

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 514139

API: 47 - 017 - 06588

Submission: Initial Amended

Notes: Correction to Production Cement Top
(MD)

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Office of Oil and Gas
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WV Department of
Environmental Protection

AX *ay/ally*
04/01/2016

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

API 47- 017 - 06588 County DODDRIDGE District New Milton
Quad 611- Smithburg 7.5' Pad Name SMI28 Field/Pool Name _____
Farm name Sue Ann Spiker Well Number 514139
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 4,345,995 Easting 552,581
Landing Point of Curve Northing 4,346,251 Easting 523,392
Bottom Hole Northing 4,345,156 Easting 523,925

Elevation (ft) 1,254 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)

Synthetic base Mud 12.4 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 11/17/2014 Date drilling commenced 1/12/2015 Date drilling ceased 4/14/2015
Date completion activities began 5/7/2015 Date completion activities ceased 5/12/2015
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 35, 92, 113, 136, 273, 298, 379, 403, 440, 491, 513, 583 Open mine(s) (Y/N) depths N
Salt water depth(s) ft N/A Void(s) encountered (Y/N) depths N
Coal depth(s) ft 45, 281, 557, 628, 1207, 1376 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

04/01/2016

API 47-017 - 06588 Farm name Sue Ann Spiker Well number 514139

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"	72'	NEW	A-500 81.3LB/FT	NONE	Y
Surface	17.5"	13.375"	669'	NEW	J-55 54.5LB/FT	540'	Y
Coal							
Intermediate 1	12.375"	9.625"	5,328'	NEW	P-110 40LB/FT	1084', 3162'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	12,680'	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	69.1	15.6	1.18	81.54	0	8
Surface	CLASS A	590	15.6	1.20	708	0	8
Coal							
Intermediate 1	CLASS A / A / A	430 / 355 / 1080	14.2 / 15.6 / 15.6	1.24 / 1.18 / 1.18	533 / 418.9 / 1274.4	0	8
Intermediate 2							
Intermediate 3							
Production	Class A, 50/50 POZ Class H	485 / 620	14.2 / 15.2	1.26 / 1.96	611.1 / 1215.2 / 1826.3	4,708'	72
Tubing							

Drillers TD (ft) 12,680' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,372'

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: 1.5, 10
 INTERMEDIATE- RAN AT LEAST EVERY 500' FEET JOINTS: 1, 11, 23, 35, 47, 59, 69, 82, 93, 104, 115
 PRODUCTION- RAN 1 CENTRALIZER ON EVERY JOINT FROM TD to 5,300'

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 - 6588 Farm name Sue Ann Spiker Well number 514139

Drilling Contractor Orion Drilling
Address 601 Aviation Way City Reynoldsville State PA Zip 15851

Logging Company _____
Address _____ City _____ State _____ Zip _____

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company CJ Energy Services
Address 2504 Smith Creek Road City Waynesburg State PA Zip 15370

514139 Final Formations API#47-017-06588

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1			570
SAND / SHALE	1			55
COAL	55			60
SAND / SHALE	60			281
COAL	281			285
SAND / SHALE	285			557
COAL	557			560
SAND / SHALE	560			628
COAL	628			633
SAND / SHALE	633			1,207.00
COAL	1,207.00			1,210.00
SAND / SHALE	1,210.00			1,376.00
COAL	1,376.00			1,381.00
SAND / SHALE	1,381.00			1,753.00
MAXTON	1,753.00			1,954.00
BIG LIME	1,954.00			2,048.00
BIG INJUN	2,048.00			2,251.00
WEIR	2,251.00			2,351.00
SAND / SHALE	2,351.00			2,458.00
GANTZ	2,458.00			2,580.00
FIFTY FOOT	2,580.00			2,664.00
GORDON	2,664.00			3,264.00
WARREN	3,264.00			3,343.00
SPEECHLEY	3,343.00			4,006.00
BALLTOWN B	4,006.00			4,216.00
BRADFORD	4,216.00			4,516.00
RILEY	4,516.00			4,931.00
BENSON	4,931.00			5,190.00
ALEXANDER	5,190.00			6,363.00
RHINESTREET	6,363.00	6,030.60		6,509.00
SONYEA	6,571.00	6,097.30		6,750.00
MIDDLESEX	6,750.00	6,158.80		6,842.00
GENESEE	6,842.00	6,190.90		6,950.00
GENESEO	6,950.00	6,228.80		7,032.00
TULLY	7,032.00	6,254.80		7,088.00
HAMILTON	7,088.00	6,271.60		7,178.00
MARCELLUS	7,178.00	6,298.30		



EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 514139

Well #514139

API # 47-1706588

Main Wellbore

Design: 514139 AS Drilled Surveys

Standard Survey Report

16 April, 2015



Where energy meets innovation.



