

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

API 47-017-06744 County DODDRIDGE District SOUTH WEST / COVE  
Quad OXFORD Pad Name OXF43 Field/Pool Name N/A  
Farm name FRANKLIN MAXWELL HEIRS L.P. Well Number 516233  
Operator (as registered with the OOG) EQT Production Company  
Address 115 Professional Place, PO Box 280 City Bridgeport State WV Zip 26330

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,334,239.0 Easting 517,905.5  
Landing Point of Curve Northing 4,333,558.2 Easting 517,428.7  
Bottom Hole Northing 4,335,417.2 Easting 516,588.1

Elevation (ft) 1229 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 12.8 ppg, aliphatic based non-aqueous drilling fluid, barium sulfate, calcium chloride, organophylic clay, quaternary ammonium clay, gilsonite, blended emulsifier, wetting agent, blended graphite, hydrated lime, calcium carbonate, ground walnut shells, fibrous cellulose.

Date permit issued 08/30/2016 Date drilling commenced 06/25/2017 Date drilling ceased 10/23/2017  
Date completion activities began 12/25/2017 Date completion activities ceased 1/22/2018  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A  

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug APR 17 2018

Freshwater depth(s) ft 73,224,310,385 Open mine(s) (Y/N) depths WV Department of Environmental Protection  
Salt water depth(s) ft No shallow SW Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 324 Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
07/20/2018

API 47-017 - 06744 Farm name FRANKLIN MAXWELL HEIRS L.P. Well number 516233

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	30"	26"	40'	NEW	A-500 85.6#	N/A	Y
Surface	17-1/2"	13-3/8"	555'	NEW	J-55 54.5#	N/A	Y
Coal							
Intermediate 1	12-3/8" & 12-1/4"	9-5/8"	6099'	NEW	A-500 40# & P-110 40#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5 1/2"	14926'	NEW	P-110 20#	N/A	N
Tubing							
Packer type and depth set							

Comment Details Production Cement job has calculated TOC of 6078' MD, which is greater than 500' TVD above the producing formation. No issues during cement job.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	CLASS A	49	15.6	1.18	58	0	8
Surface	CLASS A	520	15.6	1.20	624	0	8
Coal							
Intermediate 1	CLASS A / CLASS A	1087 / 1100	15.6 / 15.6	1.18 / 1.18	2581	0	8
Intermediate 2							
Intermediate 3							
Production	Class H / Class H	178 / 879	15.2 / 15.6	1.25 / 2.06	2033	6078'	8
Tubing							

Drillers TD (ft) 14938' 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) 1774' 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: ON SHOE TRACK AND EVERY 500' FEET TO SURFACE

INTERMEDIATE: ON SHOE TRACK AND EVERY 500' FEET TO SURFACE

PRODUCTION: ON SHOE TRACK AND EVERY JOINT TO 1703'

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_  
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WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_





API 47- 017 - 06744 Farm name FRANKLIN MAXWELL HEIRS L.P. Well number 516233

Drilling Contractor Decker Drilling  
Address 11565 State Route 676 City Vincent State OH Zip 45784

Logging Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Logging Company Scientific Drilling International, Inc.  
Address 124 Vista Drive City Charleroi State PA Zip 15022

Cementing Company BJ Services, LLC  
Address 4000 Town Center Blvd, Suite 210 City Cannonsburg State PA Zip 15317

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Final Formations Well# 516233 API# 47-017-06744-00-00				
Formation Name	Drill Top MD (ftGRD)	Drill Top (TVD) (ftGRD)	Drill Btm MD (ftGRD)	Drill Btm (TVD) (ftGRD)
SAND / SHALE	1	1	305	305
WAYNESBURG A	305	305	306	306
SAND / SHALE	306	306	1072	1072
MAXTON	1072	1072	1112	1112
SAND / SHALE	1112	1112	1948	1948
BIG LIME	1948	1948	2016	2015
SAND / SHALE	2016	2015	2060	2058
BIG INJUN	2060	2058	2092	2090
SAND / SHALE	2092	2090	2234	2228
WEIR	2234	2228	2360	2348
SAND / SHALE	2360	2348	2434	2417
GANTZ	2434	2417	2516	2492
FIFTY FOOT	2516	2492	2573	2544
SAND / SHALE	2573	2544	2614	2581
THIRTY FOOT	2614	2581	2650	2614
SAND / SHALE	2650	2614	2656	2619
GORDON	2656	2619	2705	2664
SAND / SHALE	2705	2664	2756	2710
FORTH SAND	2756	2710	2823	2769
SAND / SHALE	2823	2769	2937	2868
BAYARD	2936	2867	3007	2927
SAND / SHALE	3007	2927	3270	3136
WARREN	3270	3136	3336	3188
SPEECHLEY	3336	3188	3841	3569
BALLTOWN A	3841	3569	4199	3837
SAND / SHALE	4199	3837	4439	4019
RILEY	4439	4019	4815	4305
BENSON	4815	4305	4909	4382
ALEXANDER	5117	4561	5210	4636
ELKS	5210	4636	7357	6281
SONYEA	7357	6281	7551	6417
MIDDLESEX	7551	6417	7647	6473
GENESEE	7647	6473	7791	6544
GENESEO	7791	6544	7927	6590
TULLY	7927	6590	7999	6609
HAMILTON	7999	6609	8062	6623
MARCELLUS	8062	6623	14864	6733

