

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

API 47-017-6502 County DODDRIDGE District Southwest
Quad OXFORD 7.5' Pad Name OXFORD 159 Field/Pool Name _____
Farm name JUSTIN L. HENDERSON ET AL Well Number 513154
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 4,339,878 Easting 520,537
Landing Point of Curve Northing 4,339,291 Easting 519,818
Bottom Hole Northing 4,340,406 Easting 519,276

Elevation (ft) 1,252 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 w/o Flowback
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 7/30/2014 Date drilling commenced 11/21/2014 Date drilling ceased 5/3/2015
Date completion activities began 6/19/2015 Date completion activities ceased 6/27/2015
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 264, 325, 401 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1312, 1379 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 246, 313, 474, 616, 732, 735 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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API 47-017 - 6502 Farm name JUSTIN L. HENDERSON ET AL Well number 513154

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	40'	NEW	A-500 40LB/FT	NONE	Y
Surface	17.5"	13.375"	1,110'	NEW	J-55 54.5LB/FT	None	Y
Coal							
Intermediate 1	12.375"	9.625"	5,253'	NEW	P-110 40LB/FT	1,564', 3,190'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	13304	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	38	15.6	1.18	44.84	0	8
Surface	CLASS A	835	15.6	1.20	1,002	0	8
Coal							
Intermediate 1	CLASS A / A / A	447 / 380 / 1,205	14.2 / 15.6 / 15.6	1.24 / 1.18 / 1.18	2,424.58	0	8
Intermediate 2							
Intermediate 3							
Production	Class A 50/50 POZ / H	970/560	14.2 / 15.2	1.26 / 1.97	2325.40	4163	8
Tubing							

Drillers TD (ft) 13310' Loggers TD (ft) 13310'

Deepest formation penetrated Marcellus Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) 5317

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

CONDUCTOR- NONE
SURFACE- JOINTS 1,12,23
INTERMEDIATE- RAN AT LEAST EVERY 500' FEET JOINTS: 1, 12, 23, 35, 48, 59, 71, 83, 95, 107, 119
PRODUCTION- 190 centralizers ran every joint from 13302' to 5158'

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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 _____

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API 47- 017 - 6502 Farm name JUSTIN L. HENDERSON ET AL Well number 513154

Drilling Contractor Patterson UTI
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Phoenix Technology Services
Address 1805 Brittmoore Road City Houston State TX Zip 77043

Logging Company Gyro Data Inc.
Address 601 Mayer St. City Bridgeville State PA Zip 15017

Cementing Company C & J Energy Services (Nabors)
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

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Well #513154 Final Formations

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	2,729.30
30F	2,730.00	2,729.30	2,765.00	2,764.30
SAND/SHALE	2,765.00	2,764.30	2,779.00	2,778.30
GORDON	2,779.00	2,778.30	2,870.00	2,869.20
4TH SAND	2,870.00	2,869.20	3,051.00	3,050.00
BAYARD	3,051.00	3,050.00	3,151.00	3,149.90
SAND/SHALE	3,151.00	3,149.90	3,388.00	3,386.70
WARREN	3,388.00	3,386.70	3,447.00	3,445.60
SAND/SHALE	3,447.00	3,445.60	3,459.00	3,457.60
SPEECHLEY	3,459.00	3,457.60	3,703.00	3,701.20
SAND/SHALE	3,703.00	3,701.20	4,139.00	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	6,352.10
SONYEA	7,920.00	6,352.10	8,378.00	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	6,585.70
GENESE0	8,766.00	6,585.70	8,930.00	6,627.80
TULLY	8,930.00	6,627.80	9,015.00	6,645.80
HAMILTON	9,015.00	6,645.80	9,141.00	6,667.70
MARCELLUS	9,141.00	6,667.70		

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Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	6/19/2015
Job End Date:	6/27/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06502-00-00
Operator Name:	EQT Production
Well Name and Number:	513154
Longitude:	-80.76230100
Latitude:	39.20783900
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,668
Total Base Water Volume (gal):	9,105,600
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	89.42805	None
Sand (Proppant)	FTS International	Proppant	Crystalline Silica	14808-60-7	100.00000	10.18491	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution	Calcium nitrate	10124-37-5	60.00000	0.05741	None
FRW-900	FTS International	Friction reducer	Hydrotreated light distillate	64742-47-8	30.00000	0.02516	None
			Alkyl Alcohol	Proprietary	10.00000	0.00835	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00415	None
Hydrochloric Acid (15%)	FTS International	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.02680	None
CS-500-SI	FTS International	Scale inhibitor	Ethylene glycol	107-21-1	10.00000	0.00253	None
HVG-1	FTS International	Gelling agent	Petroleum distillate	64742-47-8	55.00000	0.00095	None
			Guar gum	9000-30-0	50.00000	0.00087	None
			Surfactant	68439-51-0	2.00000	0.00003	None

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FE-100L	FTS International	Clay	14808-60-7	2.00000	0.00003	None
		Iron control				
CI-150	FTS International	Citric acid	77-92-9	55.00000	0.00050	None
		Acid Corrosion Inhibitor				
		Ethylene glycol	107-21-1	30.00000	0.00010	None
		Organic amine resin salt	Proprietary	30.00000	0.00010	None
		Isopropanol	67-63-0	30.00000	0.00010	None
		Dimethylformamide	68-12-2	10.00000	0.00003	None
		Aromatic aldehyde	Proprietary	10.00000	0.00003	None
		Quaternary ammonium compound	Proprietary	10.00000	0.00003	None
NE-100	FTS International	Non-emulsifier				
		2-Butoxyethanol	111-76-2	10.00000	0.00003	None
		2-Propanol	67-63-0	10.00000	0.00003	None
		Dodecylbenzenesulfonic acid	27176-87-0	5.00000	0.00001	None
B-10	FTS International	High pH buffer				
		Potassium carbonate	584-08-7	48.00000	0.00002	None
		Potassium hydroxide	1310-58-3	20.00000	0.00001	None
APB-1	FTS International	Breaker				
		Ammonium persulfate	7727-54-0	95.00000	0.00002	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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Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 513154

API: 47 - 017 - 6502

Submission: Initial Amended

Notes: Add'l Inj test 1.02, 1.03

Waiting on Flowback

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