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

API 47 - 017 - 6502 Count	DODDRIDGE	District Southwest	
Quad OXFORD 7.5' Pad N	ame OXFORD 159	Field/Pool Name	
Farm name JUSTIN L. HENDERSON ET AL		Well Number 513	154
Operator (as registered with the OOG) EQT Pro	oduction Company		
Address 625 Liberty Ave. EQT Plaza, Suite 1700		State PA	Zip 15222
Top hole Northing 4.		Easting <u>520,537</u>	
Landing Point of Curve Northing 4,		Easting 519,818	
Bottom Hole Northing 4.	340,406	Easting 519,276	
Elevation (ft) 1,252 GL Typ	oe of Well BNew 🗆 Existing	Type of Report	<b>≜Interim</b> □Final
Permit Type   Deviated   Horizontal	■ Horizontal 6A □ Vertic	al Depth Type	□ Deep □ Shallow
Type of Operation   Convert   Deepen	Drill De Plug Back De F	Redrilling 🗆 Rework	■ Stimulate
Well Type □ Brine Disposal □ CBM ■ Gas □	Oil   Secondary Recovery	□ Solution Mining □ Sto	orage   Other
	·		
Type of Completion ■ Single □ Multiple F	Fluids Produced   Brine	Gas 🗆 NGL 🗅 Oil	■ Other w/o Flowback
Orilled with □ Cable ■ Rotary			
Orilling Media Surface hole Air 🗆 Mud	□Fresh Water Intermed	iate hole 🛮 Air 🗆 Mud	□ Fresh Water □ Brine
Production hole 🗆 Air 📕 Mud 🗆 Fresh War	er 🗆 Brine		
Mud Type(s) and Additive(s)			
Water base Mud 12.5 ppg barium sulfate, sodium chloride, xanthan gu			
calcum hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chlo	rido, sodium carbonate, ground watnut shalls, alcol	of and modified fatty acid, ferrechrome ligno	osulfonate, calcium corbonate, fibrous cellulose
Date permit issued 7/30/2014 Date d	rilling commenced 11/21/	2014 Date drilling o	eased 5/3/2015
Date completion activities began 6/19/2			6/27/2015
Verbal plugging (Y/N) N Date permis	Bute completion		N/A
verbal plugging (1/N) Date permis	Sion granted	Granted by	
			1
Please note: Operator is required to submit a plug	ging application within 5 days	of verbal permission to p	
004 005 404	•		RECEIVED
Freshwater depth(s) ft 264, 325, 40°	Open mine(s) (Y	N) depths	<u>Offid<mark>N</mark> of Oll and Ga</u> s
Salt water depth(s) ft 1312, 1379	Void(s) encounte	red (Y/N) depths	N SEN 1 6 2015
Coal depth(s) ft 246, 313, 474, 616,732		tered (Y/N) depths	
Is coal being mined in area (Y/N)	N		WW Department of
		Er	Reviewed by: Protecti

