



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Tuesday, January 22, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for HORST UNIT 2H
47-095-02517-00-00

Lateral Length

ANTERO RESOURCES CORPORATION

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.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: HORST UNIT 2H
Farm Name: ROY A. MEREDITH
U.S. WELL NUMBER: 47-095-02517-00-00
Horizontal 6A New Drill
Date Modification Issued: January 22, 2019

A handwritten signature in blue ink, appearing to read 'James A. Martin', is written over the typed name and title.

Promoting a healthy environment.

WW-6B
(04/15)

API NO. 47-095 - 02517
 OPERATOR WELL NO. Horst Unit 2H
 Well Pad Name: Meredith Pad

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

1) Well Operator: Antero Resources Corporation 494507062 095-Tyler Centerville West Union 7.5'
 Operator ID County District Quadrangle

2) Operator's Well Number: Horst Unit 2H Well Pad Name: Meredith Pad

3) Farm Name/Surface Owner: Roy A. Meredith, et al Public Road Access: Haymond Road

4) Elevation, current ground: 1117' Elevation, proposed post-construction: ~1114'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow Deep

Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7000' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 7000' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 18700' MD

11) Proposed Horizontal Leg Length: 9277'

12) Approximate Fresh Water Strata Depths: 463', 604', 683'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: 1521', 1567', 2109'

15) Approximate Coal Seam Depths: 63', 1239'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No

(a) If Yes, provide Mine Info: Name: _____

Depth: _____

Seam: _____

Owner: _____

RECEIVED
Office of Oil and Gas

SEP 25 2018

WV Department of
Environmental Protection

4709502517

PERMIT MODIFICATION (API # 47-095-02516)

WW-6B
(04/15)

API NO. 47- 095 - 02516
OPERATOR WELL NO. Horst Unit 2H
Well Pad Name: Meredith Pad

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	20"	New	H-40	94#	93	93	CTS, 89 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	740 *see#19	740 *see#19	CTS, 1028 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	18700	18700	CTS, 4735 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ~1.44 & H~1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

PACKERS

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

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of Environmental Protection

WW-6B
(10/14)

API NO. 47- 095 - 02516

OPERATOR WELL NO. Horst Unit 2H

Well Pad Name: Meredith Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot 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 fresh water 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."

Anticipated Max Pressure - 9300 lbs
Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 31.17 acres

22) Area to be disturbed for well pad only, less access road (acres): 7.09 acres

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 2-3% calcium chloride and 1/4 lb of flake
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

RECEIVED
Office of Oil and Gas
SEP 25 2010

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 surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine 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 barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

WV Department of
Environmental Protection

*Note: Attach additional sheets as needed.

WW-6A1

Operator's Well Number Horst Unit 2H

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
<u>Roy A. Meredith, et ux Lease</u>			
Roy A. Meredith	J & J Enterprises	1/8	0257/0527
J & J Enterprises	Eastern American Energy Corp.	Assignment	0282/0296
Eastern American Energy Corporation	Energy Corporation of America	Assignment	0371/0528
Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0398/0416
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Janice L. Hurst Lease</u>			
Janice L. Hurst	Manna Oil & Gas Company	1/8	0260/0493
Manna Oil & Gas Company	SEFCO Enterprises, Inc.	Assignment	0267/0448
SEFCO Enterprises, Inc.	J&J Enterprises, Inc.	Assignment	0282/0296
J&J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0282/0296
Eastern American Energy Corporation	Energy Corporation of America	Merge	0009/1993
Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0398/0416
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Gene Bond Lease</u>			
Gene Bond	Drilling Appalachian Corporation	1/8	0296/0170
Drilling Appalachian Corporation	Dominion Exploration & Production Inc	Assignment	0372/0413
Dominion Exploration & Production Inc	CONSOL Gas Company	Name Change	0009/0206
CONSOL Gas Company	CNX Gas Company	Merger	0384/0191
CNX Gas Company	Noble Energy, Inc	Assignment	0388/0286
Noble Energy, Inc	Antero Resources Corporation	Assignment	0546/0242
<u>Colleen Griffin Ash Lease</u>			
Colleen Griffin Ash	Antero Resources Appalachian Corporation	1/8+	0407/0657
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0557/0430
<u>Mae Bond Lease</u>			
Mae Bond	Exxon Corporation	1/8	0209/0146
Exxon Corporation	Petro-Enterprises, Inc.	Assignment	0209/0141
Petro-Enterprises, Inc.	J&J Enterprises, Inc.	Assignment	0229/0518
J&J Enterprises, Inc.	Eastern American Energy Corporation	Assignment	0282/0296
Eastern American Energy Corporation	Energy Corporation of America	Merger	0009/0093
Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0398/0416
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

RECEIVED
 Office of Oil and Gas
 SEP 25 2018
 WV Department of
 Environmental Protection

*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.

