WR-35
Rev (9-11)

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

DATE: 01/09/2015
API #: 47-085-10130

Farm name: Jed Rollins & Jefferson Rollins Operator Well No.: W-1650

LOCATION: Elevation: 962' Quadrangle: Harrisville

District: Murphy County: Ritchie
Latitude: 13050 Feet South of 39 Deg. 12 Min. 30 Sec.
Longitude 6670 Feet West of 81 Deg. 02 Min. 30 Sec.

Company: Haught Energy Corporation

Address: 12864 Staunton Turnpike	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Smithville, WV 26178	13-3/8"	40'	40'	
Agent: Warren R. Haught	9-5/8"	338'	338'	Surface (100 Sks)
Inspector: David Cowan	7"	2156'	2156'	Surface (300 Sks)
Date Permit Issued: 07/16/2014	4-1/2"	6078.7'	6078.7'	4000' (250 Sks)
Date Well Work Commenced: 9/05/2014				
Date Well Work Completed: 1/05/2015				
Verbal Plugging:				
Date Permission granted on:				
Rotary ☐ Cable ☐ Rig ☑				
Total Vertical Depth (ft): 6,118'				
Total Measured Depth (ft): 6,081'				
Fresh Water Depth (ft.): 45'				
Salt Water Depth (ft.): None				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): None				
Void(s) encountered (N/Y) Depth(s) None				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Benson/Alexander Pay zone depth (ft) 4,000-4,620
Gas: Initial open flow show MCF/d Oil: Initial open flow 2 Bbl/d
Final open flow 200 MCF/d Final open flow 1 Bbl/d
Time of open flow between initial and final tests 12 Hours
Static rock Pressure 1000 psig (surface pressure) after 24 Hours

Second producing formation Hamilton Shale Pay zone depth (ft) 5560'-5690'
Gas: Initial open flow show MCF/d Oil: Initial open flow - Bbl/d
Final open flow 100 MCF/d Final open flow - Bbl/d
Time of open flow between initial and final tests 12 Hours
Static rock Pressure 1000 psig (surface pressure) after 24 Hours

Received
Office of Oil & Gas
JAN 14 2015

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Warren R. Haught 1/12/15
Signature Date

85-10130

Were core samples taken? Yes_____ No X

Were cuttings caught during drilling? Yes_____ No X

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list Gamma Ray, Neutron, Density, Induction, Temp., Audio

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

Perforated by Superior Well Services 9/17//2014

Perforations at: 3990' - 3995' ; 4414' - 4430' ; 4619' - 4625'; 5564' - 5574'; 5655' - 5689'

Fractured by Universal Well Services 09/23/2014

3 Stage Nitrogen Frac totaling 2,050,000 cubic feet

Plug Back Details Including Plug Type and Depth(s): NA

Formations Encountered: Top Depth / Bottom Depth

Surface:

See attached worksheet

Received
Office of Oil & Gas
JAN 14 2015

Rollins W-1650
API # 47-085-10130

Formation	Top	Bottom	Remarks
Red Rock & Shale	0	544	
Sand	544	579	
Red Rock	579	659	
Sand	659	679	
Red Rock	679	744	
Slate	744	859	
Dunkard Sand	859	979	
Slate & Shells	979	1204	
Gas Sand	1204	1319	
Slate	1319	1379	
1st Salt Sand	1379	1440	
Shale	1440	1480	
2nd Salt Sand	1480	1498	
Shale	1498	1524	
3rd Salt Sand	1524	1639	
Slate	1639	1724	
Maxon Sand	1724	1759	
Shale	1759	1834	
Little lime	1834	1856	
Pencil Cave	1856	1868	
Big Lime	1868	1966	
Big Injun Sand	1966	2014	
Slate Break	2014	2019	
Squaw Sand	2019	2027	
Slate & Shells	2027	2378	
Berea Sand	2378	2404	
Slate & Shells	2404	2752	
Gordon	2752	2778	
Slate & Shells	2778	4409	
Riliey	4409	4434	
Slate & Shells	4434	4606	
Benson Sand	4606	4610	
Slate & Shells	4610	4900	
Alexander Sand	4900	4914	
Slate & Shells	4914	5536	
Hamilton Shale	5536	5572	
Slate & Shells	5572	5612	
Elk	5612	5680	
Slate & Shells	5680	5994	
Marcellus	5994	6072	
Onandoga lime	6072	6118	
TD	6118		

Received
Office of Oil & Gas
JAN 14 2015

WR-35
Rev (9-11)

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

DATE: 1/12/2015
API #: 47-085-10131

Farm name: Jed Rollins & Jefferson Rollins Operator Well No.: W-1651

LOCATION: Elevation: 977' Quadrangle: Harrisville

District: Murphy County: Ritchie
Latitude: 12110 Feet South of 39 Deg. 12 Min. 30 Sec.
Longitude 5680 Feet West of 81 Deg. 02 Min. 30 Sec.