API 47- 017	_ 6502	Farm name_	IUSTIN L. HE	ENDERSON E	ET AL W	ell number513	3154
CASING STRINGS	Hole Size	Casing Size [				Basket Depth(s)	Did cement circulate (Y/ N)  * Provide details below*
Conductor	24"				40LB/FT		
Surface	17.5"	13.375" 1.	,110' N	IEW J-55	54.5LB/FT	None	Υ
Coal							
Intermediate I	12.375"	9.625" 5.	.253' N	IEW P-110	40LB/FT	1.564', 3.190'	Y
Intermediate 2						1,000,000	
STRINGS   Size   Size   Depth   Used   wv/fl   Depth(s)   *Provide details below*   Conductor   24"   20"   40"   NEW   A-500 40 JBPT   NONE   Y							
Production	8.5"	5.5" 1:	3304 N	IEW P-110	20LB/FT	NONE	N
Tubing							
Packer type and d	epth set					l	
Comment Details							
			•				
	1		I	1	1		
Surface		835	15.6	1.20	1,002	. 0	8
Coal					1		
Intermediate I	CLASS A / A / A	447 / 380 / 1,205	14.2 / 15.6 /15.6	1.24 / 1.18 / 1.18	2,424.5	58 0	8
CASING   Hole   Casing   Size   Size   Depth   Vised   Will   Depth(s)   Provide details below?							
Intermediate 3							
Production	Class A 50/50 POZ	rH 970/560	14.2 /15.2	1.26 / 1.97	2325.4	0 416	3 8
Tubing							
Deepest forma	tion penetrated M	arcellus					
-		-					□sonic
	·	□ Conventional	□ Sidewall	w	,		
CONDUCTOR-NONE	<u>.</u>	LICI DACLIVIDIO I					DE ENED
		FEET JOINTS: 1 12 23 35 4	8 59 71 83 95 107	119			HEULIVE and Gas
			-,, - 1,,, 107,				Office of City
WAS WELL	COMPLETED AS	S SHOT HOLE -	Yes • No				to trom:
WAS WELL	COMPLETED O	PEN HOLE? - Y	es 🖪 No	DETAILS _		E	WN Departs Protecti
WERE TRAC	ERS USED a	∕es ■ No TY	PE OF TRAC				
							10/30/2015

WR-	35
Rev.	8/23/13

Page	of

API	47- 017	6502	Farm name	JUSTIN L. HENDERSON ET AL	_Well number_	513154
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### PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					Please See Attached
<u></u>					
				<u>.</u>	
<u> </u>					
				1	
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<u> </u>					
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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
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							1	* 6 ZU15
						<u> </u>	N/V r	Protection
							Environ	and in of
								Protons:

Please insert additional pages as applicable.

Address P.O. Box 261021 Cementing Company Allied Services Address 1036 East Main Street Stimulating Company FTSI State TX Address 301 E 18th Street City Cisco Viv Department of Please insert additional pages as applicable.

Completed by Jim Helmick Title VP Completions Signature

Telephone 412-395-5518

Date 9/15/2015

Submittal of Hydraulic Vracturing Chemical Disclosure Information

Attach copy of FRACFOCUS Registry

WR-35 Page of Rev. 8/23/13 API 47- 017 \_ 6502 Farm name JUSTIN L. HENDERSON ET AL Well number 513154 Drilling Contractor Patterson UTI Zip\_15330 State PA Address 207 Carlton Drive City Eighty Four

State TX Address 1805 Brittmoore Road Houston Logging Company Gyro Data Inc. 15017 State PA Address 601 Mayer St. Bridgeville City Cementing Company C & J Energy Services (Nabors) \_ Zip \_ 26378 \_\_\_\_State W