PHX
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514139
Company:	EQT Production - Marbellus	TVD Reference:	KB@23 @ 1277.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@23 @ 1277.0usft
Site:	Doddridge County 514139	North Reference:	Grid
Well:	Well #514139	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514139 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 514139				
Site Position:		Northing:	280,283.80 usft	Latitude:	39 26
From:	Map	Easting:	1,649,352.00 usft	Longitude:	-80 74
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.79 °

Well	Well #514139					
Well Position	+N-S	0 0 usft	Northing:	280,283.80 usft	Latitude:	39° 15' 46.472 N
	+E-W	0 0 usft	Easting:	1,649,352.00 usft	Longitude:	80° 44' 18.347 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	1,254.0 usft

Wellbore	Main Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	3/16/2015	-8.48	66.74	52,171

Design	514139 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	122.92

Survey Program	Date	4/16/2015			
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5.330.0	514139 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
0.00	12,680.0	514139 PHX MWD (Main Wellbore)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM	

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	-1,277.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.34	219.59	100.0	-1,177.0	-0.2	-0.2	0.0	0.34	0.34	0.00
200.0	0.37	239.70	200.0	-1,077.0	-0.6	-0.7	-0.2	0.13	0.03	20.11
300.0	0.42	260.90	300.0	-977.0	-0.9	-1.3	-0.6	0.15	0.05	21.20
400.0	0.32	268.32	400.0	-877.0	-0.9	-2.0	-1.1	0.11	-0.10	7.43
500.0	0.21	300.16	500.0	-777.0	-0.8	-2.4	-1.6	0.18	-0.12	31.83
600.0	0.18	350.41	600.0	-677.0	-0.6	-2.6	-1.8	0.16	-0.03	50.25
700.0	0.23	334.25	700.0	-577.0	-0.3	-2.7	-2.1	0.08	0.06	-16.15



PHX
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514139
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1277.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@23 @ 1277.0usft
Site:	Doddridge County 514139	North Reference:	Grid
Well:	Well #514139	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514139 AS Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
800.0	0.24	331.46	800.0	-477.0	0.1	-2.9	-2.5	0.01	0.01	-2.80
900.0	0.27	324.01	900.0	-377.0	0.5	-3.1	-2.9	0.04	0.03	-7.45
1,000.0	0.23	331.53	1,000.0	-277.0	0.8	-3.3	-3.3	0.05	-0.03	7.52
1,100.0	0.23	27.07	1,100.0	-177.0	1.2	-3.4	-3.5	0.22	-0.01	55.54
1,200.0	0.38	50.55	1,200.0	-77.0	1.6	-3.0	-3.4	0.20	0.15	23.48
1,300.0	0.38	52.59	1,300.0	23.0	2.0	-2.5	-3.2	0.01	0.00	2.05
1,400.0	0.43	55.23	1,400.0	123.0	2.4	-1.9	-2.9	0.06	0.05	2.63
1,500.0	0.42	56.91	1,500.0	223.0	2.8	-1.3	-2.6	0.02	-0.01	1.69
1,600.0	0.34	49.37	1,600.0	323.0	3.2	-0.7	-2.4	0.10	-0.08	-7.54
1,700.0	0.33	35.56	1,700.0	423.0	3.7	-0.4	-2.3	0.08	-0.01	-13.81
1,800.0	0.35	43.73	1,800.0	523.0	4.1	0.0	-2.2	0.05	0.02	8.17
1,900.0	0.21	83.66	1,900.0	623.0	4.4	0.4	-2.0	0.23	-0.13	39.95
2,000.0	0.16	105.66	2,000.0	723.0	4.3	0.7	-1.7	0.09	-0.05	21.97
2,100.0	0.12	108.54	2,100.0	823.0	4.3	1.0	-1.5	0.04	-0.04	2.88
2,200.0	0.09	148.85	2,200.0	923.0	4.2	1.1	-1.3	0.08	-0.03	40.31
2,300.0	0.11	204.89	2,300.0	1,023.0	4.0	1.1	-1.2	0.10	0.02	56.04
2,400.0	0.19	240.04	2,400.0	1,123.0	3.8	0.9	-1.3	0.12	0.08	35.15
2,500.0	0.24	244.06	2,500.0	1,223.0	3.7	0.6	-1.5	0.06	0.05	4.02
2,600.0	0.31	252.16	2,600.0	1,323.0	3.5	0.2	-1.8	0.08	0.07	8.10
2,700.0	0.36	260.28	2,700.0	1,423.0	3.3	-0.4	-2.2	0.06	0.04	8.11
2,800.0	0.40	260.88	2,800.0	1,523.0	3.2	-1.1	-2.7	0.05	0.05	0.60
2,900.0	0.45	268.72	2,900.0	1,623.0	3.2	-1.8	-3.2	0.08	0.05	7.83
3,000.0	0.49	265.54	3,000.0	1,723.0	3.1	-2.6	-3.9	0.04	0.03	-3.17
3,100.0	0.48	266.36	3,100.0	1,823.0	3.1	-3.5	-4.6	0.01	-0.01	0.82
3,200.0	0.50	273.14	3,200.0	1,923.0	3.1	-4.3	-5.3	0.06	0.02	6.78
3,300.0	0.48	271.95	3,299.9	2,022.9	3.1	-5.2	-6.0	0.02	-0.02	-1.19
3,400.0	0.50	274.98	3,399.9	2,122.9	3.2	-6.0	-6.8	0.03	0.02	3.03
3,500.0	0.50	282.21	3,499.9	2,222.9	3.3	-6.9	-7.6	0.06	0.00	7.22
3,600.0	0.48	281.29	3,599.9	2,322.9	3.5	-7.7	-8.4	0.02	-0.02	-0.91
3,700.0	0.54	278.86	3,699.9	2,422.9	3.6	-8.6	-9.2	0.06	0.06	-2.44
3,800.0	0.57	285.16	3,799.9	2,522.9	3.8	-9.6	-10.1	0.07	0.02	6.30
3,900.0	0.61	288.05	3,899.9	2,622.9	4.1	-10.5	-11.1	0.05	0.04	2.89
4,000.0	0.61	289.99	3,999.9	2,722.9	4.5	-11.5	-12.1	0.02	0.00	1.94
4,100.0	0.67	300.93	4,099.9	2,822.9	4.9	-12.6	-13.2	0.14	0.06	10.94
4,200.0	0.80	301.26	4,199.9	2,922.9	5.6	-13.6	-14.5	0.13	0.13	0.32
4,300.0	0.90	310.16	4,299.9	3,022.9	6.5	-14.8	-16.0	0.17	0.10	8.92
4,400.0	1.00	312.76	4,399.9	3,122.9	7.6	-16.1	-17.6	0.11	0.10	2.58
4,500.0	1.06	316.18	4,499.9	3,222.9	8.8	-17.4	-19.4	0.09	0.06	3.42
4,600.0	1.31	317.95	4,599.8	3,322.8	10.3	-18.8	-21.4	0.25	0.25	1.77
4,700.0	1.58	327.42	4,699.8	3,422.8	12.3	-20.3	-23.7	0.36	0.27	9.47
4,800.0	1.59	330.34	4,799.8	3,522.8	14.7	-21.7	-26.2	0.08	0.01	2.92
4,900.0	1.65	329.66	4,899.7	3,622.7	17.2	-23.1	-28.7	0.06	0.06	-0.46



