.7	5,039.7	297.6	3,302.9	1,220.1	8.25	0.00	-8.75
8,023.0	70.60	73.70	6,185.0	5,050.0	305.2	3,331.1	1,235.5	6.40	0.32	-6.77
8,055.0	71.00	70.60	6,195.5	5,060.5	314.5	3,359.8	1,252.5	9.23	1.25	-9.69
8,087.0	71.90	67.90	6,205.7	5,070.7	325.3	3,388.2	1,270.8	8.48	2.81	-8.44
8,118.0	72.10	64.70	6,215.3	5,080.3	337.1	3,415.2	1,289.8	9.84	0.65	-10.32
8,150.0	71.70	61.80	6,225.2	5,090.2	350.8	3,442.4	1,310.6	8.70	-1.25	-9.06
8,182.0	71.80	58.50	6,235.3	5,100.3	365.9	3,468.7	1,332.6	9.80	0.31	-10.31
8,213.0	72.20	55.50	6,244.8	5,109.8	382.0	3,493.4	1,355.0	9.29	1.29	-9.68
8,245.0	72.60	52.50	6,254.5	5,119.5	399.9	3,518.1	1,379.2	9.02	1.25	-9.38
8,276.0	72.30	49.40	6,263.9	5,128.9	418.5	3,541.1	1,403.5	9.58	-0.97	-10.00
8,308.0	72.60	45.80	6,273.5	5,138.5	439.1	3,563.6	1,429.6	10.77	0.94	-11.25
8,339.0	72.50	42.30	6,282.8	5,147.8	460.3	3,584.1	1,455.8	10.78	-0.32	-11.29
8,371.0	73.00	39.30	6,292.3	5,157.3	483.5	3,604.1	1,483.7	9.09	1.56	-9.38
8,402.0	73.50	36.20	6,301.3	5,166.3	506.9	3,622.3	1,511.3	9.71	1.61	-10.00
8,434.0	74.10	33.00	6,310.2	5,175.2	532.2	3,639.7	1,540.5	9.78	1.88	-10.00
8,465.0	75.00	30.10	6,318.4	5,183.4	557.7	3,655.4	1,569.4	9.47	2.90	-9.35
8,497.0	75.90	27.10	6,326.5	5,191.5	584.9	3,670.2	1,599.6	9.50	2.81	-9.38
8,529.0	76.40	23.50	6,334.1	5,199.1	613.0	3,683.5	1,630.3	11.03	1.56	-11.25
8,560.0	76.70	19.90	6,341.4	5,206.4	641.0	3,694.6	1,660.3	11.34	0.97	-11.61
8,592.0	77.20	16.20	6,348.6	5,213.6	670.6	3,704.3	1,691.5	11.37	1.56	-11.56
8,623.0	78.20	13.20	6,355.2	5,220.2	699.9	3,711.9	1,721.8	9.99	3.23	-9.68
8,655.0	78.80	10.30	6,361.6	5,226.6	730.6	3,718.3	1,753.0	9.08	1.88	-9.06
8,686.0	79.10	6.10	6,367.5	5,232.5	760.7	3,722.7	1,783.1	13.33	0.97	-13.55
8,718.0	80.00	3.10	6,373.3	5,238.3	792.1	3,725.2	1,813.9	9.64	2.81	-9.38
8,750.0	81.40	359.90	6,378.5	5,243.5	823.6	3,726.0	1,844.4	10.79	4.38	-10.00
8,781.0	82.70	357.00	6,382.8	5,247.8	854.3	3,725.2	1,873.6	10.17	4.19	-9.35
8,813.0	83.10	353.10	6,386.7	5,251.7	886.0	3,722.4	1,903.2	12.16	1.25	-12.19
8,844.0	83.20	350.00	6,390.4	5,255.4	916.4	3,717.9	1,931.1	9.93	0.32	-10.00
8,875.0	83.60	346.60	6,394.0	5,259.0	946.5	3,711.7	1,958.2	10.97	1.29	-10.97
8,907.0	84.80	343.70	6,397.2	5,262.2	977.3	3,703.5	1,985.4	9.76	3.75	-9.06
8,939.0	85.80	340.60	6,399.9	5,264.9	1,007.7	3,693.7	2,011.8	10.15	3.13	-9.69
8,970.0	86.00	337.70	6,402.1	5,267.1	1,036.6	3,682.7	2,036.4	9.35	0.65	-9.35
LP= 9902' MD/6404' TVD										
9,002.0	86.60	333.80	6,404.1	5,269.1	1,065.7	3,669.6	2,060.6	12.31	1.88	-12.19
9,033.0	88.40	331.00	6,405.5	5,270.5	1,093.1	3,655.3	2,082.9	10.73	5.81	-9.03
9,096.0	89.90	329.30	6,406.4	5,271.4	1,147.7	3,623.9	2,126.4	3.60	2.38	-2.70
9,159.0	90.00	330.50	6,406.5	5,271.5	1,202.2	3,592.3	2,169.7	1.91	0.16	1.90
9,222.0	90.40	331.30	6,406.3	5,271.3	1,257.3	3,561.7	2,213.8	1.42	0.63	1.27
9,285.0	90.50	332.50	6,405.8	5,270.8	1,312.9	3,532.0	2,258.7	1.91	0.16	1.90
9,348.0	91.30	333.90	6,404.8	5,269.8	1,369.1	3,503.6	2,304.6	2.56	1.27	2.22