City Jane Lew

Logging Company Phoenix Technology Services

Address 1650 Hackers Creek

RECEIVED Office of Oil and Gas

SEP 1 6 2015

MV Department of Environmen all Protection

17-0650	入 Well #51	3154 Final Form	ations	
Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	1	1	411	411
SAND/SHALE	1	1	256	256
WASHINGTON COAL	256	256	258	258
SAND/SHALE	258	258	323	323
WAYNESBURG A COAL	323	323	325	325
SAND/SHALE	325	325	484	484
UNIONTOWN COAL	484	484	486	486
SAND/SHALE	486	486	626	626
SEWICKLEY	626	626	628	628
SAND/SHALE	628	628	742	742
REDSTONE COAL	742	742	743	743
SAND/SHALE	743	743	745	745
PITTSBURGH COAL	745	745	749	749
SAND/SHALE	749	749	2,030.00	2,029.70
BIG LIME	2,030.00	2,029.70	2,174.00	2,173.60
SAND/SHALE	2,174.00	2,173.60	2,323.00	2,322.60
WEIR	2,323.00	2,322.60	2,437.00	2,436.50
SAND/SHALE	2,437.00	2,436.50	2,531.00	2,530.50
GANTZ	2,531.00	2,530.50	2,608.00	2,607.40
50F	2,608.00	2,607.40	2,684.00	2,683.40
SAND/SHALE	2,684.00	2,683.40	2,730.00	
30F	2,730.00	2,729.30	2,765.00	2,729.30 2,764.30
SAND/SHALE	2,765.00	2,764.30	2,779.00	2,778.30
GORDON	2,779.00	2,778.30		
4TH SAND	2,779.00	2,869.20	2,870.00 3,051.00	2,869.20
BAYARD	3,051.00		3,151.00	3,050.00 3,149.90
	<del></del>	3,050.00	3,388.00	
SAND/SHALE	3,151.00	3,149.90		3,386.70
WARREN	3,388.00	3,386.70	3,447.00	3,445.60
SAND/SHALE	3,447.00	3,445.60		3,457.60
SPEECHLEY	3,459.00	3,457.60	3,703.00 4,139.00	3,701.20
SAND/SHALE	3,703.00	3,701.20		4,135.50
BALLTOWN A	4,139.00	4,135.50	4,253.00	4,248.70
SAND/SHALE	4,253.00	4,248.70	4,338.00	4,333.10
RILEY	4,338.00	4,333.10	4,484.00	4,478.00
SAND/SHALE	4,484.00	4,478.00	5,009.00	4,998.80
BENSON	5,009.00	4,998.80	5,049.00	5,038.50
SAND/SHALE	5,049.00	5,038.50	5,180.00	5,168.50
ALEXANDER	5,180.00	5,168.50	6,211.00	5,916.40
RHINESTREET UPPER	6,211.00	5,916.40	6,362.00	5,954.70
RHINESTREET	6,362.00	5,954.70	7,920.00	
SONYEA	7,920.00	6,352.10		6,472.90
MIDDLESEX	8,378.00	6,472.90	8,550.00	6,525.30
GENESSEE	8,550.00	6,525.30	8,766.00	
GENESEO	8,766.00	6,585.70	8,930.00	6,627.80
TULLY	8,930.00	6,627.80		Departm 6,645.80
HAMILTON	9,015.00	6,645.80		menia 5 <b>6,667.70</b>
MARCELLUS	9,141.00	6,667.70		.50110

		513154 - 47-01	7-017-06502-0000- Perforations	SI	
Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	6/20/2015	13,302.00	13,304.00	10	MARCELLUS
1	6/20/2015	13,151.00	13,277.00	42	MARCELLUS -
2	6/22/2015	12,971.00	13,093.00	42	MARCELLUS
3	6/23/2015	12,791.00	12,913.00	42	MARCELLUS
4	6/23/2015	12,611.00	12,733.00	42	MARCELLUS CA
ស	6/23/2015	12,431.00	12,553.00	42	MARCELLUS (S.
9	6/23/2015	12,251.00	12,373.00	42	MARCELLUS /
7	6/23/2015	12,071.00	12,193.00	42	MARCELLUS
80	6/24/2015	11,891.00	12,011.00	42	MARCELLUS
6	6/24/2015	11,711.00	11,833.00	42	MARCELLUS
10	6/24/2015	11,530.00	11,653.00	42	MARCELLUS
11	6/24/2015	11,351.00	11,473.00	42	MARCELLUS
12	6/24/2015	11,171.00	11,293.00	42	MARCELLUS
13	6/25/2015	10,991.00	11,113.00	42	MARCELLUS
14	6/25/2015	10,811.00	10,930.00	42	MARCELLUS
15	6/25/2015	10,633.00	10,753.00	42	MARCELLUS
16	6/25/2015	10,451.00	10,573.00	42	MARCELLUS
17	6/25/2015	10,271.00	10,378.00	42	MARCELLUS
18	6/26/2015	10,091.00	10,211.00	42	MARCELLUS
19	6/26/2015	9,911.00	10,033.00	42	MARCELLUS
20	6/26/2015	9,731.00	9,853.00	42	MARCELLUS
21	6/26/2015	9,551.00	00'899'6	42	MARCELLUS
22	6/27/2015	9,371.00	9,493.00	42	MARCELLUS
23	6/27/2015	9,193.00	9,313.00	42	MARCELLUS
24	6/27/2015	9,011.00	9,133.00	42	MARCELLUS
25 €	○ 6/27/2015	8,831.00	8,953.00	42	MARCELLUS
	(C)				
SE Di	S B				
P .	$\widetilde{u}_i$				
6 2015 Finient of <sup>31 Protection</sup> 0/30/2015	l∈IVED Olland Gas				