WW-6A1

Operator's Well Number Horst Unit 2H

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
<u>Lelia Washburn, et al Lease</u>			
Lelia Washburn, et al	Union Carbine Corporation	1/8	0177/0232
Union Carbine Corporation	Perkins Oil & Gas, Inc.	Assignment	Unrecorded
Perkins Oil & Gas, Inc.	Eastern Intermountain Energy, Inc.	Assignment	0266/0099
Eastern Intermountain Energy, Inc.	Appalachian Energy Development, Inc.	Assignment	0266/0170
Appalachian Energy Development, Inc.	Perkins Oil & Gas, Inc.	Assignment	0268/0197
Perkins Oil & Gas, Inc.	Antero Resources Corporation	Partial Assignment of Lease	0419/0547
<u>Cammie Gatrell, et al Lease</u>			
Cammie Gatrell, et al	Exxon Corporation	1/8	0211/0104
Exxon Corporation	Petro-Enterprises, Inc	Assignment	0249/0141
Petro-Enterprises, Inc	J&J Enterprises	Assignment	0229/0518
J&J Enterprises	Eastern American Energy Corporation	Assignment	0282/0296
Eastern American Energy Corporation	Energy Corporation of America	Certificate of Merger	0371/0528
Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0398/0416
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	0557/0430
<u>Nettie Leah Licot, et al Lease</u>			
Nettie Leah Licot, et al	North Coast Energy Eastern, Inc.	1/8	0349/0541
North Coast Energy Eastern, Inc	Exco-North Coast Energy Eastern, Inc.	Name Change	0009/0080
Exco-North Coast Energy Eastern, Inc.	EXCO Resources (WV) Inc	Name Change	Exhibit 2
EXCO Resources (WV) Inc	EXCO Production Company (WV) Inc	Name Change	Exhibit 3
EXCO Production Company (WV) Inc	EXCO Production Company (WV) LLC	Name Change	Exhibit 4
EXCO Production Company (WV) LLC	Antero Resources Appalachian Corporation	Assignment	0406/0195
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of
Environmental Protection

*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.

CONTINUED ON NEXT PAGE

WW-6A1

Operator's Well Number Horst Unit 2H

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
<u>Nathan Cain, et al Lease</u>			
Nathan Cain, et al	J.E. Trainer	1/8	0072/0216
J.E. Trainer	W.W. Hepburn	Assignment	0080/0346
W.W. Hepburn	Eastern Petroleum Company	Assignment	0080/0338
Eastern Petroleum Company	Clifton Oil & Gas Company	Assignment	0094/0061
Clifton Oil & Gas Company	Quaker State Oil Refining Corporation	Assignment	0270/0111
Quaker State Oil Refining Corporation	Quaker State Corporation	Name change	Exhibit 2
Quaker State Corporation	Bolden & Blake Corporation	Assignment	0311/0584
Bolden & Blake Corporation	Peake Energy	Assignment	0321/0340
Peake Energy	North Coast Energy Eastern, Inc.	Name Change	0008/0702
North Coast Energy Eastern, Inc.	Exco-North Coast Energy Eastern, Inc.	Name Change	0009/0080
Exco-North Coast Energy Eastern, Inc.	EXCO Resources (WV) Inc	Name Change	Exhibit 2
EXCO Resources (WV) Inc	EXCO Production Company (WV) Inc	Name Change	Exhibit 3
EXCO Production Company (WV) Inc	EXCO Produciton Company (WV) LLC	Name Change	Exhibit 4
EXCO Production Company (WV) LLC	Antero Resources Appalachian Corporation	Assignment	0406/0195
Antero Resources Appalachian Corporation	Antero Resources Corporation	Name Change	Exhibit 1
<u>Jean Cole, et vir Lease</u>			
Jean Cole, et vir	Clarence W. Mutschelknaus	1/8	0252/0379
Clarence W. Mutschelknaus	Antero Resources Corporation	Assignment	0449/0785