Phoenix Technologies
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1135.0usft
Project:	Ritchie County, WV	MD Reference:	KB @ 1135.0usft
Site:	Ritchie County 515275	North Reference:	Grid
Well:	Well #515275	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	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)
9,411.0	89 80	334.50	6,404.2	5,269.2	1,425.8	3,476.2	2,351.3	2.56	-2.38	0.95
9,474.0	89 70	334.90	6,404.4	5,269.4	1,482.8	3,449.3	2,398.3	0.65	-0.16	0.63
9,537.0	88 30	335.20	6,405.5	5,270.5	1,539.9	3,422.7	2,445.5	2.27	-2.22	0.48
9,601.0	89 10	334.90	6,407.0	5,272.0	1,597.9	3,395.7	2,493.5	1.33	1.25	-0.47
9,664.0	89 30	334.40	6,407.9	5,272.9	1,654.8	3,368.7	2,540.5	0.85	0.32	-0.79
9,727.0	88 40	334.30	6,409.1	5,274.1	1,711.6	3,341.5	2,587.2	1.44	-1.43	-0.16
9,790.0	88 40	334.30	6,410.9	5,275.9	1,768.3	3,314.2	2,633.9	0.00	0.00	0.00
9,853.0	88 50	333.70	6,412.6	5,277.6	1,824.9	3,286.6	2,680.4	0.97	0.16	-0.95
9,916.0	89 30	334.60	6,413.8	5,278.8	1,881.6	3,259.1	2,727.0	1.91	1.27	1.43
9,979.0	89 60	334.80	6,414.4	5,279.4	1,938.6	3,232.2	2,774.0	0.57	0.48	0.32
10,043.0	89 70	334.10	6,414.8	5,279.8	1,996.3	3,204.6	2,821.6	1.10	0.16	-1.09
10,106.0	89 50	334.50	6,415.3	5,280.3	2,053.1	3,177.3	2,868.3	0.71	-0.32	0.63
10,168.0	89.70	333.90	6,415.7	5,280.7	2,108.9	3,150.3	2,914.2	1.02	0.32	-0.97
10,232.0	89 00	335.10	6,416.4	5,281.4	2,166.7	3,122.7	2,961.8	2.17	-1.09	1.88
10,294.0	89.30	335.20	6,417.3	5,282.3	2,222.9	3,096.7	3,008.4	0.51	0.48	0.16
10,357.0	89.50	334.20	6,418.0	5,283.0	2,279.9	3,069.7	3,055.4	1.62	0.32	-1.59
10,421.0	88.60	335.90	6,419.1	5,284.1	2,337.9	3,042.8	3,103.4	3.01	-1.41	2.66
10,483.0	88.70	335.60	6,420.5	5,285.5	2,394.4	3,017.3	3,150.4	0.51	0.16	-0.48
10,547.0	88.80	335.50	6,421.9	5,286.9	2,452.6	2,990.8	3,198.8	0.22	0.16	-0.16
10,610.0	89 10	335.00	6,423.1	5,288.1	2,509.8	2,964.4	3,246.2	0.93	0.48	-0.79
10,673.0	89.20	334.60	6,424.0	5,289.0	2,566.8	2,937.6	3,293.3	0.65	0.16	-0.63
10,736.0	88.00	334.90	6,425.5	5,290.5	2,623.8	2,910.8	3,340.3	1.96	-1.90	0.48
10,799.0	87.80	334.80	6,427.8	5,292.8	2,680.8	2,884.0	3,387.4	0.35	-0.32	-0.16
10,863.0	88 00	335.60	6,430.2	5,295.2	2,738.9	2,857.2	3,435.5	1.29	0.31	1.25
10,925.0	89.60	337.00	6,431.5	5,296.5	2,795.6	2,832.3	3,482.8	3.43	2.58	2.26
10,988.0	91.90	337.70	6,430.7	5,295.7	2,853.7	2,808.0	3,531.7	3.82	3.65	1.11
11,052.0	91 30	336.60	6,428.9	5,293.9	2,912.7	2,783.2	3,581.3	1.96	-0.94	-1.72
11,115.0	91.40	336.00	6,427.4	5,292.4	2,970.4	2,757.8	3,629.4	0.97	0.16	-0.95
11,178.0	90.70	336.40	6,426.2	5,291.2	3,028.0	2,732.4	3,677.5	1.28	-1.11	0.63
11,241.0	91.10	335.90	6,425.2	5,290.2	3,085.6	2,707.0	3,725.5	1.02	0.63	-0.79
11,304.0	89 80	335.60	6,424.8	5,289.8	3,143.1	2,681.1	3,773.3	2.12	-2.06	-0.48
11,367.0	90.00	335.30	6,424.9	5,289.9	3,200.4	2,654.9	3,820.9	0.57	0.32	-0.48
11,430.0	90.10	335.50	6,424.8	5,289.8	3,257.6	2,628.7	3,868.4	0.35	0.16	0.32
11,493.0	90.00	335.40	6,424.8	5,289.8	3,314.9	2,602.5	3,915.9	0.22	-0.16	-0.16
11,557.0	90.40	334.40	6,424.5	5,289.5	3,372.9	2,575.4	3,963.8	1.68	0.63	-1.56
11,620.0	90.80	334.00	6,423.9	5,288.9	3,429.6	2,547.9	4,010.5	0.90	0.63	-0.63
11,683.0	90 80	332.70	6,423.0	5,288.0	3,485.9	2,519.7	4,056.5	2.06	0.00	-2.06
11,746.0	90.20	332.40	6,422.4	5,287.4	3,541.8	2,490.6	4,101.9	1.06	-0.95	-0.48
11,810.0	90 50	332.60	6,422.1	5,287.1	3,598.6	2,461.1	4,148.0	0.56	0.47	0.31
11,873.0	90.90	332.10	6,421.3	5,286.3	3,654.4	2,431.9	4,193.2	1.02	0.63	-0.79
11,935.0	90 60	332.30	6,420.5	5,285.5	3,709.2	2,402.9	4,237.6	0.58	-0.48	0.32
11,997.0	90 70	332.80	6,420.2	5,285.2	3,728.7	2,392.8	4,253.5	2.32	0.45	2.27
12,020.0	87.90	335.40	6,421.0	5,286.0	3,785.4	2,365.3	4,300.0	6.06	-4.44	4.13