PHX
Survey Report



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Well:	Well #514139	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514139 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)
5,000.0	170	330.60	4,999.7	3,722.7	19.7	-24.6	-31.3	0.05	0.04	0.72
5,100.0	170	329.82	5,099.6	3,822.6	22.3	-26.0	-34.0	0.02	0.00	-0.79
5,200.0	192	331.59	5,199.6	3,922.6	25.0	-27.6	-36.8	0.22	0.22	1.77
5,300.0	185	334.18	5,299.5	4,022.5	28.0	-29.1	-39.6	0.11	-0.07	2.59
Gyro Tie Ins 5330' MD										
5,330.0	2.00	334.68	5,329.5	4,052.5	28.9	-29.5	-40.5	0.50	0.50	1.67
5,400.0	2.34	346.91	5,399.5	4,122.5	31.4	-30.4	-42.5	0.82	0.48	17.47
KOP=5411' MD										
5,411.0	2.40	348.50	5,410.5	4,133.5	31.8	-30.5	-42.9	0.82	0.56	14.45
5,500.0	12.24	30.33	5,498.7	4,221.7	42.0	-26.6	-45.2	11.88	11.06	47.00
5,600.0	22.20	57.34	5,593.8	4,316.8	62.9	-4.9	-38.3	12.52	9.95	27.01
5,700.0	27.74	74.28	5,684.6	4,407.6	78.3	33.8	-14.2	9.00	5.54	16.94
5,800.0	37.74	72.93	5,768.6	4,491.6	94.6	85.3	20.2	10.02	10.00	-1.35
5,900.0	47.80	71.95	5,841.8	4,564.8	114.1	150.4	64.2	10.08	10.06	-0.98
6,000.0	57.91	71.59	5,902.2	4,625.2	139.4	225.8	113.8	10.11	10.11	-0.36
6,100.0	68.60	71.18	5,946.9	4,669.9	167.8	310.4	169.4	10.70	10.69	-0.41
6,200.0	70.94	70.23	5,981.3	4,704.3	198.9	399.0	226.8	2.50	2.34	-0.95
6,300.0	72.72	69.78	6,012.0	4,735.0	231.5	488.4	284.2	1.83	1.78	-0.45
6,400.0	72.27	69.65	6,041.7	4,764.7	264.7	577.9	341.3	0.47	-0.45	-0.14
6,500.0	70.79	69.70	6,073.4	4,796.4	297.6	666.9	398.1	1.47	-1.47	0.05
6,600.0	69.99	69.98	6,107.2	4,830.2	330.2	755.2	454.5	0.85	-0.80	0.28
6,700.0	69.84	69.89	6,141.6	4,864.6	362.2	843.5	511.2	0.17	-0.15	-0.08
6,800.0	69.60	70.16	6,176.2	4,899.2	394.5	931.6	567.6	0.35	-0.24	0.27
6,900.0	69.36	69.90	6,211.3	4,934.3	426.2	1,019.7	624.3	0.35	-0.24	-0.26
7,000.0	71.83	70.94	6,245.1	4,968.1	458.1	1,108.2	681.3	2.66	2.48	1.04
7,100.0	72.60	71.46	6,275.2	4,998.2	488.6	1,198.5	740.6	0.92	0.77	0.53
7,200.0	73.04	71.41	6,304.8	5,027.8	519.0	1,289.1	800.1	0.44	0.44	-0.05
7,300.0	71.71	70.57	6,334.9	5,057.9	550.0	1,379.3	858.9	1.55	-1.33	-0.85
7,400.0	70.52	68.84	6,367.3	5,090.3	582.8	1,468.0	915.6	2.02	-1.19	-1.73
7,500.0	70.70	68.63	6,400.5	5,123.5	617.0	1,555.9	970.8	0.26	0.18	-0.21
7,600.0	70.72	69.54	6,433.5	5,156.5	650.7	1,644.1	1,026.5	0.86	0.02	0.91
7,700.0	70.93	70.04	6,466.4	5,189.4	683.3	1,732.7	1,083.2	0.52	0.21	0.50
7,800.0	71.18	70.30	6,498.9	5,221.9	715.3	1,821.7	1,140.5	0.35	0.25	0.26
7,900.0	71.33	70.16	6,530.8	5,253.8	747.3	1,910.9	1,198.0	0.21	0.15	-0.14
8,000.0	70.44	69.20	6,563.5	5,286.5	780.0	1,999.6	1,254.7	1.26	-0.89	-0.95
8,100.0	69.41	68.24	6,597.9	5,320.9	814.5	2,086.9	1,309.2	1.37	-1.04	-0.96
8,200.0	70.20	76.94	6,632.2	5,355.2	843.4	2,176.1	1,368.4	8.20	0.79	8.70
8,300.0	70.33	86.91	6,666.5	5,389.5	857.1	2,269.0	1,438.9	9.39	0.13	9.97
8,400.0	72.55	98.40	6,698.6	5,421.6	852.4	2,363.4	1,520.7	11.11	2.22	11.49
8,500.0	73.42	108.52	6,728.9	5,451.9	830.8	2,456.1	1,610.2	9.72	0.86	10.12
8,600.0	74.40	119.54	6,756.0	5,479.0	791.5	2,543.8	1,705.2	10.63	0.98	11.01
8,700.0	73.53	129.08	6,783.8	5,506.8	737.6	2,623.2	1,801.1	9.21	-0.86	9.54
8,800.0	78.72	137.34	6,808.6	5,531.6	671.3	2,693.7	1,896.4	9.54	5.18	8.26