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**516233 47-017-06744-0000 - Perforations**

<b>Stage Number</b>	<b>Perforation Date</b>	<b>Top Perf Depth (ftKB)</b>	<b>Bottom Perf Depth (ftKB)</b>	<b>Number of Shots</b>	<b>Formation</b>
Initiation Sleeve	12/15/2017	14,899	14,926	10	Marcellus
1	12/25/2017	14,739	14,861	32	Marcellus
2	12/26/2017	14,539	14,701	40	Marcellus
3	12/27/2017	14,339	14,501	40	Marcellus
4	12/28/2017	14,139	14,301	40	Marcellus
5	12/30/2017	13,939	14,101	40	Marcellus
6	1/1/2018	13,739	13,901	40	Marcellus
7	1/1/2018	13,539	13,701	40	Marcellus
8	1/2/2018	13,339	13,501	40	Marcellus
9	1/3/2018	13,139	13,301	40	Marcellus
10	1/3/2018	12,939	13,101	40	Marcellus
11	1/5/2018	12,739	12,901	40	Marcellus
12	1/5/2018	12,539	12,701	40	Marcellus
13	1/6/2018	12,339	12,501	40	Marcellus
14	1/7/2018	12,139	12,301	40	Marcellus
15	1/8/2018	11,939	12,101	40	Marcellus
16	1/8/2018	11,739	11,901	40	Marcellus
17	1/10/2018	11,539	11,701	40	Marcellus
18	1/10/2018	11,339	11,501	40	Marcellus
19	1/11/2018	11,139	11,301	40	Marcellus
20	1/11/2018	10,939	11,101	40	Marcellus
21	1/12/2018	10,739	10,901	40	Marcellus
22	1/12/2018	10,539	10,701	40	Marcellus
23	1/14/2018	10,339	10,501	40	Marcellus
24	1/15/2018	10,139	10,301	40	Marcellus
25	1/16/2018	9,939	10,101	40	Marcellus
26	1/16/2018	9,739	9,901	40	Marcellus
27	1/18/2018	9,539	9,701	40	Marcellus
28	1/18/2018	9,339	9,501	40	Marcellus
29	1/19/2018	9,139	9,301	40	Marcellus
30	1/19/2018	8,939	9,101	40	Marcellus
31	1/20/2018	8,739	8,901	40	Marcellus
32	1/21/2018	8,539	8,701	40	Marcellus
33	1/21/2018	8,339	8,501	40	Marcellus
34	1/21/2018	8,139	8,301	40	Marcellus

