

west virginia department of environmental protection

Office of Oil and Gas 601 57th Street SE Charleston, WV 25304 (304) 926-0450 (304) 926-0452 fax Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

February 13, 2014

ANTERO RESOURCES APPALACHIAN CORPORATION 1625 17TH STREET, SUITE 300 DENVER, CO 80202

Re: Permit Modification Approval for API Number 3305702 , Well #: FORD UNIT 1H Changed Orientation of Lateral

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith

Regulatory/Compliance Manager

Office of Oil and Gas



November 7, 2013

Antero Resources 1625 17th Street Denver, Colorado 80202 Office 303.357.7310 Fax 303.357.7315

West Virginia Department of Environmental Protection Office of Oil and Gas Attn: Ms. Laura Cooper 601 57th Street Charleston, WV 25304

Ms. Laura Cooper:

Antero Resources Corporation (Antero) would like to submit the following permit modifications for two approved wells on the existing Hubert Pad. We are requesting to change the orientation of the horizontal laterals which will change the bottom hole locations of the Ford 1H (API# 47-033-05702) and Ford Unit 2H (API#47-033-05694).

Attached you will find the following documents:

- ➤ REVISED Form WW-6B, which shows the revised MD and Production Casing/Cement program
- > REVISED Form WW-6A1, which shows the leases we will be drilling into
- REVISED Mylar Plat, which shows the new bottom hole location

If you have any questions please feel free to contact me at (303) 357-7323.

Thank you in advance for your consideration.

Sincerely,

Ashlie Mihalcin Permit Representative

Antero Resources Corporation

Enclosures

RECEIVED
Office of Oil and Gas
NOV 0 82013

Wiv Department of Environment at Protection WW-6B (9/13)

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS WELL WORK PERMIT APPLICATION

1) Well Operato	or: Antero Reso	urces Corporation	494488557	033- Harrison	Tenmile	Salem
			Operator ID	County	District	Quadrangle
2) Operator's W	Vell Number: <u>Fo</u>	rd Unit 1H	Well Pad	Name: Hube	rt Pad (exis	sting)
3) Farm Name/	Surface Owner:	Bland, Hubert M., Jr.	, et ux Public Road	d Access: CR 5	50/6	
4) Elevation, cu	irrent ground:	1376' Ele	evation, proposed p	oost-construction	on: 1376'	
5) Well Type						
	Other					
	()	allow _	Deep			
OF: B		rizontal _				
, ,	: Yes or No Yes		. 171.1	1 4		
, 1	•		pated Thickness at - 50' feet, Associated		, ,	
		•	00 1001,71000010100	11000010 0,200		
	tal Vertical Dept Total Vertical D		Shale			
		-F				
•	otal Measured D					
11) Proposed H	orizontal Leg Le	ength: 9068'				
12) Approxima	te Fresh Water S	trata Depths:	391'			
13) Method to I	Determine Fresh	Water Depths:	lorris Unit 2H (API#4	7-033-05701) on	same pad	
14) Approxima	te Saltwater Dep	ths: 1,210', 1,832	2'			-
15) Approxima	te Coal Seam De	epths: 492', 961', 1	,055'			
16) Approxima	te Depth to Poss	ible Void (coal mi	ne, karst, other): 1	None anticipated		
		n contain coal sean an active mine?	ns Yes	No	√	DECENT.
(a) If Yes, pro	vide Mine Info:	Name:			Office	of Oil and Gas
		Depth:			N	OV 0 0 2012
		Seam:	9		10/17 m	0.013
		Owner:			Environ	epartment of
						iental Protection

WW-6B (9/13)

18)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	New	H-40	94#	40'	40'	CTS, 38 Cu. Ft.
Fresh Water	13-3/8"	New	J-55/H-40	54.5#/ 48#	450'	450' *#19	CTS, 625 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2510'	2510'	CTS, 1002 Cu Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	17500'	17500'	4410 Cu Ft.
Tubing	2-3/8"	New	N-80	4.7#		7200'	
Liners							



TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	Class A	1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	Class A	1.18
Intermediate						
Production	5-1/2"	8-3/4" & 8-1/2"	0.361"	12630	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11200		
Liners						

PACKERS

Kind:	N/A		
Sizes:	N/A		
Depths Set:	N/A		Offic RECEIVED

NOV 0 82013

WV Department of Page 202/14/2014

WW-6B (9/13)

19) Describe proposed well work, including the drifting and plugging back of any phot hole.
Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.
*Antero will be air drilling the fresh water string which makes it difficult to determine when freshwater is encountered, therefore we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.
20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:
Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."
21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.73 acres (existing)
22) Area to be disturbed for well pad only, less access road (acres): 3.22 acres (existing)
23) Describe centralizer placement for each casing string:
Conductor: no centralizers Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface. Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.
24) Describe all cement additives associated with each cement type:
Conductor: no additives, Class A cement.
Surface: Class A cement with 2% calcium and 1/4 lb flake, 5 gallons of clay treat Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20
25) Proposed borehole conditioning procedures:
Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
Intermediate, blowhole clean with air trip to curface easing chao trip to bettom, blowhole clean with air trip out, run easing Signulate 40 bills bridge.
water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.

Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump/48 bbls

*Note: Attach additional sheets as needed.

barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

Operator's Well Number

Ford Unit 1H

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE Chapter 22, Article 6A, Section 5(a)(5) IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

	Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
DEPI et al Leas	e DV019191			
Minnie S. Lee		Consolidated Gas Supply Corporation	1/8	1060/0644
Consolidated Ga	as Supply Corporation	Consolidated Gas Transmission Corporation	Assignment	1136/0250
Consolidated Ga	as Transmission Corporation	CNG Development Company	Assignment	1143/0921
CNG Developm	ent Company	CNG Producing Company	Certificate of Incorporation	Exhibit 2
CNG Producing	Company	Dominion Exploration & Production, Inc.	Amended Certificate of Authority	AOI 0058/0366
Dominion Explo	ration & Production, Inc., DTI, &	Antero Resources Appalachian Corporation	Assignment	1423/1068
•	ces Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
/ I Moses Raad	et al Lease 21030			
J. Moses Raad.		Garner and Gawthrop, Inc.	1/8	1120/0056
Garner and Gav		Bluestone Energy Partners	Assianment	1459/0310
Bluestone Energ		Antero Resources Bluestone, LLC, a wholly owned	Affidavit Regarding Merger	AOI 0035/1236
Diaestone Energ	y i aidicis	subsidiary of Antero Resources Appalachian Corporation	Amaarit Nogarang Margor	A01 0000/1200
Antero Resource	ces Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
√George W. Rob	inson et al Lease 22032			
George W. Robi	nson, et al	Alton Skinner	1/8	1101/0574
Alton Skinner		Crystal G. Skinner Barley, et al	Settlement	Settlement Book 0443/0657
Crystal G. Skinn	er Barley, et al	DC Petroleum, Inc.	Conveyance	Misc. Book 0035/1088
DC Petroleum, I	nc.	Bluestone Energy Partners	Assignment	1461/1034
Bluestone Energ		Antero Resources Bluestone, LLC, a wholly owned subsidiary of Antero Resources Appalachian Corporation	Affidavit Regarding Merger	AOI 0035/1236
Antero Resourc	ces Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
VPaul J. Watson	et ux et al Lease			
Paul J. Watson.		Clarence W. Mutschelknaus	1/8	1421/0522
Clarence W. Mu		Bluestone Energy Partners	Assignment	1473/0453
Bluestone Energ		Antero Resources Bluestone, LLC, a wholly owned subsidiary of Antero Resources Appalachian Corporation	Affidavit Regarding Merger	AOI 0035/1236
Antero Resoure	es Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
√Frances Barry	.ease			
Frances Nelson	Barry a/k/a Frances N. Barry	Antero Resources Appalachian Corporation	1/8+	1517/0961
Antero Resourc	es Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
		·	-	Office of Colland Gas NOV 0 02013
				Mov a
				MOV 6 05013

