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

API 47 017 06219	County Doddridg	ge Di	strict Greenb	rier
Quad New Milton 7.5'	Pad Name Trent		eld/Pool Name	
Farm name Clarence Trent Jr. et		w	ell Number E	Bowen Unit 1H
Operator (as registered with the OO	G) Antero Resources			
Address 1615 Wynkoop Street	City Den	ver	State CO	Zip 80202
As Drilled location NAD 83/UTN Top hole	Northing 4,340,073m	d plat, profile view, and d Easting	eviation survey 532,018m	<i>y</i>
Landing Point of Curve	Northing 4,339,781.90m		531,866.09m	
Bottom Hole	Northing 4,337,789m	Easting	532,485m	
Elevation (ft) 1409' GL Permit Type Deviated	Type of Well Horizont	New □ Existing al 6A □ Vertical	Type of Rep	ort □Interim ■Final □ Deep ■ Shallow
Type of Operation □ Convert □	Deepen Drill	Plug Back □ Redrillir	ng 🗆 Rewor	k 📕 Stimulate
Well Type □ Brine Disposal □ Cl	BM ■ Gas □ Oil □ Seco	ondary Recovery	tion Mining	Storage 🗆 Other
Type of Completion ■ Single □ M	Aultiple Fluids Produc	eed □ Brine ■Gas	□ NGL □ O	il 🗆 Other
Drilled with □ Cable ■ Rotary		ou de dina	21.02	
Similar nam of small of dinama.				
Drilling Media Surface hole	Air □ Mud □Fresh Wat	er Intermediate hol	e ∄Air □N	Mud □ Fresh Water □ Brine
Production hole □ Air ■ Mud	□ Fresh Water □ Brine			
Mud Type(s) and Additive(s) Air - Foam & 4% KCL				
Mud - Polymer				
Date permit issued 5/10/2013	Date drilling comm	nenced 9/26/2013	Date drill	ing ceased10/24/2013
Date completion activities began	11/8/2013	Date completion activit		4/00/0044
Verbal plugging (Y/N) N/A	Date permission granted	4.114	Granted by	N/A
Friedrice (****)	F			
Please note: Operator is required to	submit a plugging applica	ition within 5 days of verb	oal permission	to plug
Freshwater depth(s) ft	32', 112'	Open mine(s) (Y/N) dep	ths	N
Salt water depth(s) ftNor	ne Identified	Void(s) and and the letter of	N) depths	N
	Identified	Cofficeento Wilrell		N
Is coal being mined in area (Y/N)	N			
		MAY 2 6 20	13	Reviewed by:

WV Department of Environmental Protection Reviewed by: 125/27/15 W. S. Q6/05/2015

□ Yes 🖪 No

DETAILS

WAS WELL COMPLETED OPEN HOLE?

WERE TRACERS USED ■ Yes □ No

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API	47- 017	06219	Farm name Clarence Trent Jr. et al	Well number Bowen Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
			SEE ATTACH	ED 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)
			SEE	ATTACHED	EXHIBIT 2			
			•					
							_	
			_			_	REC	CEIVED
			 ::				Office of	CEIVED Oil and Gas

Please insert additional pages as applicable.

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WR-35 Rev. 8/23/13								Page	of
	_ 06219	Farm	name_Clarence	e Trent Jr	. et al	Well numb	er_Bowen	Unit 1H	
PRODUCING	FORMATION(<u>S)</u>	DEPTHS						
Marcellus			7401' (Top)	_TVD	7762' (Top)	MD			
		_		_					
		_		_					
Please insert ad	lditional pages a	as applicable.							
GAS TEST	□ Build up □	Drawdown	■ Open Flow		OIL TEST 🗆	Flow 🗆 Pur	np		
SHUT-IN PRE	SSURE Surf	ace 3950	psi Botto	m Hole	psi	DURATION	OF TEST	hrs	
OPEN FLOW	Gas 1675 mcf	Oil pd	bpd		Water bpd	GAS MEA			
LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN MD	FT DESCRIBE			QUANTITYAND E, OIL, GAS, H ₂ S,	ETC)
	0		0						
			SEE ATTA	CHED E	XHIBIT 3				
Please insert ac	lditional pages a	as applicable.							
Drilling Contra	Patterson -	- UTI Drilling C	Company LLC					2105	
Address 207 Ca	arlton Drive		City	Eighty Fou	r	State PA	Zip _1	5330	_
Logging Comp Address 600 Al	any Rush Wells	ite Services	City	Canonsbu	rg	State PA	Zip 1	5317	
		mpletion & Product	ion Services, Co. (bou	ght Superior)					
Address 1650 F			City	Jane Lew		State W	/Zip_2	6378	
Stimulating Co	ompany US We	ell Services							
Address 533 Inc	dustrial Park Drive		City	Jane Lew		State W	/ Zip <u>2</u>	RECEI	/FD
	iditional pages	as applicable.					0	ffice of Oil	
Completed by	Natalie Komp		mtal D	ermitting Age	Telephone	303-357-682	20		
Signature M	dunia	5	litle P	Commung Age	JIII.	Dat	e_5/8/2015	MAY 2 6	2015