Database: EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
Company: EQT Production - Marcellus	TVD Reference:	KB @ 1135.0usft
Project: Ritchie County, WV	MD Reference:	KB @ 1135.0usft
Site: Ritchie County 515275	North Reference:	Grd
Well: Well #515275	Survey Calculation Method:	Minimum Curvature
Wellbore: Main Wellbore		
Design: 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)
12,082.0	87.20	334.80	6,423.6	5,288.6	3,841.6	2,339.2	4,346.5	1.49	-1.13	-0.97
12,146.0	87.20	334.50	6,426.8	5,291.8	3,899.4	2,311.8	4,394.2	0.47	0.00	-0.47
12,209.0	87.50	335.20	6,429.7	5,294.7	3,956.3	2,285.1	4,441.3	1.21	0.48	1.11
12,272.0	88.50	335.60	6,431.9	5,296.9	4,013.6	2,258.9	4,488.8	1.71	1.59	0.63
12,335.0	89.10	336.60	6,433.2	5,298.2	4,071.2	2,233.4	4,536.8	1.85	0.95	1.59
Deepest Point of Well= 12397' MD/6433' TVD										
12,397.0	90.80	337.00	6,433.3	5,298.3	4,128.1	2,208.9	4,584.5	2.82	2.74	0.65
12,461.0	90.90	338.30	6,432.3	5,297.3	4,187.3	2,184.6	4,634.4	2.04	0.16	2.03
12,524.0	91.20	336.60	6,431.1	5,296.1	4,245.5	2,160.5	4,683.3	2.74	0.48	-2.70
12,587.0	90.60	334.60	6,430.2	5,295.2	4,302.9	2,134.4	4,731.0	3.31	-0.95	-3.17
12,650.0	90.30	334.80	6,429.7	5,294.7	4,359.8	2,107.5	4,778.0	0.57	-0.48	0.32
12,713.0	91.00	334.20	6,428.9	5,293.9	4,416.7	2,080.4	4,824.9	1.46	1.11	-0.95
12,776.0	91.20	333.80	6,427.7	5,292.7	4,473.3	2,052.8	4,871.4	0.71	0.32	-0.63
12,840.0	91.00	333.60	6,426.5	5,291.5	4,530.6	2,024.4	4,918.3	0.44	-0.31	-0.31
12,903.0	90.60	333.40	6,425.6	5,290.6	4,587.0	1,996.3	4,964.5	0.71	-0.63	-0.32
12,966.0	90.30	332.40	6,425.1	5,290.1	4,643.1	1,967.6	5,010.1	1.66	-0.48	-1.59
13,029.0	90.20	331.50	6,424.9	5,289.9	4,698.7	1,938.0	5,055.1	1.44	-0.16	-1.43
13,092.0	90.30	332.80	6,424.6	5,289.6	4,754.4	1,908.6	5,100.2	2.07	0.16	2.06
13,155.0	91.00	335.10	6,423.9	5,288.9	4,811.0	1,880.9	5,146.6	3.82	1.11	3.65
13,218.0	90.90	334.80	6,422.8	5,287.8	4,868.1	1,854.2	5,193.8	0.50	-0.16	-0.48
13,281.0	90.80	335.00	6,421.9	5,286.9	4,925.1	1,827.5	5,241.0	0.35	-0.16	0.32
13,344.0	90.20	334.80	6,421.3	5,286.3	4,982.2	1,800.8	5,288.1	1.00	-0.95	-0.32
13,407.0	89.70	334.70	6,421.4	5,286.4	5,039.1	1,773.9	5,335.2	0.81	-0.79	-0.16
13,470.0	90.00	335.30	6,421.6	5,286.6	5,096.2	1,747.3	5,382.4	1.06	0.48	0.95
13,533.0	89.90	336.20	6,421.6	5,286.6	5,153.7	1,721.4	5,430.2	1.44	-0.16	1.43
13,596.0	89.70	336.30	6,421.8	5,286.8	5,211.3	1,696.0	5,478.3	0.35	-0.32	0.16
13,659.0	89.50	335.90	6,422.3	5,287.3	5,268.9	1,670.5	5,526.3	0.71	-0.32	-0.63
13,722.0	89.10	335.80	6,423.0	5,288.0	5,326.4	1,644.8	5,574.1	0.65	-0.63	-0.16
Final Survey= 13786' MD/6424' TVD										
13,786.0	89.00	335.70	6,424.1	5,289.1	5,384.8	1,618.5	5,622.7	0.22	-0.16	-0.16
Projection to TD= 13847' MD/6425' TVD										
13,847.0	89.00	335.70	6,425.2	5,290.2	5,440.3	1,593.4	5,668.9	0.00	0.00	0.00