^{*}Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

02/14/2014

WW-6A1 (5/13)

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE Chapter 22, Article 6A, Section 5(a)(5) IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name of	Ī				
Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page	
✓Tetrick Group II Revocable	e Trust Lease 21184				
	Tetrick Group II Revocable Trust	Bluestone Energy Partners	1/8	1425/0761	
	Bluestone Energy Partners	Antero Resources Bluestone, LLC,	Affidavit Regarding Merger	AOI 0035/1236	
		a wholly owned subsidiary of Antero Reso	urces		
		Appalachian Corporation			
	Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1	

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

Acknowledgement of Possible Permitting/Approval In Addition to the Office of Oil and Gas

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- · WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

well Operator:	Antero Resource	s Corp	oration	Office 0	i Oil an
By:	Kevin Kilstrom	le	Culst	MO!	
Its:	Vice President of Production		NUV	0 8 2013	

Page 1 of

FORM WW-6A1 EXHIBIT 1



SE SE

JUN 1 0 2013

Penney Barker, Manager IN THE OFFICE OF Corporations Division ECRETARY OF STATE Fax: (304)558-8381

Website: www.wvsos.com
E-mail: business@wvsos.com

FILE ONE ORIGINAL (Two if you want a filed stamped copy returned to you) FEE: \$25.00

Natalie B. Tennant

Secretary of State 1900 Kanawha Blvd E Bldg 1, Suite 157-K Charleston, WV 25305

APPLICATION FOR AMENDED CERTIFICATE OF AUTHORITY

Office Hours: Monday - Friday 8:30 a.m. - 5:00 p.m. ET

	Name under which the corporation was authorized to transact business in WV:	Antero Resources Appalachian Corporation
2.	Date Certificate of Authority was issued in West Virginia:	6/25/2008
3.	Corporate name has been changed to:	Antero Resources Corporation
	(Attach one <u>Certified Conv of Name Change</u> as filed in home State of incorporation.)	
A	Name the corporation elects to use in WV:	Antero Resources Corporation
٦.	(due to home state name not being available)	
5	Other amendments:	
٠,.	(attach additional pages if necessary)	
	• • • • • • • • • • • • • • • • • • • •	
:		
	1	
6.	Name and phone number of contact person. (the filing, listing a contact person and phone number document.)	This is optional, however, if there is a problem with other may avoid having to return or reject the
6.	the filing, listing a contact person and phone num	This is optional, however, if there is a problem with ober may avoid having to return or reject the (303) 357-7310
6.	the filing, listing a contact person and phone num document.)	nber may avoid having to return or reject the
6.	the filing, listing a contact person and phone nun document.) Alvyn A. Schopp	nber may avoid having to return or reject the
6. 7.	the filing, listing a contact person and phone nun document.) Alvyn A. Schopp	(303) 357-7310 Phone Number
	the filing, listing a contact person and phone num document.) Alvyn A. Schopp Contact Name Signature information (See below *Important A.	(303) 357-7310 Phone Number Legal Notice Regarding Signature):
	the filing, listing a contact person and phone num document.) Alvyn A. Schopp Contact Name	(303) 357-7310 Phone Number Legal Notice Regarding Signature): Title/Capacity: Authorized Person
	the filing, listing a contact person and phone num document.) Alvyn A. Schopp Contact Name Signature information (See below *Important A.	(303) 357-7310 Phone Number Legal Notice Regarding Signature):