PHX
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514139
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1277.DusH
Project:	Doddridge County, WV Grid	MD Reference:	KB@23 @ 1277.DusH
Site:	Doddridge County 514139	North Reference:	Grid
Well:	Well #514139	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514139 AS Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,900.0	85.10	147.12	6,821.4	5,544.4	593.4	2,754.7	1,989.9	11.60	6.38	9.79
9,000.0	88.47	152.72	6,827.7	5,550.7	506.7	2,804.1	2,078.5	6.53	3.38	5.60
LP-9016 MD/ 6828" TVD										
9,015.0	89.20	153.30	6,828.0	5,551.0	493.4	2,810.9	2,091.5	6.20	4.84	3.87
9,100.0	89.29	154.73	6,829.2	5,552.2	417.0	2,848.2	2,164.2	1.69	0.11	1.68
9,200.0	90.44	153.48	6,829.5	5,552.5	326.9	2,891.6	2,249.7	1.70	1.15	-1.25
9,300.0	89.70	154.80	6,829.3	5,552.3	237.0	2,935.3	2,335.2	1.51	-0.74	1.32
9,400.0	89.47	153.31	6,830.1	5,553.1	147.2	2,979.3	2,421.0	1.50	-0.23	-1.49
9,500.0	90.70	157.05	6,829.8	5,552.8	56.3	3,020.9	2,505.3	3.94	1.23	3.74
9,600.0	90.58	156.43	6,828.6	5,551.6	-35.7	3,060.2	2,588.3	0.63	-0.12	-0.62
9,700.0	89.80	154.77	6,828.2	5,551.2	-126.7	3,101.6	2,672.4	1.84	-0.78	-1.66
9,800.0	89.46	153.93	6,829.3	5,552.3	-216.7	3,145.3	2,758.0	0.91	-0.35	-0.84
9,900.0	90.33	154.28	6,829.2	5,552.2	-306.8	3,188.5	2,843.3	0.95	0.88	0.35
10,000.0	90.35	153.73	6,828.7	5,551.7	-396.4	3,232.9	2,929.2	0.55	0.02	-0.55
10,100.0	90.51	154.60	6,827.8	5,550.8	-486.6	3,276.1	3,014.6	0.88	0.16	0.87
10,200.0	90.40	155.91	6,827.1	5,550.1	-577.1	3,318.6	3,099.4	1.31	-0.11	1.31
10,300.0	90.29	157.30	6,826.4	5,549.4	-669.2	3,357.7	3,182.2	1.40	-0.11	1.39
10,400.0	90.20	157.77	6,826.0	5,549.0	-761.5	3,396.1	3,264.6	0.48	-0.09	0.47
10,500.0	90.46	157.59	6,825.5	5,548.5	-854.1	3,433.7	3,346.6	0.32	0.26	-0.19
10,600.0	89.63	156.26	6,825.1	5,548.1	-946.2	3,472.8	3,429.4	1.57	-0.83	-1.33
10,700.0	88.68	154.60	6,826.7	5,549.7	-1,037.1	3,514.4	3,513.7	1.91	-0.95	-1.65
10,800.0	88.10	153.96	6,829.5	5,552.5	-1,127.1	3,557.9	3,599.2	0.86	-0.58	-0.64
10,900.0	89.11	154.84	6,832.2	5,555.2	-1,217.1	3,601.3	3,684.5	1.34	1.01	0.88
11,000.0	88.93	155.00	6,833.8	5,556.8	-1,307.8	3,643.6	3,769.3	0.24	-0.17	0.16
11,100.0	90.15	154.14	6,834.7	5,557.7	-1,398.1	3,686.5	3,854.4	1.49	1.21	-0.86
11,200.0	89.99	153.90	6,834.5	5,557.5	-1,488.0	3,730.3	3,940.0	0.28	-0.16	-0.23
11,300.0	89.31	154.17	6,835.2	5,558.2	-1,577.9	3,774.1	4,025.6	0.73	-0.68	0.26
11,400.0	89.37	154.90	6,836.3	5,559.3	-1,668.2	3,817.0	4,110.7	0.74	0.07	0.73
11,500.0	89.22	154.20	6,837.6	5,560.6	-1,758.4	3,860.0	4,195.9	0.72	-0.16	-0.70
11,600.0	89.25	153.92	6,838.8	5,561.8	-1,848.4	3,903.6	4,281.4	0.28	0.04	-0.28
11,700.0	89.24	153.26	6,840.3	5,563.3	-1,937.8	3,948.4	4,367.6	0.67	-0.01	-0.67
11,800.0	89.73	154.64	6,841.2	5,564.2	-2,027.5	3,992.5	4,453.4	1.47	0.49	1.39
11,900.0	90.20	156.06	6,841.2	5,564.2	-2,118.6	4,033.8	4,537.5	1.49	0.46	1.42
12,000.0	90.23	155.33	6,840.6	5,563.6	-2,209.9	4,074.7	4,621.4	0.73	0.03	-0.73
12,100.0	89.06	154.25	6,841.0	5,564.0	-2,300.3	4,117.5	4,706.5	1.59	-1.17	-1.08
12,200.0	88.26	154.28	6,843.7	5,566.7	-2,390.2	4,161.1	4,792.0	0.80	-0.80	0.02
12,300.0	87.75	154.19	6,847.0	5,570.0	-2,480.3	4,204.3	4,877.2	0.51	-0.50	-0.08
12,400.0	87.33	153.73	6,851.5	5,574.5	-2,570.1	4,248.2	4,962.8	0.62	-0.42	-0.46
12,500.0	87.59	154.24	6,856.0	5,579.0	-2,659.7	4,292.2	5,048.5	0.57	0.25	0.51
12,600.0	87.93	154.58	6,859.9	5,582.9	-2,749.9	4,335.3	5,133.7	0.48	0.34	0.33