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
3,168.0	3,167.9	-21.3	-5.7	Gyro Tie In= 3168' MD	
9,002.0	6,404.1	1,065.7	3,669.6	LP= 9002' MD/6404' TVD	
12,397.0	6,433.3	4,128.1	2,208.9	Deepest Point of Well= 12397' MD/6433' TVD	
13,786.0	6,424.1	5,384.8	1,618.5	Final Survey= 13786' MD/6424' TVD	
13,847.0	6,425.2	5,440.3	1,593.4	Projection to TD= 13847' MD/6425' TVD	

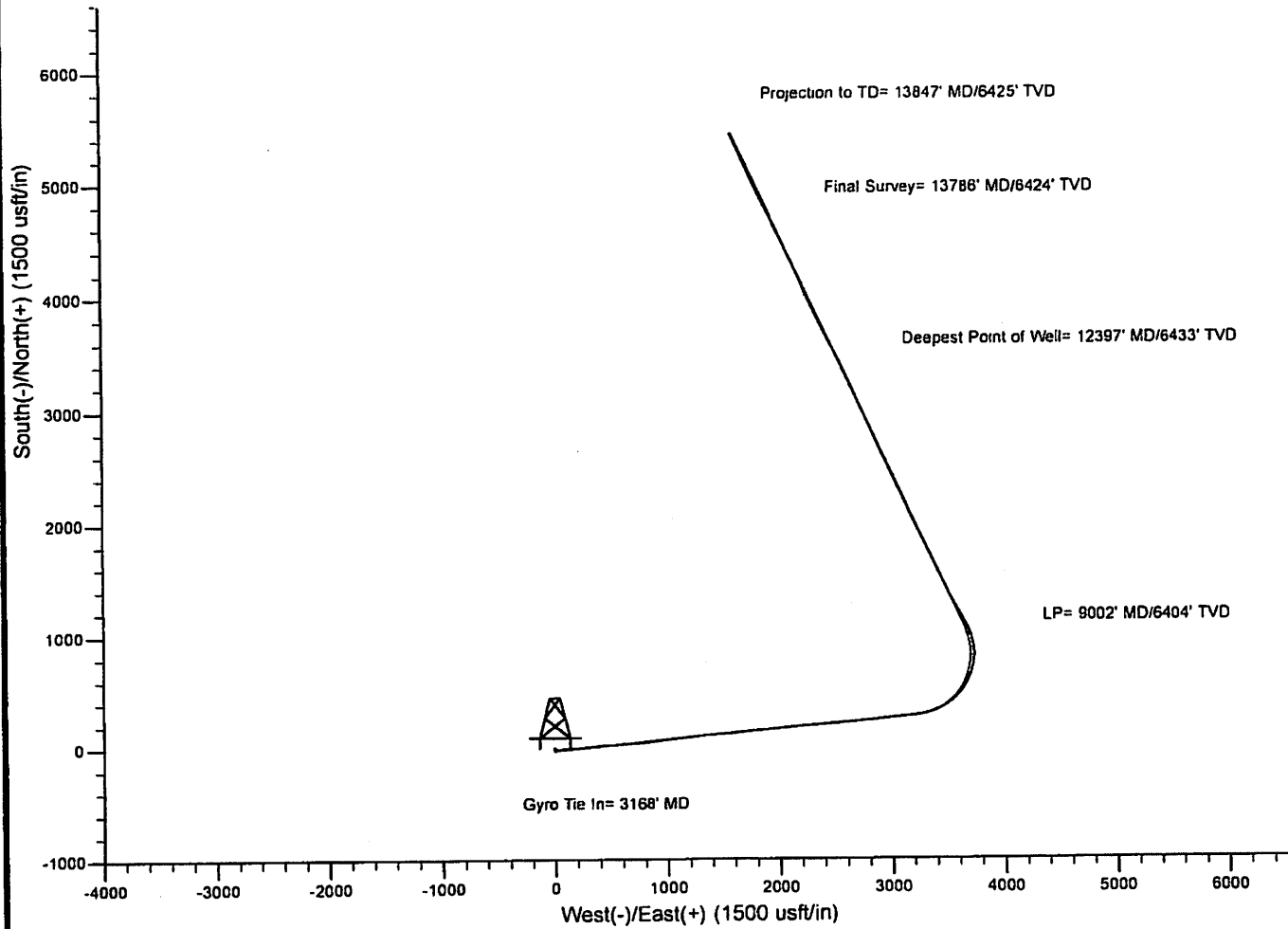
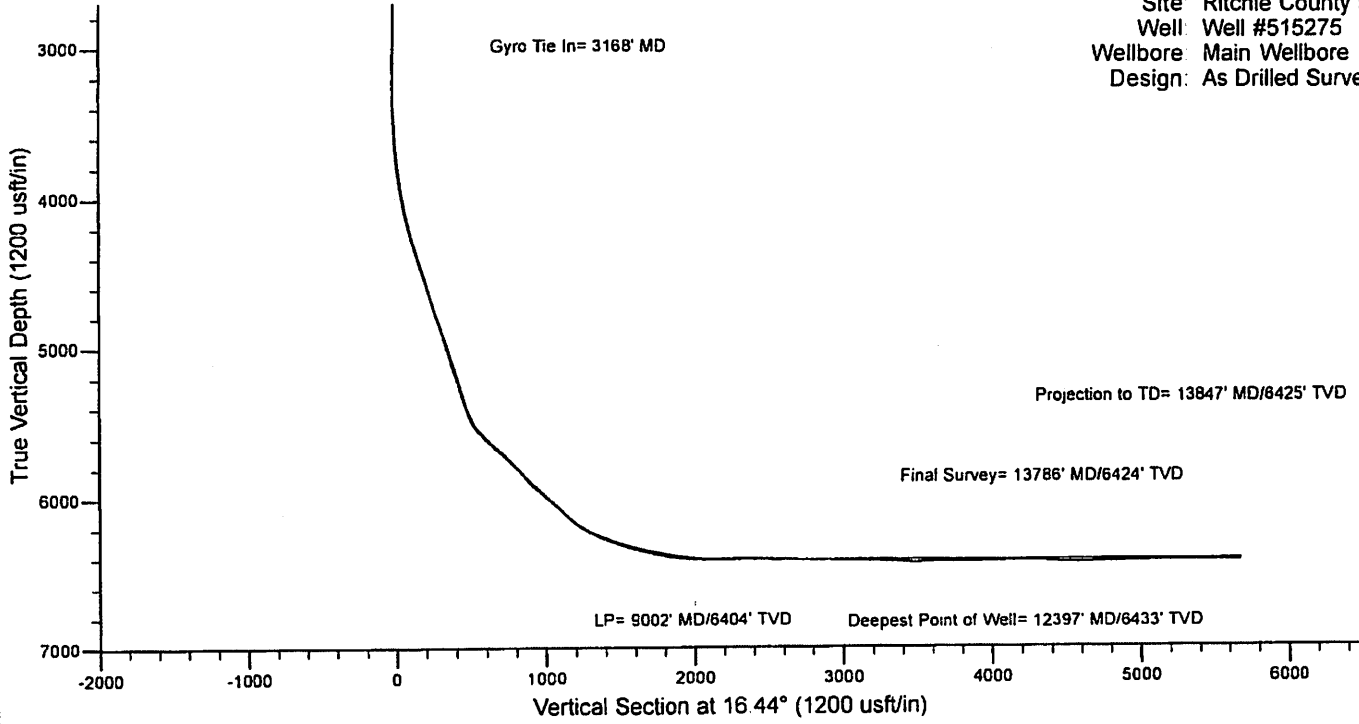
Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 515275
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 1135.0usft
Project:	Ritchie County, WV	MD Reference:	KB @ 1135.0usft
Site:	Ritchie County 515275	North Reference:	Grid:
Well:	Well #S15275	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	As Drilled Surveys		