Form CF-4

Issued by the Office of the Secretary of State

Revised 4/1

FORM WW-6A1 EXHIBIT 2, PAGE 1



TO BE FILED IN DUFLICATE ORIGINALS

JUL 1 0 1901

GOFFICE OF
RY OF STATE
WEST VIRGINIA

APPLICATION FOR CERTIFICATE OF WITHDRAWAL

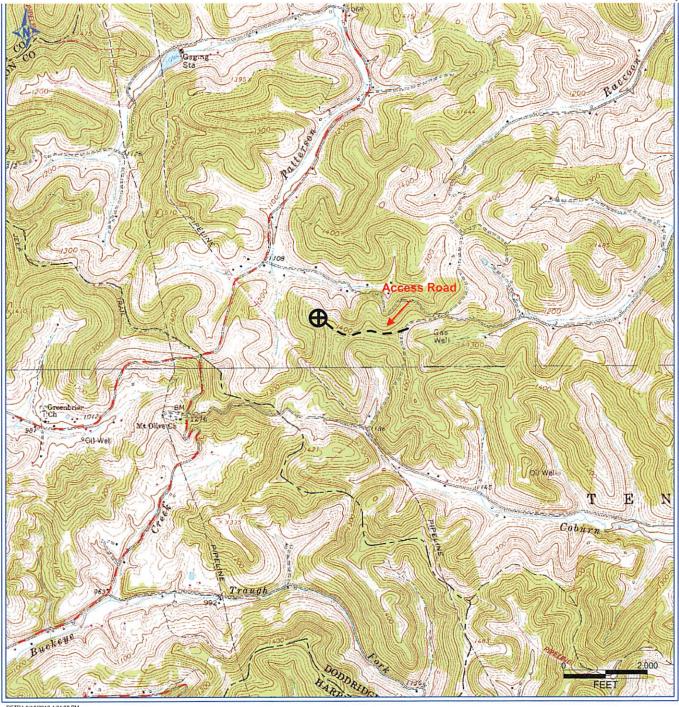
OF CNG Development Company

corporation hereby apparent	ith Chapter 31, Article plies for a certificate	e 1, Section 60 of the Cod of withdrawal from West	e of West Virginia, the undersigned Virginia, and submits the fellowing
The name of the	corporation is:	CNG Development Co	ompany
It is incorporated under	the laws ofDel	g va i. 6	
T IS NOT TRANSACTIF	IG BUSINESS IN WES	T VIRGINIA.	
its registered agent in in any action, suit or time the corporation w	West Virginia to accomproceeding based up was authorized to train	ept service of process, and oon any course of action a	Virginia. It revokes the authority of d consents that service of process arising in West Virginia during the rginia may thereafter be made on nia.
The post-office a	address to which the	Secretary of State may m	nail a copy of any process against
he corporation is:	ING Producing (New Orleans, U	ompany, CNG Tower	, 1450 Poydras Street, D: Corporate Secretary
The aggregate no	umber of shares which	th it has authority to issue within a class, as of this da	item but hy classes not value of
IUMBER OF SHARES	CLASS	SERIES	PAR VALUE/NO PAR
1,400,000	Common		100
	imbox of its issued sh	ares dem but hu cheses	par value of shares, shares without
The aggregate nu par, and series, if any, w	within a class, as of the	s date is	
The aggregate number, and series, if any, when the series of shares	CLASS	s date is	PAR VALUE/NO PAR
our, and series, if any, w	vithin a class, as of thi	s date is	
IUMBER OF SHARES	CLASS	s date is	PAR VALUE/NO PAR

FORM WW-6A1 EXHIBIT 2, PAGE 2

IIBII Z	, PAGE 2
ChG	Development Company (Through CRG Producing Company)
corporate nar	пе
	a zul lalah
	Secretary With AAI
President/Vi	ice President
State of	Louisiana
Parish	Orleans
'	D. Malcolm Johns, Jr.
nereby cert	the Secretary
	of CNG Producing Company
	corporate name
Cinc	diter are me and they signed the fore; inglas the aut and deed of the corporation.
appeared	districted and a rest of the second
	Notify Public
	Notify robite
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