A	PI 47-017-0621	9 Farm Name Clarence	Trent Jr. et al W	/eli Number Bow	en Unit 1H
			HIBIT 1		
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	8-Nov-13	14,624	14,816	60	Marcellus
2	1-Dec-13	14,397	14,589	60	Marcellus
3	1-Dec-13	14,170	14,361	60	Marcellus
4	2-Dec-13	13,943	14,134	60	Marcellus
5	2-Dec-13	13,715	13,907	60	Marcellus
6	2-Dec-13	13,488	13,679	60	Marcellus
7	3-Dec-13	13,261	13,452	60	Marcellus
8	3-Dec-13	13,033	13,225	60	Marcellus
9	3-Dec-13	12,806	12,997	60	Marcellus
10	3-Dec-13	12,579	12,770	60	Marcellus
11	4-Dec-13	12,351	12,543	60	Marcellus
12	4-Dec-13	12,124	12,315	60	Marcellus
13	4-Dec-13	11,897	12,088	60	Marcellus
14	4-Dec-13	11,669	11,861	60	Marcellus
15	5-Dec-13	11,442	11,634	60	Marcellus
16	6-Dec-13	11,215	11,406	60	Marcellus
17	6-Dec-13	10,988	11,179	60	Marcellus
18	6-Dec-13	10,760	10,952	60	Marcellus
19	6-Dec-13	10,533	10,724	60	Marcellus
20	7-Dec-13	10,306	10,497	60	Marcellus
21	7-Dec-13	10,078	10,270	60	Marcellus
22	7-Dec-13	9,851	10,042	60	Marcellus
23	7-Dec-13	9,624	9,815	60	Marcellus
24	7-Dec-13	9,396	9,588	60	Marcellus
25	8-Dec-13	9,169	9,360	60	Marcellus
26	9-Dec-13	8,942	9,133	60	Marcellus
27	9-Dec-13	8,714	8,906	60	Marcellus
28	10-Dec-13	8,487	8,679	60	Marcellus
29	10-Dec-13	8,260	8,451	60	Marcellus
30	10-Dec-13	8,032	8,224	60	Marcellus
31	10-Dec-13	7,805	7,997	60	Marcellus