Checked By: _____ Approved By: _____ Date _____



EQT Production - Marcellus

Project: Ritchie County, WV
Site: Ritchie County 515275
Well: Well #515275
Wellbore: Main Wellbore
Design: As Drilled Surveys



515275- 47-085-10093-0000- Perforations

Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation:Sleeve	4/29/2015	13,833.00	13,835.00	10	MARCELLUS
1	6/10/2015	13,689.00	13,781.00	32	MARCELLUS
2	6/11/2015	13,539.00	13,661.00	40	MARCELLUS
3	6/11/2015	13,389.00	13,511.00	40	MARCELLUS
4	6/11/2015	13,239.00	13,361.00	40	MARCELLUS
5	6/11/2015	13,089.00	13,211.00	40	MARCELLUS
6	6/11/2015	12,939.00	13,061.00	40	MARCELLUS
7	6/12/2015	12,789.00	12,911.00	40	MARCELLUS
8:01	6/12/2015	12,788.00	12,910.00	32	MARCELLUS
8	6/12/2015	12,639.00	12,761.00	40	MARCELLUS
9	6/12/2015	12,489.00	12,611.00	40	MARCELLUS
10	6/12/2015	12,339.00	12,461.00	40	MARCELLUS
11	6/13/2015	12,189.00	12,311.00	40	MARCELLUS
12	6/13/2015	12,039.00	12,161.00	40	MARCELLUS
13	6/14/2015	11,889.00	12,011.00	40	MARCELLUS
14	6/14/2015	11,739.00	11,861.00	40	MARCELLUS
15	6/14/2015	11,589.00	11,711.00	40	MARCELLUS
16	6/14/2015	11,439.00	11,561.00	40	MARCELLUS
17	6/14/2015	11,289.00	11,411.00	40	MARCELLUS
18	6/14/2015	11,139.00	11,261.00	40	MARCELLUS
19	6/15/2015	10,989.00	11,111.00	40	MARCELLUS
20	6/15/2015	10,839.00	10,961.00	40	MARCELLUS
21	6/15/2015	10,689.00	10,811.00	40	MARCELLUS
22	6/15/2015	10,539.00	10,661.00	40	MARCELLUS
23	6/15/2015	10,389.00	10,511.00	40	MARCELLUS
24	6/15/2015	10,239.00	10,361.00	40	MARCELLUS
25	6/16/2015	10,089.00	10,211.00	40	MARCELLUS
26	6/16/2015	9,939.00	10,061.00	40	MARCELLUS
27	6/16/2015	9,789.00	9,911.00	40	MARCELLUS
28	6/16/2015	9,639.00	9,761.00	40	MARCELLUS
29	6/16/2015	9,489.00	9,611.00	40	MARCELLUS
30	6/16/2015	9,339.00	9,461.00	40	MARCELLUS
31	6/16/2015	9,189.00	9,311.00	40	MARCELLUS
32	6/17/2015	9,039.00	9,161.00	40	MARCELLUS
33	6/17/2015	8,889.00	9,011.00	40	MARCELLUS