PHX
Survey Report



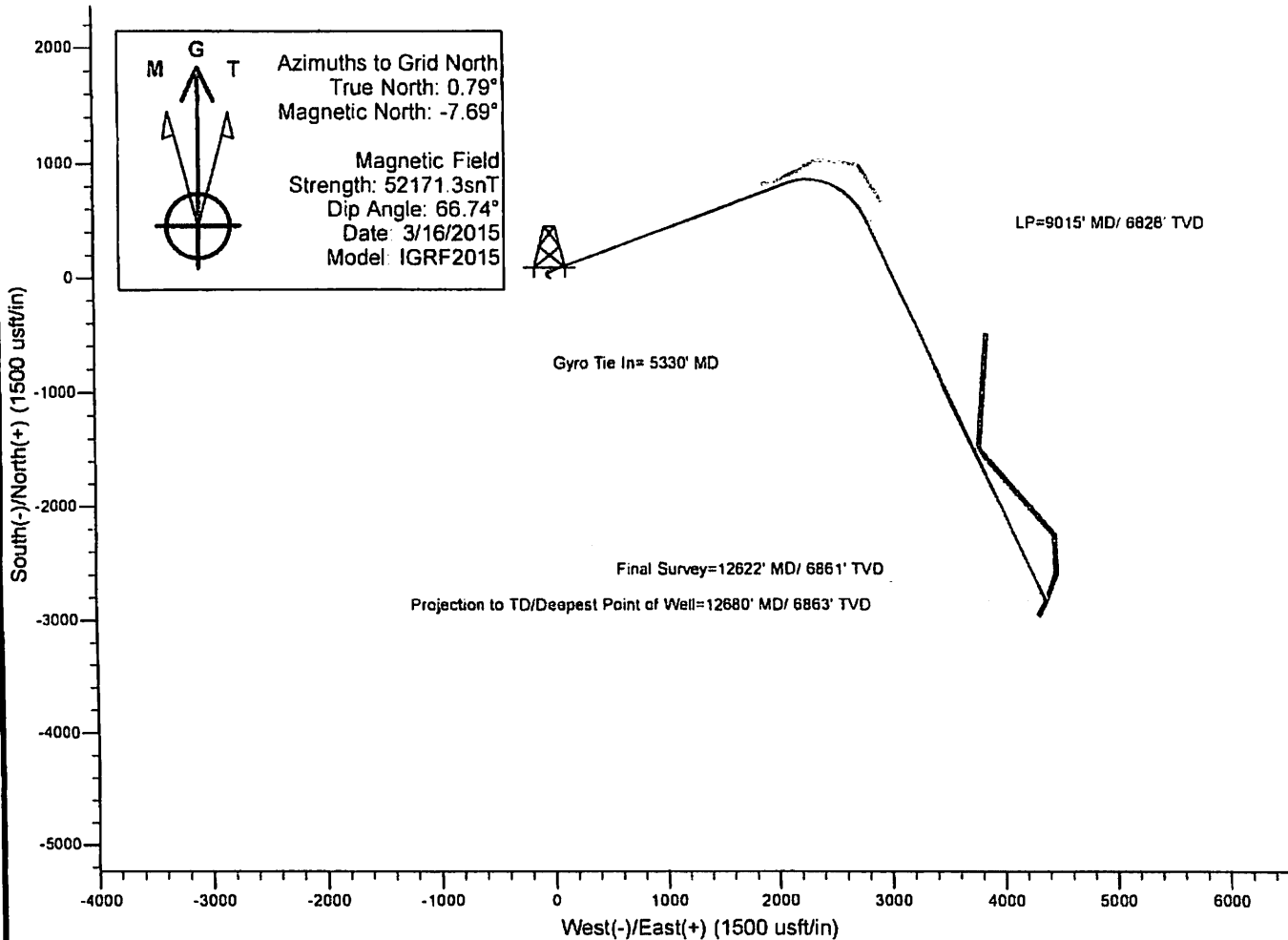
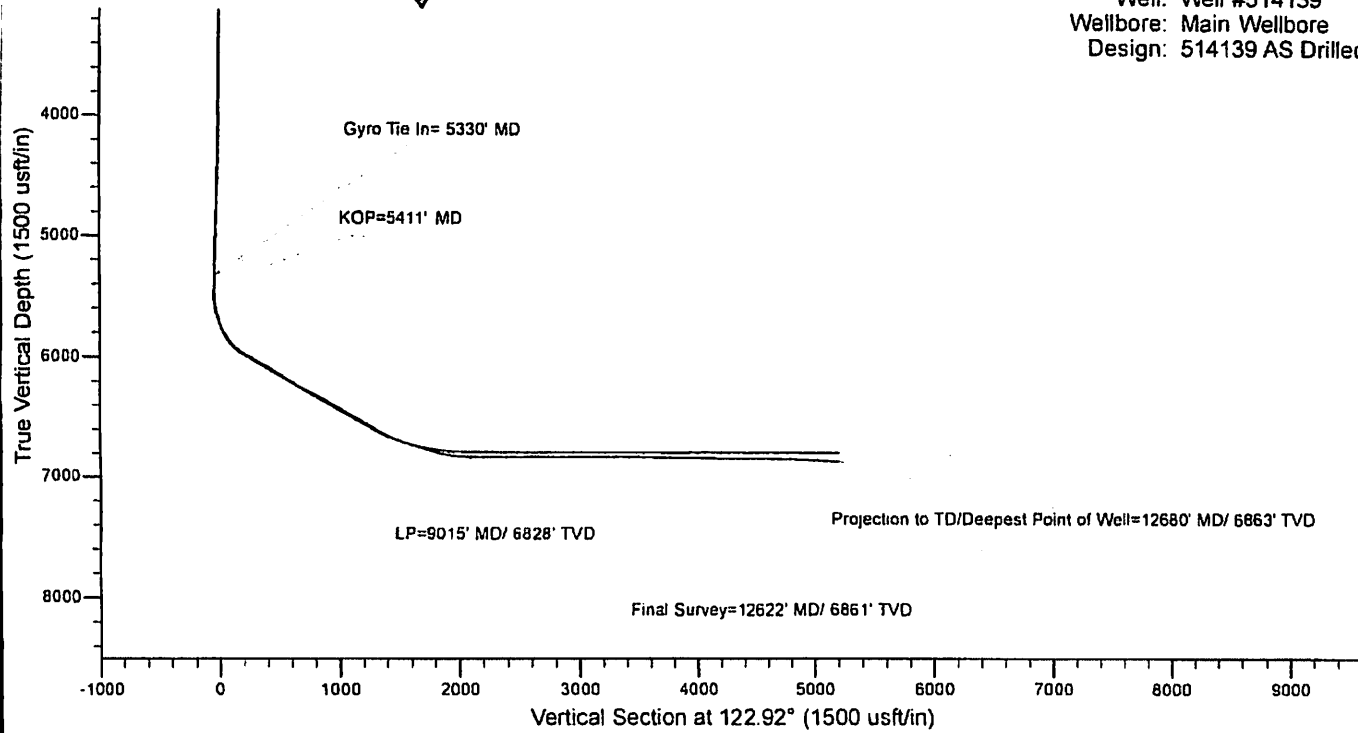
Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 514139
Company:	EQT Production - Marcellus	TVD Reference:	KB@23 @ 1277.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB@23 @ 1277.0usft
Site:	Doddridge County 514139	North Reference:	Grid
Well:	Well #514139	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	514139 AS Drilled Surveys		

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,330.0	5,329.5	28.9	-29.5	Gyro Tie In= 5330' MD
5,411.0	5,410.5	31.8	-30.5	KOP=5411' MD
9,015.0	6,828.0	493.4	2,810.9	LP=9015' MD/ 6828' TVD
12,622.0	6,860.7	-2,769.8	4,344.7	Final Survey=12622' MD/ 6861' TVD
12,680.0	6,862.7	-2,822.1	4,369.6	Projection to TD/Deepest Point of Well!=12680' MD/ 6863' TVD

Checked By: _____ Approved By: _____ Date: _____

Project: Doddridge County, WV Grid
 Site: Doddridge County 514139
 Well: Well #514139
 Wellbore: Main Wellbore
 Design: 514139 AS Drilled Surveys



Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	5/7/2015
Job End Date	5/12/2015
State	West Virginia
County	Doddridge
API Number	47-017-06588-00-00
Operator Name	EQT Production
Well Name and Number	514139
Longitude	-80.73843000
Latitude	39.26290900
Datum	NAD83
Federal/Tribal Well	NO
True Vertical Depth	6,298
Total Base Water Volume (gal)	6,061,230
Total Base Non Water Volume	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	FTS International	Carrier/Base Fluid	Water	7732-18-5	100.00000	96.09719	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	3.39413	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.06244	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.02854	None
			Alkyl Alcohol	Proprietary	10.00000	0.00951	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00476	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.03817	None
HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55.00000	0.00613	None
			Guar gum	9000-30-0	50.00000	0.00557	None
			Surfactant	58439-51-0	2.00000	0.00022	None
			Clay	14808-60-7	2.00000	0.00022	None
B-10	FTS International	High pH Buffer					