Company: Haught Energy Corporation

Address: 12864 Staunton Turnpike	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Smithville, WV 26178	13-3/8"	40'	40'	
Agent: Warren R. Haught	9-5/8"	336'	336'	Surface (120 Sks)
Inspector: David Cowan	7"	2107'	2107'	Surface (300 Sks)
Date Permit Issued: July 16, 2014	4-1/2"	6104'	6104'	2300' (160 Sks)
Date Well Work Commenced: 9/16/2014				
Date Well Work Completed: 1/05/2015				
Verbal Plugging:				
Date Permission granted on:				
Rotary ☐ Cable ☐ Rig ☑				
Total Vertical Depth (ft): 6,132'				
Total Measured Depth (ft): 6,109'				
Fresh Water Depth (ft.): 55'				
Salt Water Depth (ft.): None				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): None				
Void(s) encountered (N/Y) Depth(s) None				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)
Producing formation Benson/Alexander Pay zone depth (ft) 4430'-4940'
Gas: Initial open flow 50 MCF/d Oil: Initial open flow - Bbl/d
Final open flow 250 MCF/d Final open flow - Bbl/d
Time of open flow between initial and final tests 12 Hours
Static rock Pressure 1500 psig (surface pressure) after 24 Hours

Second producing formation Hamilton Shale Pay zone depth (ft) 5990'-5860'
Gas: Initial open flow show MCF/d Oil: Initial open flow - Bbl/d
Final open flow 150 MCF/d Final open flow - Bbl/d
Time of open flow between initial and final tests 12 Hours
Static rock Pressure 1500 psig (surface pressure) after 24 Hours

Received
Office of Oil & Gas
JAN 14 2015

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Warren R. Haught 1/12/15
Signature Date

85.10131

Were core samples taken? Yes_____ No X

Were cuttings caught during drilling? Yes_____ No X

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list Gamma Ray, Neutron, Density, Induction, Temp., Audio

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

Perforated by Superior Well Services 10/15/2014

Perforations at: 4436' - 4456' ; 4636' - 4640' ; 4934' - 4938'; 5590' - 5600'; 5680' - 5739'; 5850' - 5856'

Fractured by Universal Well Services 10/16/2014

3 Stage Nitrogen Frac totaling 2,400,000 cubic feet

Plug Back Details Including Plug Type and Depth(s): NA

Formations Encountered: Top Depth / Bottom Depth

Surface:

See attached worksheet

Received
Office of Oil & Gas
JAN 14 2015

Rollins W-1651

API # 47-085-10131

Formation	Top	Bottom	Remarks
Red Rock & Shale	0	559	
Sand	559	594	
Red Rock	594	674	
Sand	674	694	
Red Rock	694	759	
Slate	759	874	
Dunkard Sand	874	994	
Slate & Shells	994	1219	
Gas Sand	1219	1334	
Slate	1334	1394	
1st Salt Sand	1394	1455	
Shale	1455	1494	
2nd Salt Sand	1494	1513	
Shale	1513	1539	
3rd Salt Sand	1539	1654	
Slate	1654	1739	
Maxon Sand	1739	1774	
Shale	1774	1849	
Little lime	1849	1871	
Pencil Cave	1871	1883	
Big Lime	1883	1981	
Big Injun Sand	1981	2029	
Slate Break	2029	2034	
Squaw Sand	2034	2042	
Slate & Shells	2042	2393	
Berea Sand	2393	2419	
Slate & Shells	2419	2767	
Gordon	2767	2793	
Slate & Shells	2793	4424	
Riliey	4424	4449	
Slate & Shells	4449	4621	
Benson Sand	4621	4625	
Slate & Shells	4625	4915	
Alexander Sand	4915	4929	
Slate & Shells	4929	5551	
Hamilton Shale	5551	5587	
Slate & Shells	5587	5627	
Elk	5627	5695	
Slate & Shells	5695	6024	
Marcellus	6024	6100	
Onandoga lime	6100	6132	
TD	6132		

Received
Office of Oil & Gas
JAN 14 2015

pM

WR-35
Rev. 8/23/13

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

API 47 - 095 - 02064 County Tyler District Centerville
Quad Shirley Pad Name Graff Field/Pool Name
Farm name John H. Graff and Frances J. Graff Well Number Graff Unit 1H
Operator (as registered with the OOG) Trans Energy, Inc.
Address P.O. Box 393 City St. Marys State WV Zip 26170

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing	4364646.70	Easting	512966.93
Landing Point of Curve	Northing	4363087.23	Easting	512756.86
Bottom Hole	Northing	4364999.83	Easting	512874.30

Elevation (ft) 1030 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 Drilling Mud: additives = Calcium Carbonate, Calcium Chloride, Synvert LEM, Synvert Synthetic WA-L, Barite, Hydrated Lime, Cedar Fiber, Rubber Crumb, Cottonseed Hulls, Synvert Synthetic 11-L, Bentonite, Soda Ash, Lignite, Aluminum Sterate, Citric Acid, Sodium Bicarbonate, Glycerine, Caustic Soda Beads, Drispac Low Vis, Desco, Bioclear

Date permit issued 12/11/12 Date drilling commenced 6/10/13 Date drilling ceased 7/5/13
Date completion activities began Date completion activities ceased 2/7/14
Verbal plugging (Y/N) N/A 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 60', 150' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1525' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 900' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

RECEIVED
Office of Oil and Gas
OCT 23 2014
WV Department of
Environmental Protection

Reviewed by:

WR-35
Rev. 8/23/13

API 47-095 - 02064 Farm name John H. Graff and Frances J. Graff Well number Graff Unit 1H

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		20"	50'	New	J-55 / 94	N/A	Y
Surface		13-3/8"	971'	New	J-55 / 54.5	160'	Y
Coal							
Intermediate 1		9-5/8"	3,168'	New	J-55 / 36	200'	Y
Intermediate 2							
Intermediate 3							
Production		5-1/2"	11,560'	New	P110 / 20	N/A	Y
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							
Surface	Type 1	903	14.8	1.25	948	CTS	8
Coal							
Intermediate 1	Premium NE-1	999	15.6	1.26	1053	CTS	8
Intermediate 2							
Intermediate 3							
Production	Class H	1288	13.5	1.18	2809	CTS	8
Tubing							