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	API <u>47</u>	-017-06219	Farm Name	Clarence Trent	Jr. et al We	ll Number <u>Bowen Unit 1</u>	<u>.H</u>	
				EXHIBIT	۲2			
	:		AVg	Max				Amount of
Stage No.	Stimulations	Assa Damen	Treatment	Breakdown		Amount of Proppant	Amount of Water	Nitrogen/ other
Stuge Ho.	Date	Avg Pump Rate	Pressure (PSI)	Pressure ((PSI)	ISIP (PSI)	(lbs)	(bbls)	(units)
1	1-Dec-13	69.0	7,871	6,187		205,660	, ,	N/A
2					5,774	·	7,464	
3	1-Dec-13	71.0	7,467	6,892	5,851	205,640	7,533	N/A
4	1-Dec-13	76.0	7,693	6,117	5,900	247,400	7,516	N/A
	2-Dec-13	73.0	7,730	6,519	5,927	223,160	6,276	N/A
5	2-Dec-13	76.0	7,670	5,944	5,675	265,280	6,947	N/A
6	2-Dec-13	72.5	7,645	6,144	5,781	267,000	6,829	N/A
7	3-Dec-13	76.5	7,572	5,852	5,983	266,600	6,787	N/A
8	3-Dec-13	77.0	7,626	6,079	5,717	259,420	6,833	N/A
9	3-Dec-13	76.0	7,560	6,154	5,721	228,400	7,029	N/A
10	3-Dec-13	77.0	7,703	6,137	6,021	263,350	6,799	N/A
11	4-Dec-13	77.0	7,663	6,057	5,994	268,280	6,719	N/A
12	4-Dec-13	78.0	7,658	6,124	5,873	266,700	6,691	N/A
13	4-Dec-13	78.5	7,611	6,210	5,981	240,530	6,403	N/A
14	4-Dec-13	79.6	7,471	4,952	5,993	269,120	6,743	N/A
15	5-Dec-13	78.9	7,623	6,319	5,801	251,320	6,692	N/A
16	6-Dec-13	79.6	7,627	6,489	5,906	260,900	6,711	N/A
17	6-Dec-13	78.0	7,447	6,009	5,626	264,980	6,651	N/A
18	6-Dec-13	78.0	7,550	6,381	5,897	265,000	6,645	N/A
19	6-Dec-13	79.3	7,018	5,572	5,593	265,200	6,695	N/A
20	7-Dec-13	79.0	7,460	5,985	4,874	264,050	6,639	N/A
21	7-Dec-13	77.0	7,854	6,374	5,119	219,720	7,165	N/A
22	7-Dec-13	79.0	7,256	5,804	5,249	265,520	6,553	N/A
23	7-Dec-13	79.0	7,437	5,956	5,019	264,500	6,551	N/A
24	7-Dec-13	79.1	7,411	5,824	5,605	263,700	6,575	N/A
25	8-Dec-13	79.8	7,242	5,540	5,579	263,270	6,577	N/A
26	9-Dec-13	76.0	7,042	5,769	5,538	263,820	6,525	N/A
27	9-Dec-13	78.3	7,217	5,684	5,246	177,300	6,395	N/A
28	10-Dec-13	73.4	7,907	5,996	4,749	204,550	7,074	N/A
29	10-Dec-13	78.0	7,656	6,152	5,620	264,860	6,691	N/A
30	10-Dec-13	78.0	7,158	5,751	5,944	264,230	6,433	N/A
31	10-Dec-13	77.7	6,945	5,933	4,154	260,100	6,441	N/A
	AVG=	76.9	7,509	6,029	5,604	7,759,560	209,582	TOTAL

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API 4	7-017-06219 Farm Nam	e Clarence Trent Jr. et al Well	Number Bowen Unit 1	<u>H</u>
		EXHIBIT 3	· · · · · · · · · · · · · · · · · · ·	
	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
LITHOLOGY/ FORMATION	From Surface	From Surface	From Surface	From Surface
Freshwater	32	NA	32	NA
Freshwater	112	NA	112	NA
Sandstone	0	77	0	77
Shale	est. 77	632	est. 77	632
Sandstone	est. 632	697	est. 632	697
Shale and Limestone	est. 697	877	est. 697	877
Sandstone	est. 877	907	est. 877	907
Shale	est. 907	1,037	est. 907	1,037
Sandstone and Coal	est. 1037	1,087	est. 1037	1,087
Shale	est. 1087	1,237	est. 1087	1,237
Sandstone	est. 1237	1,267	est. 1237	1,267
Shale	est. 1267	1,767	est. 1267	1,767
Sandstone	est. 1767	1,897	est. 1767	1,897
Shale	est. 1897	1,957	est. 1897	1,957
Sandstone and Coal	est. 1957	1,987	est. 1957	1,987
Shale	est. 1987	2,077	est. 1987	2,077
Sandstone	est. 2077	2,147	est. 2077	2,147
Shale	est. 2147	2,395	est. 2147	2,395
Big Lime	2,395	2,529	2,395	2,529
Big Injun	2,529	5,761	2,529	5,761
Gantz Sand	5,761	2,978	5,761	2,978
Fifty Foot Sandstone	2,978	3,143	2,978	3,143
Gordon	3,143	3,484	3,143	3,484
Fifth Sandstone	3,484	3,550	3,484	3,550
Bayard	3,550	3,766	3,550	3,766
Warren	3,766	4,092	3,766	4,092
Speechley	4,092	4,296	4,092	4,296
Baltown	4,296	4,924	4,296	4,924
Bradford	4,924	5,399	4,924	5,399
Benson	5,399	5,651	5,399	5,652
Alexander	5,651	5,890	5,652	5,894
Elk	5,890	6,433	5,894	6,477
Rhinestreet	6,433	6,952	6,477	7,055
Sycamore	6,952	7,108	7,055	7,243
Middlesex	7,108	7,262	7,243	7,469
Burkett	7,262	7,286	7,469	7,511
Tully	7,286	7,401	7,511	7,762
Marcellus	7,401	NA	7,762	NA