			Potassium carbonate	584-08-7	48.00000	0.00653	None
			Potassium hydroxide	1310-58-3	20.00000	0.00272	None
CS-500-SI	FTS International	Scale Inhibitor					
			Ethylene glycol	107-21-1	10.00000	0.00278	None
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00096	None
CI-150	FTS International	Acid Corrosion Inhibitor					
			Isopropanol	67-63-0	30.00000	0.00014	None
			Ethylene glycol	107-21-1	30.00000	0.00014	None
			Organic amine resin salt	Proprietary	30.00000	0.00014	None
			Quaternary ammonium compound	Proprietary	10.00000	0.00005	None
			Aromatic aldehyde	Proprietary	10.00000	0.00005	None
			Dimethylformamide	68-12-2	10.00000	0.00005	None
APB-1	FTS International	Breaker					
			Ammonium persulfate	7727-54-0	95.00000	0.00019	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)

LEGEND

LEASE LINE	---
SURFACE LINE	---
WELL LATERAL	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
FENCE LINE	---
COUNTY ROUTE	---
PLUGGED WELL	○
PROPOSED WELL	○
DUSTING WELL	○
PERATED WELL	○
TAX MAP-PARCEL	00-00

**EQT PRODUCTION COMPANY
MAXWELL LEASE
1447.16 ACRES±
WELL NO. WV 514139**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD27 S.P.C.(FT) N. 280,283.8 E. 1,849,352.0
 NAD27 GEO. LAT.(N) 39.282909 LONG.(W) 80.738429
 NAD83 UTM (M) N. 4,345,964.6 E. 522,580.8

LANDING POINT

NAD27 S.P.C.(FT) N. 291,082.3 E. 1,852,028.0
 NAD27 GEO. LAT.(N) 39.285202 LONG.(W) 80.729018
 NAD83 UTM (M) N. 4,348,251.4 E. 523,062.0

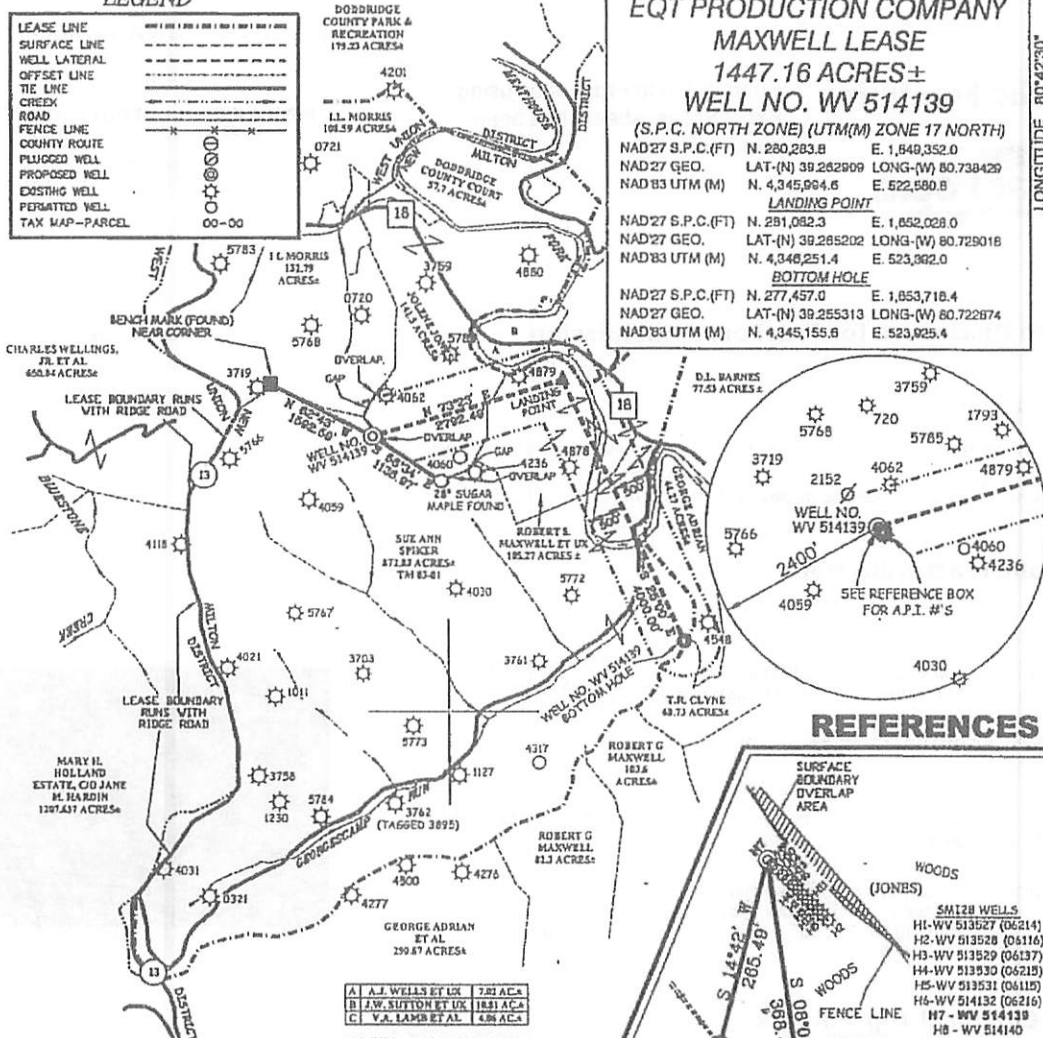
BOTTOM HOLE

NAD27 S.P.C.(FT) N. 277,457.0 E. 1,853,718.4
 NAD27 GEO. LAT.(N) 39.255313 LONG.(W) 80.722874
 NAD83 UTM (M) N. 4,345,155.6 E. 523,925.4