Drillers TD (ft) 11,855.90' Loggers TD (ft) 11,855.90'
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 6,118'

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
Fresh Water String - 1 Centralizer every 160'
Intermediate String - 1 Centralizer every 100' from 3000' to 900'
Production String - 1 Centralizer every 80' from TD to above ROP 7,000'

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

RECEIVED
Office of Oil and Gas
OCT 23 2014
WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47- 095 - 02064 Farm name John H. Graff and Frances J. Graff Well number Graff Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
			*Please see Exhibit 1		

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 Exhibit 2				

Please insert additional pages as applicable.

API 47-095-02064 Farm Name John H. & Frances J. Graff Well Number Graff Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	15-Jan-14	11,259	11,423	60	Marcellus
2	15-Jan-14	11,064	11,228	60	Marcellus
3	16-Jan-14	10,869	11,033	60	Marcellus
4	16-Jan-14	10,673	10,838	60	Marcellus
5	16-Jan-14	10,478	10,643	60	Marcellus
6	16-Jan-14	10,283	10,448	60	Marcellus
7	17-Jan-14	10,088	10,253	60	Marcellus
8	17-Jan-14	9,893	10,058	60	Marcellus
9	18-Jan-14	9,698	9,862	60	Marcellus
10	18-Jan-14	9,503	9,667	60	Marcellus
11	18-Jan-14	9,308	9,472	60	Marcellus
12	18-Jan-14	9,112	9,277	60	Marcellus
13	18-Jan-14	8,917	9,082	60	Marcellus
14	19-Jan-14	8,722	8,887	60	Marcellus
15	19-Jan-14	8,527	8,692	60	Marcellus
16	19-Jan-14	8,332	8,497	60	Marcellus
17	20-Jan-14	8,137	8,301	60	Marcellus
18	20-Jan-14	7,942	8,106	60	Marcellus
19	20-Jan-14	7,747	7,911	60	Marcellus
20	20-Jan-14	7,552	7,716	60	Marcellus
21	21-Jan-14	7,356	7,521	60	Marcellus
22	21-Jan-14	7,161	7,326	60	Marcellus

RECEIVED
Office of Oil and Gas
OCT 23 2014
WV Department of
Environmental Protection

95-02064

API 47-095-02064 Farm Name John H. & Frances J. Graff Well Number Graff Unit 1H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	15-Jan-14	72.0	7,492	5,315	4,421	126,220	6,055	N/A
2	15-Jan-14	43.0	8,571	5,877	4,565	35,125	6,406	N/A
3	16-Jan-14	74.0	7,766	6,334	4,068	150,030	6,092	N/A
4	16-Jan-14	65.0	6,582	5,981	4,976	126,020	6,525	N/A
5	16-Jan-14	76.7	7,340	5,679	4,915	226,200	5,844	N/A
6	16-Jan-14	76.8	6,939	5,426	1,933	225,720	5,900	N/A
7	17-Jan-14	76.0	7,214	5,336	5,106	176,580	6,382	N/A
8	17-Jan-14	62.0	6,776	5,430	5,149	81,700	6,382	N/A
9	18-Jan-14	76.5	7,266	5,470	4,698	225,230	5,822	N/A
10	18-Jan-14	77.0	6,835	5,052	5,405	223,200	5,802	N/A
11	18-Jan-14	79.0	7,162	5,311	4,961	225,460	5,782	N/A
12	18-Jan-14	79.0	7,175	5,405	5,134	230,480	5,758	N/A
13	18-Jan-14	75.8	6,922	5,178	5,052	228,810	5,771	N/A
14	19-Jan-14	77.0	7,148	5,361	5,336	226,580	5,753	N/A
15	19-Jan-14	79.6	7,213	5,192	5,120	224,900	5,768	N/A
16	19-Jan-14	75.7	7,315	5,271	4,111	199,460	6,256	N/A
17	20-Jan-14	77.0	6,727	5,336	4,594	226,480	5,680	N/A
18	20-Jan-14	79.5	7,153	5,833	3,182	225,100	5,745	N/A
19	20-Jan-14	76.0	6,931	5,369	4,518	227,590	5,669	N/A
20	20-Jan-14	74.0	6,529	5,048	5,379	175,510	5,968	N/A
21	21-Jan-14	78.0	7,046	5,214	5,124	207,500	6,104	N/A
22	21-Jan-14	78.0	6,561	4,929	4,302	169,865	5,764	N/A

RECEIVED
Office of Oil and Gas
OCT 23 2014
WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47- 095 - 02064 Farm name John H. Graff and Frances J. Graff Well number Graff Unit 1H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6,524'	TVD	11,885'	MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	37,358 mcfpd	455 bpd	_____ bpd	_____ bpd	□ Estimated □ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
		SEE	ATTACHED	EXHIBIT 3	

Please insert additional pages as applicable.