515275-47-085-10093-0000- 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	6/10/2015	27.3	7,750.00	8,123.00	5,441.00	0	374	0
1	6/10/2015	94	8,350.00	8,552.00	3,397.00	200,480	5564	0
2	6/11/2015	96.8	8,411.00	8,618.00	3,423.00	200,980	5751	0
3	6/11/2015	93.3	8,160.00	8,495.00	3,657.00	198,760	5868	0
4	6/11/2015	96.3	8,260.00	8,624.00	3,545.00	202,780	5467	0
5	6/11/2015	95.2	8,352.00	8,575.00	3,421.00	200,060	5429	0
6	6/11/2015	91.1	8,366.00	8,682.00	3,316.00	200,580	5407	0
7	6/12/2015	96.5	8,564.00	8,771.00	3,702.00	200,940	5117	0
8/01	6/12/2015	9.7	4,652.00	6,007.00	4,903.00	0	3021	0
8	6/12/2015	90	8,220.00	8,551.00	3,795.00	203,140	5552	0
9	6/12/2015	96.5	8,066.00	8,222.00	3,638.00	200,320	5295	0
10	6/13/2015	93.7	7,914.00	8,197.00	3,417.00	200,040	5695	0
11	6/13/2015	95.2	7,845.00	8,070.00	3,506.00	200,780	5258	0
12	6/14/2015	95.7	7,894.00	8,080.00	3,504.00	202,220	5295	0
13	6/14/2015	97.7	7,910.00	8,182.00	4,063.00	201,220	5214	0
14	6/14/2015	92.6	8,256.00	8,674.00	3,868.00	203,200	5231	0
15	6/14/2015	98	8,147.00	8,569.00	3,533.00	200,360	5271	0
16	6/14/2015	98.2	8,283.00	8,509.00	3,829.00	201,180	5330	0
17	6/14/2015	99.2	8,011.00	8,301.00	3,830.00	200,120	5089	0
18	6/15/2015	97.8	8,008.00	8,213.00	3,713.00	201,360	5184	0
19	6/15/2015	98.2	7,949.00	8,309.00	3,827.00	200,480	5201	0
20	6/15/2015	97.9	8,238.00	8,628.00	4,255.00	198,700	5440	0
21	6/15/2015	96.3	8,267.00	8,527.00	3,958.00	199,320	5338	0
22	6/15/2015	96.1	8,275.00	8,519.00	3,784.00	200,140	5282	0
23	6/15/2015	99.2	7,789.00	8,076.00	3,731.00	200,320	5156	0
24	6/16/2015	98.4	7,906.00	8,238.00	4,920.00	199,840	5087	0
25	6/16/2015	100	7,563.00	7,877.00	3,705.00	199,340	5154	0
26	6/16/2015	99.1	8,012.00	8,532.00	4,055.00	201,820	5267	0
27	6/16/2015	98.5	8,238.00	8,631.00	3,681.00	199,300	5194	0
28	6/16/2015	97.8	8,322.00	8,593.00	3,783.00	199,460	5101	0
29	6/16/2015	99.8	7,918.00	8,308.00	3,664.00	198,860	5128	0
30	6/16/2015	99.50	7,887.00	8,215.00	3,976	200,940	4,887	0
31	6/17/2015	100.30	7,954.00	8,415.00	3,387	204,020	4,973	0
32	6/17/2015	98.20	8,108.00	8,789.00	3,350	204,520	5,094	0
33	6/17/2015	98.60	7,986.00	8,803.00	3,602	199,560	5,023	0

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/10/2015
Job End Date:	6/17/2015
State:	West Virginia
County:	Ritchie
API Number:	47-085-10093-00-00
Operator Name:	EQT Production
Well Name and Number:	515275
Longitude:	-80.95139000
Latitude:	39.26183900
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,381
Total Base Water Volume (gal):	7,464,954
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	Stingray Pressure Pumping, LLC	Carrier/Base Fluid	Water	7732-18-5	100.00000	89.99292	None
Sand (Proppant)	Stingray Pressure Pumping, LLC	Proppant	Silica Substrate	14808-60-7	100.00000	9.57084	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.07119	None
FRA-405	Stingray Pressure Pumping, LLC	Friction reducer	Petroleum distillates	64742-47-8	40.00000	0.02742	None
			Sodium chloride	7647-14-5	10.00000	0.00685	None
			Ammonium chloride	12125-02-9	7.00000	0.00480	None
			Alcohols, C12-16, Ethoxylated	68551-12-2	7.00000	0.00480	None
Hydrochloric Acid (15%)	Stingray Pressure Pumping, LLC	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03328	None
ScaleClear 125	Stingray Pressure Pumping, LLC	Scale inhibitor	Phosphonomethylated polyamine, compd. w/ substituted amine	Proprietary	15.00000	0.00370	None
			Ammonium chloride	12125-02-9	2.50000	0.00062	None