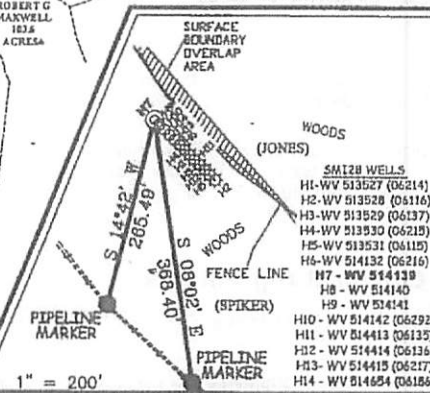
NAD 27 GRID NORTH

LONGITUDE 80°42'30"

10.475'



REFERENCES

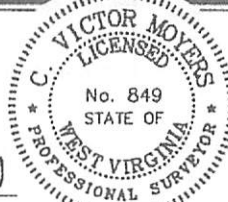


NOTES ON SURVEY

- 1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.

Professional Energy Consultants
 A DIVISION OF SUELLI LAND SERVICES, INC.
SLS
 8015 WYOMING
 ENVIRONMENTAL
 PROJECTS DEPT.
 (304) 422-6268 WWW.SUELLI.COM

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 AUGUST 19, 20 14
 REVISED _____, 20 ____
 OPERATORS WELL NO. WV 514139
 API WELL NO. 47 - 017 - 6588
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/200 FILE NO. 7428P514139
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORN NETWORK)
 SCALE 1" = 2,000'

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

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

LOCATION: ELEVATION 1254'(PAD ELEVATION) WATERSHED TRIBUTARY OF GEORGESCAMP RUN
 DISTRICT NEW MILTON COUNTY DODDRIDGE QUADRANGLE SMITHBURG 7.5'

SURFACE OWNER SUE ANN SPIKER ACREAGE 872.83±
 ROYALTY OWNER LEWIS MAXWELL HEIRS LEASE ACREAGE 1447.16±
 PROPOSED WORK: LEASE NO. 080617
 DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
 PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH TVD 6,726'

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

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



Submission to FracFocus using Excel Spreadsheets has been turned off.

[FIND A WELL BY STATE](#) [ABOUT PROJECT PARTNERS](#)

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

Prepare Disclosure for FracFocus Submission

[Disclosure Lists](#) | [Dashboard](#)

i Disclosure has been submitted.

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

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

Hydraulic Fracturing Data

[Edit](#)

Job Start Date 5/7/2015 Job End Date 5/12/2015 API Number 47-017-06588-00-00 State & County West Virginia --- Doddridge

Well Name 514139

Longitude -80.73843 Latitude 39.262909 Datum NAD83 Federal/Tribal Well?

True Vertical Depth (ft) 6298 Total Water Vol (gal) 6061230 Total Non Water Vol 0 Total Mass (lbs) 52635216



MSDS Chemical Ingredients

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

	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
Edit	Water	FTS International	Carrier/Base Fluid	Water	7732-18-5	100%	96.0971908417%	None	50580964.35
Edit	Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100%	3.3941325263%	None	1786509
Edit	MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60%	.0624422686%	None	32866.623
Edit	FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30%	.028540068%	None	15022.127
				Alkyl Alcohol	Proprietary	10%	.009513356%	None	5007.376
				Oxyalkylated alcohol A	Proprietary	5%	.004756678%	None	2503.688
Edit	Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15%	.0381694783%	None	20090.588
Edit	HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55%	.0061305414%	None	3226.824
				Guar gum	9000-30-0	50%	.0055732195%	None	2933.476
				Surfactant	68439-51-0	2%	.0002229288%	None	117.339

<input type="button" value="Edit"/>	B-10	FTS International	High pH Buffer	Clay	14808-60-7	2%	.0002229288%	None	117.339
				Potassium carbonate	584-08-7	48%	.0065325219%	None	3438.407
				potassium hydroxide	1310-58-3	20%	.0027218841%	None	1432.67
<input type="button" value="Edit"/>	CS-500-SI	FTS International	Scale inhibitor	Ethylene glycol	107-21-1	10%	.0027847151%	None	1465.741
<input type="button" value="Edit"/>	FE-100L	FTS International	Iron control	Citric acid	77-92-9	55%	.0009569243%	None	503.679
<input type="button" value="Edit"/>	CI-150	FTS International	Acid Corrosion Inhibitor	Isopropanol	67-63-0	30%	.0001412627%	None	74.354
				Ethylene glycol	107-21-1	30%	.0001412627%	None	74.354
				Organic amine resin salt	Proprietary	30%	.0001412627%	None	74.354
				Quaternary ammonium compound	Proprietary	10%	.0000470876%	None	24.785
				Aromatic aldehyde	Proprietary	10%	.0000470876%	None	24.785
				Dimethylformamide	68-12-2	10%	.0000470876%	None	24.785
<input type="button" value="Edit"/>	APB-1	FTS International	Breaker	Ammonium persulfate	7727-54-0	95%	.0001859022%	None	97.85

Non-MSDS Chemical Ingredients

New Ingredients

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