Drilling Contractor H & P International Drilling Co.
Address P.O. Box 650823 City Dallas State TX Zip 75265

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company Baker Hughes
Address P.O. Box 506 City Clarksville State WV Zip 26301

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Leslie A Gearhart Telephone 304-684-7053
Signature [signature] Title VP Operations Date OCT 23 2014

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

RECEIVED
Office of Oil and Gas
WV Department of
Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/15/2014
Job End Date:	1/21/2014
State:	West Virginia
County:	Tyler
API Number:	47-095-02064-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Graff Unit 1H
Longitude:	-80.84950600
Latitude:	39.43118100
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,567
Total Base Water Volume (gal):	5,511,576
Total Base Non Water Volume:	211,433

95-02064

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	Antero Resources	Base Fluid					
			Water	7732-18-5	100.00000	91.40227	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	8.27944	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.10510	
			Hydrogen Chloride	7641-01-1	18.00000	0.02510	
LGC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.04349	
			Petroleum Distillates	64742-47-8	60.00000	0.04119	
			Suspending agent (solid)	14808-60-7	3.00000	0.00665	
			Surfactant	68439-51-0	3.00000	0.00261	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			Anionic Polyacrylamide	Proprietary		0.02421	
			Water	7732-18-5	40.00000	0.02421	
			Petroleum Distillates	64742-47-8	22.00000	0.01949	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00303	

RECEIVED
Office of Oil and Gas
OCT 23 2014
WV Department of
Environmental Protection

			Crystalline Salt	12125-02-9	5.00000	0.00303	
SI-1000	U.S. Well Services, LLC	Scale Inhibitor					
			Anionic Copolymer	Proprietary		0.00415	
			Ethylene Glycol	107-21-1	20.00000	0.00375	
			Water	7732-18-5	30.00000	0.00312	
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00441	
			Deionized Water	7732-18-5	28.00000	0.00252	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00163	
AI-300	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene Glycol	107-21-1	31.00000	0.00028	
			N,N-Dimethylformamide	68-12-2	15.00000	0.00009	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00007	
			Cinnamaldehyde	104-55-2	5.00000	0.00007	
			2-Butoxyethanol	111-76-2	7.00000	0.00006	
			Water	7732-18-5	20.00000	0.00003	
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002	
			Triethyl Phosphate	78-40-0	3.00000	0.00001	
			Isopropyl Alcohol	67-63-0	3.00000	0.00001	

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)

95-02064

RECEIVED
Office of Oil and Gas
OCT 23 2014
WV Department of
Environmental Protection

WR-35
Rev. 8/23/13

API 47- 095 - 02064 Farm name John H. Graff and Frances J. Graff Well number Graff Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6,524' TVD	11,885' MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	37,358 mcfpd	455 bpd	_____ bpd	_____ bpd	☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
Middlesex	6362'	6453'			
Burkett	6454'	6490'			
Limestone	6491'	6523'			
Marcellus	6524'	6573'			

Please insert additional pages as applicable.

Drilling Contractor H & P International Drilling Co.
Address P.O. Box 650823 City Dallas State TX Zip 75265

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company Baker Hughes
Address P.O. Box 506 City Clarksville State WV Zip 26301

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

RECEIVED
Office of Oil and Gas
OCT 28 2014
WV Department of
Environmental Protection

Completed by _____ Telephone _____
Signature _____ Title _____ Date _____

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API: 47-095-02064	Farm Name: John H. & Frances J. Graff	
EXHIBIT 3		
	Top	Bottom
Lithology/	Depth in Ft	Depth in Ft
Formation	Name TVD	TVD
Sand	0	795'
Dunkard	1279'	1300'
1st Salt	1498'	1562'
2nd Salt	1593'	1712'
3rd Salt	1762'	1810'
Maxton	1905	1921'
Big Lime	1970	2040'
Big Injun	2046	2136'
Berea	2494	2498'
30 Foot	2733	2780'
Gordon	2920	2933'
5th	3022	3028'
Warren	3223	3297'
Riley	4582	4614'
Benson	4980	4984'
Alexander	4922	4962'
Elk	5188	5248'
Middlesex	6362	6453'
Burket	6454	6490'
Limeston	6491	6523'
Marcellus	6524	6573'

RECEIVED
Office of Oil and Gas

OCT 23 2014

WV Department of
Environmental Protection

bottom hole 80°51' 01.45" (80. 850403)

4810'

top hole 80°50' 57.60" (80.849333)

4560'

LATITUDE 39°27' 30"

UTM NAD 83
N: 4364650
E: 512985

80°50' 00"