AI 600	Stingray Pressure Pumping, LLC	Acid corrosion inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00062	None
			N,N-Dimethylformamide	68-12-2	20.00000	0.00031	None
			2-Butoxyethanol	111-76-2	15.00000	0.00023	None
			Cinnamaldehyde	104-55-2	15.00000	0.00023	None
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00023	None
			1-Decanol	112-30-1	5.00000	0.00008	None
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)- omega-hydroxy-, branched	127087-87-0	5.00000	0.00008	None
			Isopropanol	67-63-0	2.50000	0.00004	None
			Triethyl phosphate	78-40-0	2.50000	0.00004	None
			1-Octanol	111*87-5	2.50000	0.00004	None
Plexgel 907L-EB	Stingray Pressure Pumping, LLC	Slurried Guar					
			Distillates, hydrotreated light	64742-47-8	50.00000	0.00048	None
			Organophylic clay	Proprietary	2.00000	0.00002	None
			Alcohol ethoxylate	34398-01-1	1.00000	0.00001	None
			Crystalline silica	14808-60-7	0.10000	0.00000	None

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

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

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

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

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

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Submission to FracFocus using Excel Spreadsheets has been turned off.

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

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i Disclosure has been submitted.

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Hydraulic Fracturing Data

Job Start Date 6/10/2015	Job End Date 6/17/2015	API Number 47-085-10093-00-00	State & County West Virginia --- Ritchie
Well Name 515275			
Longitude -80.95139	Latitude 39.261839	Datum NAD83	Federal/Tribal Well?
True Vertical Depth (ft) 6381	Total Water Vol (gal) 7464954	Total Non Water Vol 0	Total Mass (lbs) 69222156



MSDS Chemical Ingredients

	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
<input type="button" value="Edit"/>	Water	Stingray Pressure Pumping, LLC	Carrier/Base Fluid	Water	7732-18-5	100%	89.9929226985%	None	62295041.13
<input type="button" value="Edit"/>	Sand (Proppant)	Stingray Pressure Pumping, LLC	Proppant	Silica Substrate	14808-60-7	100%	9.5708374386%	None	6625140
<input type="button" value="Edit"/>	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0711921196%	None	49280.72
<input type="button" value="Edit"/>	FRA-405	Stingray Pressure Pumping, LLC	Friction reducer	Petroleum distillates	64742-47-8	40%	.0274197407%	None	18980.536
				Sodium chloride	7647-14-5	10%	.0068549352%	None	4745.134
				Ammonium chloride	12125-02-9	7%	.0047984546%	None	3321.594
				Alcohols, C12-16, Ethoxylated	68551-12-2	7%	.0047984546%	None	3321.594
<input type="button" value="Edit"/>	Hydrochloric Acid (15%)	Stingray Pressure Pumping, LLC	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0332797193%	None	23036.939

<input type="button" value="Edit"/>	ScaleClear 125	Stingray Pressure Pumping, LLC	Scale inhibitor	Phosphonomethylated polymine, cmpd. w/ substituted amine	Proprietary	15%	.0036997988%	None	2561.081
				Ammonium chloride	12125-02-9	2.5%	.0006166331%	None	426.847
<input type="button" value="Edit"/>	AI 600	Stingray Pressure Pumping, LLC	Acid corrosion inhibitor	Ethylene glycol	107-21-1	40%	.0006165849%	None	426.813
				N,N-Dimethylformamide	68-12-2	20%	.0003082925%	None	213.407
				2-Butoxyethanol	111-76-2	15%	.0002312193%	None	160.055
				Cinnamaldehyde	104-55-2	15%	.0002312193%	None	160.055
				Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15%	.0002312193%	None	160.055
				1-Decanol	112-30-1	5%	.0000770731%	None	53.352
				Poly(oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl) .omega.-hydroxy-, branched	127087-87-0	5%	.0000770731%	None	53.352
				Isopropanol	67-63-0	2.5%	.0000385366%	None	26.676
				Triethyl phosphate	78-40-0	2.5%	.0000385366%	None	26.676
				1-Octanol	111-87-5	2.5%	.0000385366%	None	26.676
<input type="button" value="Edit"/>	Plexigel 907L-EB	Stingray Pressure Pumping, LLC	Slurried Guar	Distillates, hydrotreated light	64742-47-8	50%	.0004826978%	None	334.134
				Organophytic clay	Proprietary	2%	.0000193079%	None	13.365
				Alcohol ethoxylate	34398-01-1	1%	.000009654%	None	6.683
				Crystalline silica	14808-60-7	.1%	.0000009654%	None	0.668

Non-MSDS Chemical Ingredients

Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
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EQT PRODUCTION COMPANY TAYLOR LEASE 1,600 ACRES± WELL NO. WV 515275