^{*}Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Chemical Disclosure Registry







NAD2

Datum:

True Vertical Depth:

Fotal Base Water Volume (gal)

Federal/Tribal Well

Longitude: Latitude

-80.6293722 39.2091722

Bowen Unit

Antero Resources Corporatio

47-017-06219-00-

West Virgin

State:

County

Operator Name:

API Number

Name and Number

Well

Job Start Date: Job End Date: 8,777,49

384,32

r Volume:	Hydraulic Fracturing Fluid Composition:
Total Base Non Water Volume:	Hydraulic Fracturin

in Comments		.302		822		531	860		370	370	806	296	296		245	073	496
Maximum Ingredient Concentration in HF Fluid (% by mass)***		90.17302		9.55822		0.08531	0.02038		0.02370	0.02370	0.01908	0.00296	0.00296		0.03245	0.03073	0.00496
Maximum Maximum Ingredient Ingredient Concentration in Concentration in Additive HF Fluid (% by mass)**		100.0000		100.0000		87.5000	18.0000		40.0000		22.0000	5.0000	5.0000		20.0000	00000:09	3,0000
Chemical Abstract Service Number (CAS #)		7732-18-5		14808-60-7		7732-18-5	7641-01-1		7732-18-5	Proprietary	64742-47-8	Proprietary	12125-02-9		0-00-0006	64742-47-8	14808-60-7
Ingredients		Water		Crystalline Silica, quartz		Water	Hydrogen Chloride		Water	Anionic Polyacrylamide	Petroleum Distillates	Ethoxylated alcohol blend	Crystalline Salt		Guar Gum	Petroleum Distillates	Suspending agent (solid)
Purpose	Base Fluid		Proppant		Bulk Acid			Friction Reducer						Gelling Agents			
Supplier	Antero Resources		U.S. Well Services, LLC		U.S. Well Services, LLC			U.S. Well Services, LLC						U.S. Well Services, LLC			
Trade Name	Water		Sand		HCL Acid (12.6%- 18.0%)			WFRA-405						LGC-15			

Environmental Protection Wy Department of 610S 8 8 YAM Office of Oil and Gas

			Surfactant	68439-51-0	3.00000	0.00195	
SI-1000	U.S. Well Services, LLC	Scale Inhibitor					
			Anionic Copolymer	Proprietary		0.00446	
			Ethylene Glycol	107-21-1	20.0000	0.00403	
			Water	7732-18-5	30.0000	0.00336	
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3- nitrilopropionamide	10222-01-2	20.0000	0.00470	
			Deionized Water	7732-18-5	28.0000	0.00268	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100:0000	0.00084	
AI-300	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene Glycol	107-21-1	31,0000	0.00022	
			N,N-Dimethylformamide	68-12-2	15.0000	0.00007	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.0000	0.0000	
			Cinnamaldehyde	104-55-2	5.00000	0.0000	
			2-Butoxyethanol	111-76-2	7.00000	0.00005	
			Water	7732-18-5	20.0000	0.00002	
			Ethoxylated Nonylphenol	68412-54-4	2.00000	0.00002	
			Isopropyl Alcohol	67-63-0	3.0000	0.00001	
			Triethyl Phosphate	78-40-0	3.00000	0.00001	
Ingredients shown ab	ngredients shown above are subject to 29 CFR 1910.1200(i) and a	FR 1910,1200(i) and ap	ppear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS	eets (MSDS). Ingredient	s shown below are Non	-MSDS.	
* Total Water Volume	* Total Water Volume sources may include fresh water, produced w ** Information is based on the maximum potential for concentration	resh water, produced wa	* 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%	%0			

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)