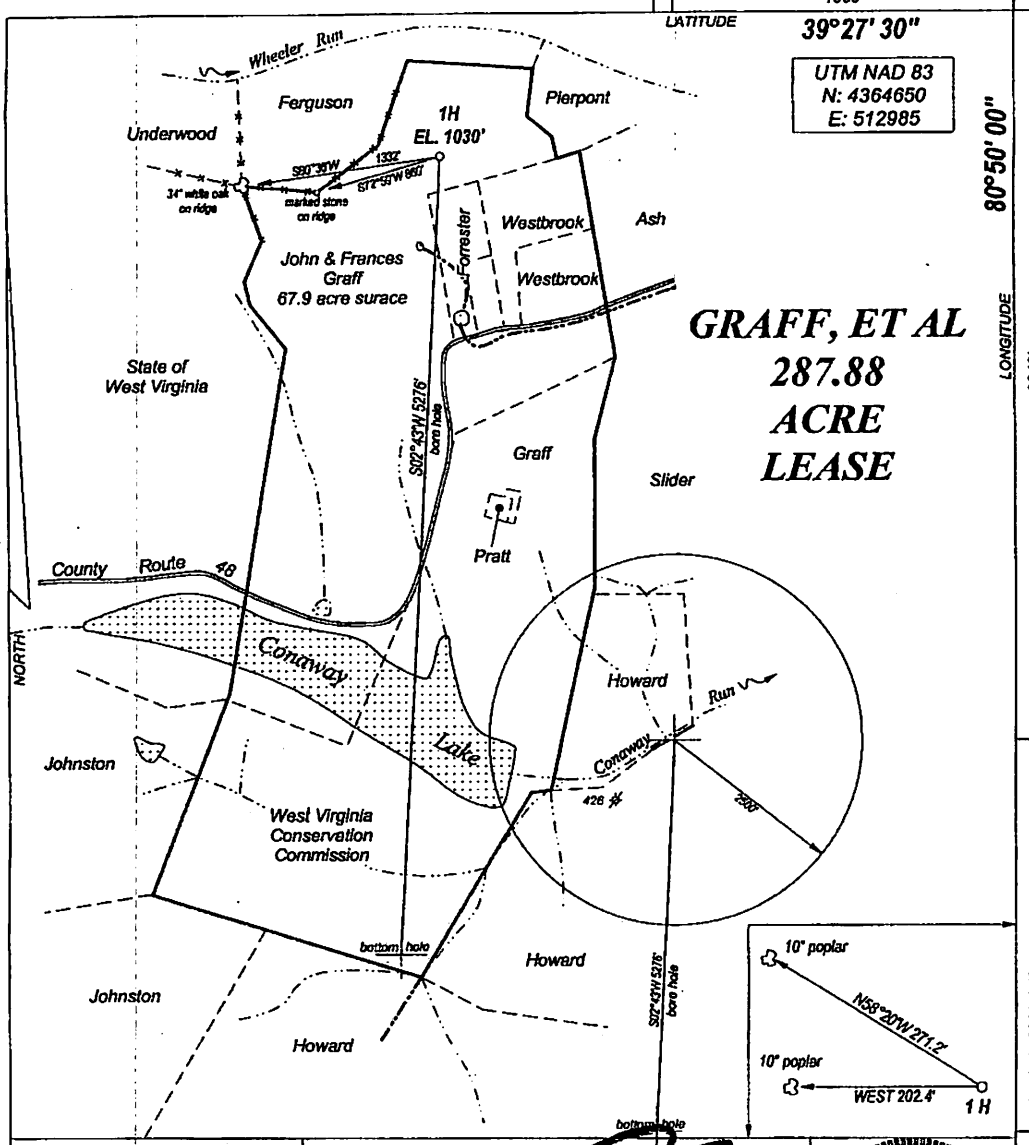
LONGITUDE

9840'

15110'

top hole 39°25' 52.54" (39.431261)

bottom hole 39°25' 00.64" (39.416844)



FILE NO.
DRAWING NO.
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY 1 : 200
PROVEN SOURCE OF ELEVATION GPS OBSERVATION

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 DEPARTMENT OF ENERGY.

(SIGNED)
PROFESSIONAL SURVEYOR: 551

WILLIAM R. MOSSOR SURVEYOR No.551 STATE OF WEST VIRGINIA PROFESSIONAL

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS

DATE APRIL 9TH, 2012
OPERATORS WELL NO. GRAFF 1H

API 47 - 095 - ____
STATE COUNTY PERMIT

WELL TYPE: OIL XX GAS XX LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF GAS) PRODUCTION XX STORAGE ___ DEEP XX SHALLOW XX

LOATION: ELEVATION 1030' WATER SHED CONAWAY RUN
DISTRICT CENTERVILLE COUNTY TYLER QUADRANGLE SHIRLEY

SURFACE OWNER JOHN H. GRAFF & FRANCES J. GRAFF ACREAGE 67.9
OIL & GAS ROYALTY GRAFF, ET AL LEASE AC. 287.88

PROPOSED WORK: DRILL XX CONVERT ___ DRILL DEEPER ___ REDRILL ___
FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ LOG & SIDEWALL CORE UTICA
OTHER PHYSICAL CHANGE IN WELL PLUG BACK TO MARCELLUS
PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___

TARGET FORMATION UTICA (MARCELLUS SHALE) ESTIMATED DEPTH 11000' (7200')

WELL OPERATOR TRANS ENERGY, INC.
ADDRESS P. O. BOX 393
ST. MARYS, WV 26170

DESIGNATED AGENT LOREN BAGLEY
ADDRESS P. O. BOX 393
ST. MARYS, WV 26170

FORM WW - 6

COUNTY NAME

PREAM

RECEIVED
Office of Oil and Gas
OCT 28 2014
WV Department of
Environmental Protection

WR-35
Rev (9-11)

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

DATE: 12/30/2014
API #: 47-103-02726

Farm name: Junior L. Robinson Operator Well No.: W-1635

LOCATION: Elevation: 1322' Quadrangle: Pine Grove

District: Green County: Wetzel
Latitude: 11930 Feet South of 39 Deg. 37 Min. 30 Sec.
Longitude 8490 Feet West of 80 Deg. 40 Min. 00 Sec.