			513154 - 47-0	513154 - 47-017-06502-0000- Stimulated Stages	Stimulate	d Stages		
Stage Number	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	(ısa) aısı	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
Initiation Sleeve	6/19/2015	15.5	7,491.00	8,605.00	4,852.00	0	609	0
1	6/20/2015	86.9	7,939.00	9,941.00	5,024.00	299,634	7254	0
1.02	6/20/2015	1.9	4,768.00	8,619.00	5,257.00	0	935	17
1.03	6/21/2015	10	5,893.00	8,871.00	4,533.00	0	14310	- (
2	6/22/2015	06	7,566.00	7,905.00	3,685.00	301,879	2922	0
3	6/23/2015	85.8	7,668.00	8,544.00	4,936.00	294,053	7583	5
4	6/23/2015	6'86	7,768.00	8,042.00	5,102.00	299,986	7177	0
5	6/23/2015	5.76	7,828.00	8,147.00	5,002.00	298,695	7480	0
9	6/23/2015	65	7,875.00	9,332.00	5,228.00	329,001	7704	0
7	6/23/2015	99.7	7,946.00	8,353.00	4,513.00	365,897	6268	0
8	6/24/2015	96.1	7,792.00	8,596.00	5,037.00	364,254	8015	0
6	6/24/2015	94.1	7,798.00	8,354.00	5,138.00	356,630	8928	0
10	6/24/2015	95.9	7,721.00	8,395.00	4,765.00	356,241	8326	0
11	6/24/2015	94.3	7,695.00	8,097.00	2,030.00	365,861	8049	0
12	6/25/2015	96.1	7,847.00	8,672.00	5,316.00	363,448	0008	0
13	6/25/2015	2.06	7,525.00	8,779.00	2,330.00	342,001	8716	0
14	6/25/2015	99.5	7,797.00	8,643.00	4,936.00	356,186	8329	0
15	6/25/2015	91.8	7,684.00	9,088.00	5,164.00	357,896	8614	0
16	6/25/2015	98.3	7,453.00	8,176.00	5,271.00	356,232	1221	0
17	6/26/2015	100.1	7,566.00	8,004.00	5,351.00	364,144	1777	0
18	6/26/2015	100.5	7,620.00	8,103.00	4,985.00	357,043	8326	0
19	6/26/2015	97.1	7,736.00	8,941.00	5,349.00	359,140	9,354	0
20	6/26/2015	97.20	7,493.00	8,340.00	5,523	362,812	7,751	0
21	6/26/2015	100.70	7,325.00	7,654.00	5,277	365,290	7,481	0
22	6/27/2015	99.40	7,329.00	7,697.00	5,269	363,230	7,623	0
23	6/27/2015	100.80	7,523.00	8,436.00	4,948	358,374	7831	0
24	6/27/2015	98.50	7,415.00	7,711.00	2,033	358,245	7934	0
25	6/27/2015	100.2	6,807.00	7,881.00	3,580.00	357,860	7827	0
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<b>D/</b>								