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**516233 47-017-06744-0000 - 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)
1.01	12/25/2017	13	6,182	8,023	5,051	0	1,100	0
1	12/26/2017	96	8,973	9,293	2,748	600,154	10,668	0
2	12/27/2017	99	8,936	9,276	3,202	600,664	12,066	0
3	12/28/2017	93	8,901	9,299	3,394	600,256	11,840	0
4	12/30/2017	90	8,855	9,300	3,679	599,824	11,628	0
5	12/31/2017	95	8,911	9,149	4,371	599,856	11,923	0
6	1/1/2018	92	8,758	9,301	3,326	600,370	10,473	0
7	1/2/2018	95	9,046	9,300	3,266	599,666	10,166	0
8	1/3/2018	99	8,974	9,243	3,988	597,957	11,830	0
9	1/3/2018	100	8,870	9,318	3,920	599,036	10,041	0
10	1/4/2018	100	8,848	9,195	4,963	599,529	10,164	0
11	1/5/2018	100	8,763	9,211	4,443	598,658	10,694	0
12	1/6/2018	98	8,776	9,294	3,303	600,013	10,894	0
13	1/7/2018	100	8,370	8,896	4,664	600,486	12,983	0
14	1/8/2018	99	8,762	9,129	4,469	600,643	10,141	0
15	1/8/2018	100	8,882	9,198	3,375	571,778	12,101	0
16	1/9/2018	99	8,987	9,286	3,629	601,189	9,950	0
17	1/10/2018	99	8,415	9,404	4,614	600,695	10,087	0
18	1/10/2018	99	8,157	9,263	5,081	600,517	12,794	0
19	1/11/2018	99	8,380	9,056	4,806	601,409	9,799	0
20	1/12/2018	100	8,235	8,877	5,330	599,960	10,036	0
21	1/12/2018	101	7,952	9,011	4,824	600,758	9,653	0
22	1/14/2018	100	8,272	8,621	4,599	600,756	9,777	0
23	1/15/2018	100	7,868	8,539	4,638	599,929	9,920	0
24	1/15/2018	101	7,691	8,005	5,352	600,264	9,884	0
25	1/16/2018	100	8,248	8,731	4,864	599,309	9,859	0
26	1/18/2018	100	8,133	8,907	4,769	599,435	9,948	0
27	1/18/2018	100	7,937	8,337	5,370	600,296	9,742	0
28	1/19/2018	101	8,035	8,405	5,375	601,850	9,319	0
29	1/19/2018	100	8,491	9,018	6,041	600,086	9,441	0
30	1/20/2018	100	8,522	8,801	4,942	601,126	9,611	0
31	1/20/2018	100	8,279	8,743	4,930	600,317	9,520	0
32	1/21/2018	100	7,986	8,606	6,364	601,787	10,039	0
33	1/21/2018	101	7,652	8,297	5,211	600,285	9,441	0
34	1/22/2018	101	7,473	8,850	4,363	600,991	9,394	0

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/25/2017
Job End Date:	1/22/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06744-00-00
Operator Name:	EQT Production
Well Name and Number:	516233
Latitude:	39.15709000
Longitude:	-80.79293000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,623
Total Base Water Volume (gal):	14,990,892
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	99.40909	None
MX-8-2544	Multi-Chem	Bacteria Treatment					
				Listed Below			

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CI-150	FTS International	Acid Corrosion Inhibitor					
				Listed Below			
Sand (Proppant)	FTS International	Proppant					
				Listed Below			
Hydrochloric Acid (15%)	FTS International	Acidizing					
				Listed Below			
Other Chemical (s)	Listed Above	See Trade Name (s) List					
				Listed Below			
MX-5-3886	Multi-Chem	Bacteria Treatment					
				Listed Below			
HVG-14.0	FTS International	Gelling Agent					
				Listed Below			
FRW-1450	FTS International	Mixture					
				Listed Below			
CS-500-SI	FTS International	Scale Inhibitor					
				Listed Below			
ABP-1	FTS International	Breaker					

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				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Silica Substrate	14808-60-7	100.00000	0.27639	None
			Calcium Nitrate.4H2O	13477-34-4	100.00000	0.04398	
			Calcium Nitrate.4H2O	13477-34-4	100.00000	0.04398	None
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.02718	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.02718	None
			Hydrochloric Acid	7647-01-0	15.00000	0.02230	None
			Alcohols, C-11-14-iso, C13-rich, ethoxylated	78330-21-9	5.00000	0.00453	None
			Alcohols, C-11-14-iso, C13-rich, ethoxylated	78330-21-9	5.00000	0.00453	
			Ethylene Glycol	107-21-1	10.00000	0.00281	None
			Ethylene Glycol	107-21-1	10.00000	0.00281	
			Sodium Chloride	7647-14-5	100.00000	0.00274	
			Sodium Chloride	7647-14-5	100.00000	0.00274	None
			Sodium Nitrate	7631-99-4	5.00000	0.00014	
			Sodium Nitrate	7631-99-4	5.00000	0.00014	None
			Isopropanol	67-63-0	30.00000	0.00007	None
			Ethylene Glycol	107-21-1	30.00000	0.00007	None
			Organic Amine Resin Salt	Proprietary	30.00000	0.00007	None
			Raffinates, Sorption Process	64741-85-1	55.00000	0.00006	
			Raffinates, Sorption Process	64741-85-1	55.00000	0.00006	None
			Guar Gum	9000-30-0	50.00000	0.00005	
			Guar Gum	9000-30-0	50.00000	0.00005	None
			Ammonium Persulfate	7727-54-0	95.00000	0.00004	None
			Dimethylformamide	68-12-2	10.00000	0.00002	None
			Quaternary Ammonium Compound	Proprietary	10.00000	0.00002	None