Company: Haught Energy Corporation

Address: 12864 Staunton Turnpike	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Smithville, WV 26178	13-3/8"	40'	40'	Sanded In
Agent: Warren R. Haught	9-5/8"	468'	468'	To Surface (110 Sks)
Inspector: Derek Haught	7"	1483'	1483'	To Surface (327 sks)
Date Permit Issued: December 7, 2011	4-1/2"	2380'	2380'	
Date Well Work Commenced: 5/14/2012				
Date Well Work Completed: 10/25/2012				
Verbal Plugging:				
Date Permission granted on:				
Rotary ☐ Cable ☐ Rig ☑				
Total Vertical Depth (ft): 3320'				
Total Measured Depth (ft): 3320'				
Fresh Water Depth (ft.): 280'				
Salt Water Depth (ft.): 1550'				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): None				
Void(s) encountered (N/Y) Depth(s) None				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)
Producing formation Gordon Pay zone depth (ft) 3138-3184
Gas: Initial open flow show MCF/d Oil: Initial open flow - Bbl/d
Final open flow 30 MCF/d Final open flow - Bbl/d
Time of open flow between initial and final tests 72 Hours
Static rock Pressure 150 psig (surface pressure) after 12 Hours

Second producing formation_____ Pay zone depth (ft)_____
Gas: Initial open flow_____MCF/d Oil: Initial open flow_____Bbl/d
Final open flow_____MCF/d Final open flow _____Bbl/d
Time of open flow between initial and final tests_____Hours
Static rock Pressure_____psig (surface pressure) after _____Hours

Received
Office of Oil & Gas
JAN 14 2015

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Warren R. Haught 1/12/15
Signature Date

103.02726

Were core samples taken? Yes_____ No X

Were cuttings caught during drilling? Yes_____ No X

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list None

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

Open Hole below casing - Natural

Plug Back Details Including Plug Type and Depth(s):

Formations Encountered: Top Depth / Bottom Depth

Surface:

See attached worksheet

Received
Office of Oil & Gas
JAN 14 2015

Robinson W-1635
API # 47-103-02726

Formation	Top	Bottom	Remarks
Red Rock & Shale	0	825	
Sand	825	849	
Red Rock	849	1151	
Sand	1151	1185	
Red Rock	1185	1308	
Slate	1308	1325	
Dunkard Sand	1325	1344	
Slate & Shells	1344	1503	
Gas Sand	1503	1595	
Slate	1595	1662	
Sand	1662	1723	
Shale	1723	1764	
Sand	1764	1778	
Shale	1778	1865	
Sand	1865	1923	
Slate & Shells	1923	2185	
Little lime	2185	2203	
Slate & Shells	2203	2223	
Big Lime	2223	2368	
Big Injun Sand	2368	2571	
Slate Break	2571	2633	
Squaw Sand	2633	2641	
Slate & Shells	2641	2713	
Weir	2713	2766	
Slate & Shells	2766	2915	
Berea Sand	2915	2932	
Slate & Shells	2932	3139	
Gordon	3139	3185	
Slate & Shells	3185	3320	
TD	3320		

Received
Office of Oil & Gas
JAN 14 2015

pm

WR-35
Rev (9-11)

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

DATE: 12/10/13
API #: 47-103-02819

Farm name: Richard Dallison et al Operator Well No.: 513534

LOCATION: Elevation: 1,452' Quadrangle: Big Run

District: Grant County: Wetzel, WV
Latitude: 5,124 Feet South of 39 Deg. 32 Min. 30 Sec.
Longitude 11,617 Feet West of 80 Deg. 32 Min. 30 Sec.

Company: EQT Production Company

Address: EQT Plaza, Suite 1700	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
625 Liberty Avenue, Pittsburgh, PA 15222	20	40	40	45
Agent: Cecil Ray	13 3/8	868	868	897
Inspector: Bill Hatfield	9 5/8	3,745	3,745	1,523
Date Permit Issued: 10/26/2012	5 1/2	12,473	12,473	1,825
Date Well Work Commenced: 2/25/2013				
Date Well Work Completed: 7/4/2013				
Verbal Plugging: N/A				
Date Permission granted on: N/A				
Rotary ✓ Cable ☐ Rig ✓				
Total Vertical Depth (ft): 7,716'				
Total Measured Depth (ft): 12,473'				
Fresh Water Depth (ft.): 552', 783'				
Salt Water Depth (ft.): 2,240'				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): 737, 807, 922, 1012, 1244				
Void(s) encountered (N/Y) Depth(s) No				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)
Producing formation Marcellus Pay zone depth (ft) 7,636
Gas: Initial open flow 1,872 MCF/d Oil: Initial open flow 0 Bbl/d
Final open flow 8,946 MCF/d Final open flow 0 Bbl/d
Time of open flow between initial and final tests 88 Hours
Static rock Pressure 3,164 psig (surface pressure) after 99 Hours

Second producing formation No second formation. Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

RECEIVED
Office of Oil and Gas
SEP 09 2014
WV Department of
Environmental Protection

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Signature 9/8/2014
Date

103-02819

Were core samples taken? Yes_____ No X

Were cuttings caught during drilling? Yes X No_____

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list MWD, Gamma, and CBL Logs

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing, or Stimulating:

See Attachment

Amended Report with Flow Back Data

Plug Back Details Including Plug Type and Depth(s): Pumped solid cement plug from 1,766' to 904'

Formations Encountered: Top Depth / Bottom Depth

Surface:

SAND / SHALE / 0 / 737 / 737 --

COAL / 737 / 738 / 1 -- SAND / SHALE / 738 / 807 / 69 --

COAL / 807 / 817 / 10 -- SAND / SHALE / 817 / 922 / 105 --

COAL / 922 / 927 / 5 -- SAND / SHALE / 927 / 1,012 / 85 --

COAL / 1,012 / 1,022 / 10 -- SAND / SHALE / 1,022 / 1,244 / 222 --

COAL / 1,244 / 1,246 / 2 -- SAND / SHALE / 1,246 / 2,475 / 1,229 --

BIG LIME / 2,475 / 3,957 / 1,482 -- WARREN / 3,957 / 4,107 / 151 --

SPEECHLEY / 4,107 / 4996 / 889 -- RILEY / 4996 / 5,631 / 635 --

BENSON / 5,631 / 5,958 / 327 -- ALEXANDER / 5,958 / 7,170 / 1,212 --

RHINESTREET / 7,170 / 7,176 / 6 -- Sonyea / 7,176 / 7,320 / 144 --

Middlesex / 7,320 / 7,364 / 44 -- Genesee / 7,364 / 7,433 / 69 --

Geneseo / 7,433 / 7,525 / 92 -- Tully / 7,525 / 7,557 / 32 --

Hamilton / 7,557 / 7,636 / 79 -- Marcellus / 7,636 / 7716 / 80 --

513534 - Perforations

Zone/Stage	Date	Top Plug Depth (ftKB)	Bottom Plug Depth (ftKB)	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Shots/ft
Toe Pop	3/26/14 14:10	12,310.00	NA	12,445.00	12,448.00	NA
1	3/26/14 19:45	12,310.00	NA	12,324.00	12,416.00	4
2	3/27/14 0:28	12,160.00	12,310.00	12,174.00	12,296.00	4
3	3/27/14 5:45	12,010.00	12,160.00	12,024.00	12,146.00	4
4	3/27/14 10:20	11,860.00	12,010.00	11,874.00	11,996.00	4
5	3/27/14 15:59	11,710.00	11,860.00	11,724.00	11,846.00	4
6	3/27/14 18:17	11,560.00	11,710.00	11,574.00	11,696.00	4
7	3/27/14 22:39	11,410.00	11,560.00	11,424.00	11,546.00	4
8	3/28/14 2:52	11,260.00	11,410.00	11,274.00	11,396.00	4
9	3/28/14 8:11	11,110.00	11,260.00	11,124.00	11,246.00	4
10	3/28/14 11:37	10,960.00	11,110.00	10,974.00	11,096.00	4
11	3/28/14 16:49	10,810.00	10,960.00	10,824.00	10,946.00	4
12	3/28/14 21:24	10,660.00	10,810.00	10,674.00	10,796.00	4
13	3/29/14 0:55	10,510.00	10,660.00	10,524.00	10,646.00	4
14	3/29/14 13:30	10,360.00	10,510.00	10,374.00	10,496.00	4
15	3/29/14 17:27	10,210.00	10,360.00	10,224.00	10,346.00	4
16	3/29/14 22:26	10,060.00	10,210.00	10,074.00	10,196.00	4
17	3/30/14 2:49	9,910.00	10,060.00	9,924.00	10,046.00	4
18	3/30/14 10:49	9,760.00	9,910.00	9,774.00	9,896.00	4
19	3/30/14 18:48	9,610.00	9,760.00	9,624.00	9,746.00	4
20	3/30/14 23:38	9,460.00	9,610.00	9,474.00	9,596.00	4
21	3/31/14 9:02	9,310.00	9,460.00	9,324.00	9,446.00	4
22	3/31/14 17:37	9,160.00	9,310.00	9,174.00	9,296.00	4
23	3/31/14 21:45	9,010.00	9,160.00	9,024.00	9,146.00	4
24	4/1/14 1:08	8,860.00	9,010.00	8,874.00	8,996.00	4
25	4/1/14 5:09	8,710.00	8,860.00	8,724.00	8,844.00	4
26	4/1/14 12:51	8,560.00	8,710.00	8,574.00	8,696.00	4
27	4/1/14 16:43	8,410.00	8,560.00	8,424.00	8,544.00	4
28	4/1/14 20:54	8,260.00	8,410.00	8,274.00	8,396.00	4
29	4/2/14 0:50	8,110.00	8,260.00	8,124.00	8,246.00	4
30	4/2/14 4:10	NA	8,110.00	7,974.00	8,096.00	4