Frac Focus Chemical Disclosure Registry

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Composition:	Hydraulic Fracturing Fluid Composition:
0	Total Base Non Water Volume
9,105,600	Total Base Water Volume (gal)
899'9	True Vertical Depth
ON	Federal/Tribal Well
NAD83	Datum
39,20783900	Latitude
-80.76230100	Longitude
513154	Well Name and Number
EQT Production	Operator Name
47-017-06502-00-00	API Number
Doddridge	County
West Virginia	State:
6/27/2015	Job End Date
6/19/2015	Job Start Date





Comments		Vone		Vone		Vone		Vone	Youe	Vone		None		vone		Vone	Vone	Vone
Maximum Ingredient Soncentration in HF Fluid (% by mass)***		89.42805None		10.18491None		0.05741None		0.02516None	0.00839None	0.00419None		0.02680None		0.00253None		0.00095None	0.00087None	0.00003None
Maximum Maximum Ingredient Concentration in Concentration in Additive HF Fluid (% by mass)***		100.0000		100.00000		900000		30.0000	10.00000	5.00000		15.00000		10.0000		55.0000	20.0000	2.0000
Chemical Abstract Service, Number (CAS #)		7732-18-5		14808-60-7		10124-37-5		64742-47-8	Proprietary	Proprietary		7647-01-0		107-21-1		64742-47-8	0-00-0006	68439-51-0
Ingredients		Water		Crystalline Silica		Calcium nitrate		Hydrotreated light distillate	Alkyl Alcohol	Oxyalkylated alcohol A		Hydrochloric Acid		Ethylene glycol		Petroleum distillate	Guar gum	Surfactant
Purpose	Carrier/Base Fluid		Proppant		Calcium nitrate solution		Friction reducer				Acidizing		Scale inhibitor		Gelling agent			
Supplier	FTS International		FTS International		Multi-Chem		FTS International				FTS International	F	FTS International		FTS International	15		
Trade Name	Water		Sand (Proppant)		MC MX 437-5		FRW-900			V	Hydrochloric Acid (15%)	SE	CS-500-SI	O l i	HVG-1	un un er	1/2	Gas

			Clay	14808-60-7	2.00000	0.00003None	
FE-100L	FTS International	Iron control					
			Citric acid	77-92-9	55.00000	0.00060None	
CI-150	FTS International	Acid Corrosion Inhibitor					
			Ethylene glycol	107-21-1	30,0000	0.00010None	
			Organic amine resin salt	Proprietary	30.0000	0.00010None	,
			Isopropanol	67-63-0	30,0000	0.00010None	
			Dimethylformamide	68-12-2	10.00000	0.00003None	
			Aromatic aldehyde	Proprietary	10,00000	0.00003None	6
			Quaternary ammonium compound	Proprietary	10.00000	0.00003None	20
NE-100	FTS International	Non-emulsifier				THE RESERVE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TW	
			2-Butoxyethanol	111-76-2	10.0000	0.00003None	
			2-Propanol	67-63-0	10.00000	0.00003None	
			Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00001None	
B-10	FTS International	High pH buffer					
			Potassium carbonate	584-08-7	48.0000	0.00002None	
			Potassium hydroxide	1310-58-3	20.00000	0.00001None	
APB-1	FTS International	Breaker			The second second		
			Ammonium persulfate	7727-54-0	95.00000	0.00002None	
Ingredients shown	Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear	CFR 1910.1200(i) and	appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS	eets (MSDS). Ingredien	is shown below are Non-I	ASDS.	
* Total Water Volu	ased on the maximum po	fresh water, produced	<ul> <li>Total Water Volume sources may include fresh water, produced water, and/or recycled water</li> <li>Information is based on the maximum potential for concentration and thus the total may be over 100%</li> </ul>	%00			

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)

## Well Operator's Report of Well Work



Well Number: 513154

API: 47 - 017 - 6502

Submission: Initial Amended

Notes: Add'l Inj test 1.02, 1.03

Waiting on Flowback

Office of Oil and Gas

SEP 1 6 2015

WW Department of Environmental Protection