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			Aromatic Aldehyde	Proprietary	10.00000	0.00002	None
			Quartz	14808-60-7	4.00000	0.00000	None
			Quartz	14808-60-7	4.00000	0.00000	
			Isotridecanol, ethoxylated	9043-30-5	2.00000	0.00000	
			Isotridecanol, ethoxylated	9043-30-5	2.00000	0.00000	None

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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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Reviewed

*John A. Z*  
4/19/18

Well Operator's Report of Well Work



Where energy meets innovation.

Well Number: 516233

API: 47 - 017 - 06744

Submission:  Initial  Amended

Notes: Waiting on Flowback

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**WV 516233**  
**EQT Production Company**  
**Franklin Maxwell Heirs L. P.**  
**255 Acres ±**

NO.	ADJACENT OWNER	NO.	SURFACE OWNER
18	EDRA LOUISE GRIMM	1	CHARLES R & EVELYN GREATHOUSE GAPN
21	RANDALL L & KELLY GRIMM	2	JAMES P GREATHOUSE
22	RANDALL L & KELLY GRIMM	3	CATHY JEAN WETZEL ETAL
28	EDWARD & GINA BASSETT	5	HUFF RANDY E DECEDENT'S
30	MARIAN G ZORN	14	BETTY M. RYAN
39	SAMUEL D GASTON	23	UNITED STATES OF AMERICA

NO.	ADJACENT OWNER	NO.	SURFACE OWNER
24	GREGORY L & ROXANNA J MORGAN	24	GREGORY L & ROXANNA J MORGAN
25	GREGORY L & ROXANNA J MORGAN	25	GREGORY L & ROXANNA J MORGAN
26	UNITED STATES OF AMERICA	26	UNITED STATES OF AMERICA
27	EDWARD & GINA BASSETT	27	EDWARD & GINA BASSETT

**WV 516233 Well Point Coordinates**

**Top Hole Coordinates**

NAD 27 S.P.C. (FL)	N: 241,963.120	E: 1,633,365.970
NAD 27 GEO	LAT: 39.157087	LONG: 80.792934
NAD 83 UTM 17N (M)	N 4,334,239.0	E 517,905.5
NAD 83 S.P.C. (FL)	N 241,998.5	E: 1,601,925.1

**Landing Point Coordinates**

NAD 27 S.P.C. (FL)	N: 238,755.162	E: 1,631,763.967
NAD 27 GEO	LAT: 39.150962	LONG: 80.798470
NAD 83 UTM 17N (M)	N 4,333,558.2	E 517,428.7
NAD 83 S.P.C. (FL)	N 239,790.5	E: 1,600,323.2

**Bottom Hole Coordinates**

NAD 27 S.P.C. (FL)	N: 245,901.873	E: 1,629,107.490
NAD 27 GEO	LAT: 39.167731	LONG: 80.808152
NAD 83 UTM 17N (M)	N 4,335,417.2	E 516,588.1
NAD 83 S.P.C. (FL)	N 245,937.1	E: 1,597,666.6

**LEGEND**

- ☆ EXISTING OIL/GAS WELL
- ⊙ WATER FEATURE
- ⊙ WELL HEAD TOP HOLE
- ▲ WELL LANDING POINT
- WELL BOTTOM HOLE
- REBAR FOUND
- DRILLED LATERAL LINE
- PERMITTED LATERAL LINE
- LEASE BOUNDARY
- PROPERTY LINE
- STREAM
- 500' LATERAL COLLECTION BUFFER

**Coordinate Notes**  
West Virginia Coordinate System of 1927 (North Zone) Based upon Differential GPS Measurements. Plat orientation, Corner and well ties are based upon the grid north meridian. Well location references are based upon the grid north meridian. UTM Coordinates are NAD83, Zone 17 Meters.

Lease No.	Acres	Owner
122692	200	Jonathan D. Casto, et al
109841	2000	Adele McDougal, et al