513534 - Stimulated Stages

Zone/Stage	P Break (psi)	Avg Treat Pressure (psi)	Avg rate (bbl/min)	ISIP (psi)	Frac Gradient (psi/ft)	15 Min. SIP (psi)	Fluid Volume (bbl)	Start Date	End Date	Proppant (lb)
Toe Pop	NA	8,260.00	10.8	NA	NA	NA	2,600	3/26/2014 14:52	3/26/2014 18:50	NA
1	6,850.00	8,627.00	93.5	4,148.00	0.97	3,519.00	5,346	3/26/2014 22:19	3/26/2014 23:44	203,500
2	6,707.00	8,564.00	97.0	4,504.00	1.02	3,761.00	4,832	3/27/2014 2:48	3/27/2014 4:00	197,700
3	6,692.00	8,549.00	95.7	5,282.00	1.12	4,020.00	5,203	3/27/2014 7:16	3/27/2014 8:28	201,800
4	6,434.00	8,675.00	95.5	5,471.00	1.14	4,292.00	5,102	3/27/2014 11:49	3/27/2014 13:03	201,500
5	7,348.00	8,600.00	90.0	5,169.00	1.1	4,114.00	5,007	3/27/2014 16:18	3/27/2014 17:34	199,400
6	6,841.00	8,588.00	89.3	5,380.00	1.13	4,252.00	4,639	3/27/2014 20:45	3/27/2014 21:56	201,900
7	6,989.00	8,706.00	93.8	5,206.00	1.11	4,298.00	4,655	3/28/2014 1:03	3/28/2014 2:10	200,700
8	6,701.00	8,504.00	95.6	5,432.00	1.14	4,421.00	5,493	3/28/2014 5:00	3/28/2014 6:23	201,300
9	6,111.00	8,746.00	91.5	5,459.00	1.14	4,296.00	5,175	3/28/2014 9:32	3/28/2014 10:45	200,300
10	6,325.00	8,660.00	92.9	5,117.00	1.1	4,214.00	5,161	3/28/2014 14:40	3/28/2014 15:54	200,700
11	6,641.00	8,588.00	99.5	5,404.00	1.13	4,239.00	4,616	3/28/2014 19:39	3/28/2014 20:43	200,200
12	6,417.00	8,483.00	100.3	5,574.00	1.16	4,401.00	4,589	3/28/2014 23:14	3/29/2014 0:17	197,900
13	7,332.00	8,220.00	100.0	5,452.00	1.14	4,358.00	4,683	3/29/2014 4:35	3/29/2014 5:38	199,400
14	6,343.00	8,535.00	99.7	5,330.00	1.12	4,361.00	4,854	3/29/2014 14:42	3/29/2014 15:49	199,000
15	6,122.00	8,539.00	100.3	5,642.00	1.16	4,485.00	4,910	3/29/2014 19:37	3/29/2014 20:46	199,900
16	6,900.00	8,353.00	99.4	5,613.00	1.16	4,325.00	5,524	3/30/2014 0:21	3/30/2014 2:00	200,200
17	6,208.00	8,048.00	100.7	5,276.00	1.12	4,191.00	5,177	3/30/2014 8:01	3/30/2014 9:10	200,700
18	6,681.00	8,195.00	100.5	5,544.00	1.15	4,460.00	4,719	3/30/2014 16:14	3/30/2014 17:17	200,400
19	6,287.00	8,309.00	100.3	5,693.00	1.17	4,639.00	4,687	3/30/2014 21:58	3/30/2014 22:53	204,000
20	6,756.00	8,277.00	100.4	5,402.00	1.13	4,217.00	5,051	3/31/2014 6:19	3/31/2014 7:29	202,400
21	7,288.00	8,328.00	98.7	5,285.00	1.12	4,141.00	4,820	3/31/2014 14:59	3/31/2014 16:07	200,500
22	6,362.00	8,319.00	99.9	5,274.00	1.12	4,077.00	4,585	3/31/2014 20:02	3/31/2014 21:01	200,100
23	6,106.00	8,382.00	96.1	5,148.00	1.1	4,008.00	4,597	3/31/2014 23:18	4/1/2014 0:23	200,500
24	6,247.00	8,426.00	99.8	5,290.00	1.12	4,050.00	4,609	4/1/2014 3:09	4/1/2014 4:10	199,700
25	6,568.00	8,447.00	100.3	5,269.00	1.12	4,240.00	4,937	4/1/2014 10:59	4/1/2014 12:05	200,500
26	6,506.00	8,254.00	98.9	5,019.00	1.09	3,912.00	4,810	4/1/2014 14:50	4/1/2014 15:55	199,200
27	6,557.00	8,417.00	96.7	5,128.00	1.1	3,981.00	4,795	4/1/2014 18:36	4/1/2014 19:40	201,500
28	6,558.00	8,201.00	99.8	5,321.00	1.12	4,217.00	4,820	4/1/2014 22:27	4/1/2014 23:30	199,900
29	6,659.00	8,306.00	98.0	5,231.00	1.11	4,103.00	4,826	4/2/2014 1:43	4/2/2014 2:46	198,700
30	6,622.00	8,046.00	99.0	5,317.00	1.13	4,249.00	4,643	4/2/2014 5:14	4/2/2014 6:14	199,900

103-02819

103.02819

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/26/2014
Job End Date:	4/2/2014
State:	West Virginia
County:	Wetzel
API Number:	47-103-02819-00-00
Operator Name:	EQT Production
Well Name and Number:	BIG192 - 513534
Longitude:	-80.58285100
Latitude:	39.52759900
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,716
Total Base Water Volume (gal):	6,435,684
Total Base Non Water Volume:	138,976

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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	Halliburton	Carrier					
			Water	7732-18-5	100.00000	89.47444	
Sand	Halliburton	Proppant					
			Crystalline Silica	14808-60-7	100.00000	10.03643	
MX-5	Halliburton	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.05631	
Hydrochloric Acid 15%	Halliburton	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.04232	
FR-66	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02236	
MX-8	Halliburton	Biocide					
			Bacteria Culture	N/A	100.00000	0.00957	
LP-65	Halliburton	Scale Inhibitor					
			Ammonium Chloride	12125-02-9	10.00000	0.00259	
WG-36	Halliburton	Gelling Agent					
			Guar Gum	9000-30-0	100.00000	0.00229	
HAI-OS	Halliburton	Protects casing					
			Methanol	67-56-1	60.00000	0.00026	
			Propargyl Alcohol	107-19-7	10.00000	0.00004	

BA-40L	Halliburton	Buffer					
			Potassium carbonate	584-08-7	60.00000	0.00022	
SP Breaker	Halliburton	Oxidizing Breaker					
			Sodium Persulfate	7775-27-1	100.00000	0.00006	
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)