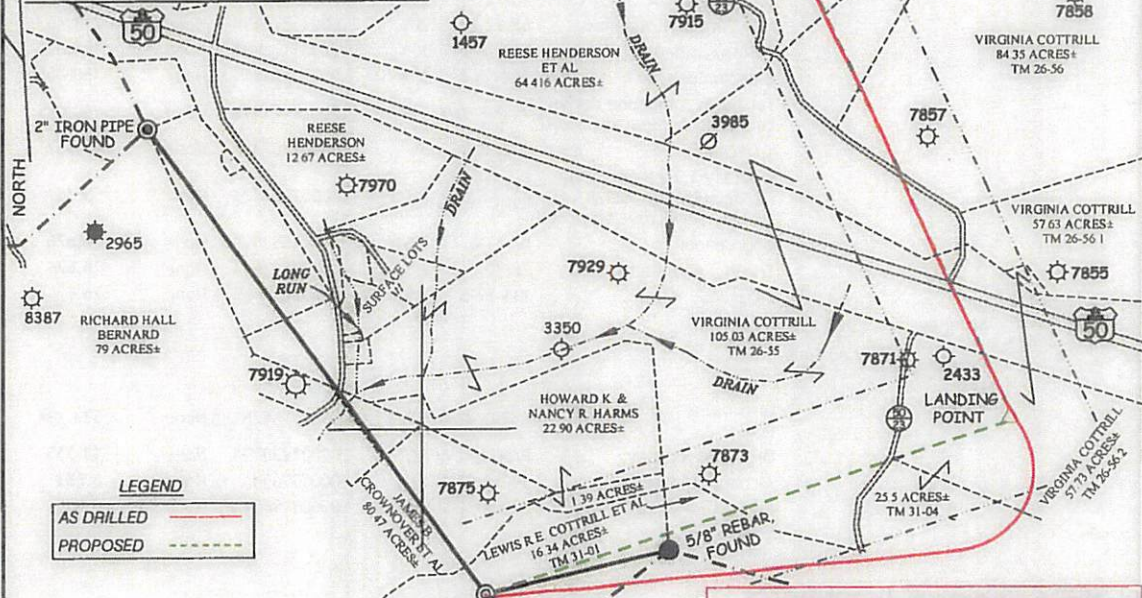
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'27 S.P.C.(FT) N. 280,796.7 E. 1,589,053.2
 NAD'27 GEO. LAT.(N) 39.261839 LONG.(W) 80.951390
 NAD'83 UTM (M) N. 4,345,843.8 E. 504,208.3

LANDING POINT
 NAD'27 S.P.C.(FT) N. 281,967.8 E. 1,592,848.7
 NAD'27 GEO. LAT.(N) 39.265212 LONG.(W) 80.938750
 NAD'83 UTM (M) N. 4,346,218.9 E. 505,297.7

BOTTOM HOLE
 NAD'27 S.P.C.(FT) N. 286,236.3 E. 1,590,658.2
 NAD'27 GEO. LAT.(N) 39.278843 LONG.(W) 80.946031
 NAD'83 UTM (M) N. 4,347,509.2 E. 504,666.6

LATITUDE 39° 17' 30"
NOTES ON SURVEY

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD '27.
2. WELL LAT./LONG. (NAD'27) ESTABLISHED BY DGPS(SURVEY GRADE TIE TO CORS NETWORK).
3. NO WATER WELLS WERE FOUND WITHIN 250 FEET OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS (GREATER THAN 2500 SQUARE FEET) OR DWELLINGS WERE FOUND WITHIN 625 FEET OF CENTER OF PROPOSED WELL PAD.
4. AS DRILLED INFORMATION PROVIDED BY EQT



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

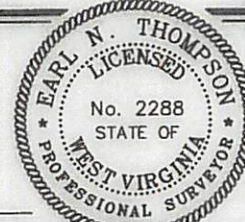
A	THOMAS A. & D. DIANE McCULLOUGH	15.3 AC±	TM 26-18.5
B	THOMAS A. & D. DIANE McCULLOUGH	12.56 AC±	TM 26-18.4
C	THOMAS A. & D. DIANE McCULLOUGH	17.24 AC±	TM 26-18.3
D	THOMAS A. & D. DIANE McCULLOUGH	12.7 AC±	TM 26-18.2
E	CLARIND & CAROLYN J. DAVIS	5.453 AC±	TM 26-18.1
F	CLARIND & CAROLYN J. DAVIS	18.55 AC±	TM 26-18

AS DRILLED COORDINATES FOR WELL NO. WV 515275
 (S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'27 S.P.C.(FT) N. 280,796.7 E. 1,589,053.2
 NAD'27 GEO. LAT.(N) 39.261839 LONG.(W) 80.951390
 NAD'83 UTM (M) N. 4,345,843.8 E. 504,208.3

BOTTOM HOLE
 NAD'27 S.P.C.(FT) N. 286,236.3 E. 1,590,658.2
 NAD'27 GEO. LAT.(N) 39.278844 LONG.(W) 80.946073
 NAD'83 UTM (M) N. 4,347,509.3 E. 504,666.0



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.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE JANUARY 10 20 14
 REVISED MARCH 12 20 15
 OPERATORS WELL NO. WV 515275
 API WELL NO. 47-085-10093-H
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7496ASDRILLED515275
 PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 1000'

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 1,119' (PAD ELEVATION) WATERSHED LONG RUN OF NORTH FORK HUGHES RIVER
 DISTRICT CLAY COUNTY RITCHIE QUADRANGLE PENNSBORO 7.5'

SURFACE OWNER DEWAYNE BRITTON ET UX ACREAGE 140.421
 ROYALTY OWNER E. R. TAYLOR HEIRS ACREAGE 1,600±

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 _____

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 BRIDGEPORT, WV 26330

07/01/2016