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of
Environmental Protection

WW-6A1
(5/13)

Operator's Well No. Horst Unit 2H

**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 or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
<u>Eugene R. Walton, et al Lease</u>	Eugene R. Walton, et al	Eastern American Energy Corporation	1/8	0282/033
	Eastern American Energy Corporation	Energy Corporation of America	Merger	0371/0528
	Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0398/0416
	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 Resources Corporation

By: Kevin Kilstrom 

Its: Senior Vice President - Production

RECEIVED
Office of Oil and Gas

SEP 25 2018

WV Department of
Environmental Protection

FORM WW-6A1
EXHIBIT 1

FILED

JUN 10 2013

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



Fenney Barker, Manager
IN THE OFFICE OF Corporations Division
SECRETARY OF STATE Tel: (304)558-8000
Fax: (304)558-8381
WebSite: www.wvnot.com
E-mail: business@wvnot.com

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

APPLICATION FOR
AMENDED CERTIFICATE
OF AUTHORITY

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

In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby applies for an Amended Certificate of Authority and submits the following statement:

- 1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachia Corporation
- 2. Date Certificate of Authority was issued in West Virginia: 6/26/2009
- 3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)
- 4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)
- 5. Other amendments:
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvyn A. Schopp (303) 367-7310
Contact Name Phone Number

7. Signature information (See below *Important Legal Notice Regarding Signatures*):

Print Name of Signer: Alvyn A. Schopp Title/Capacity: Authorized Person
Signature: [Handwritten Signature] Date: June 10, 2013

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of
Environmental Protection

Important Legal Notice Regarding Signatures For West Virginia Code §31D-1-12b. Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

FORM WW-6A1
EXHIBIT 2



I, Ken Hechler, Secretary of State of the State of West Virginia, hereby certify that originals of an application by

QUAKER STATE OIL REFINING CORPORATION

for an amended certificate of authority to transact business in West Virginia are filed in my office, as required by the provisions of Chapter 31, Article 1, Sections 57 and 59 of the West Virginia Code and conform to law. Therefore, I issue this

AMENDED CERTIFICATE OF AUTHORITY

to transact business in West Virginia under the name of

QUAKER STATE CORPORATION

and I attach to this certificate a duplicate original of the application.

Given under my hand and the Great Seal of the State of West Virginia, on this

 TWENTIETH day of
 JULY 19 87



Ken Hechler
Secretary of State.

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of
Environmental Protection

18

State of West Virginia



Certificate

I, Natalie E. Tennant, Secretary of State of the State of West Virginia, hereby certify that

by the provisions of the West Virginia Code, Articles of Merger were received and filed

MERGING EXCO RSOUCES (PA), LLC, A QUALIFIED TX ORGANIZATION WITH EXCO RESOURCES (WV), LLC, A QUALIFIED TX ORGANIZATION, AS SURVIVORS AND CREATING THE FOLLOWING NON-QUALIFIED TX ORGANIZATIONS: BG NATURAL GAS PRODUCTION COMPANY (PA), LLC, APPALACHIA MIDSTREAM, LLC, EXCO RSOUCES (XA), LLC, BG NATURAL GAS PRODUCTION COMPANY (WV), LLC AND EXCO PRODUCTION COMPANY (PA), LLC. IN THE MERGER EXCO RESOURCES (WV), LLC CHANGED ITS NAME TO EXCO PRODUCTION COMPANY (WV), LLC.

Therefore, I hereby issue this

CERTIFICATE OF MERGER

RECEIVED
Office of Oil and Gas

SEP 25 2018

WV Department of
Environmental Protection



Given under my hand and the Great Seal of the State of West Virginia on

July 1, 2010

Natalie E. Tennant

Secretary of State

FORM WW-6A1
EXHIBIT 3

State of West Virginia



Certificate

*I, Natalie E. Tennant, Secretary of State of the
State of West Virginia, hereby certify that*

an Amended Certificate of Authority of

EXCO - NORTH COAST ENERGY EASTERN, INC.

was filed in my office as required by the provisions of the West Virginia Code and was found to conform to law.

Therefore I issue this

**CERTIFICATE OF AMENDMENT TO THE
CERTIFICATE OF AUTHORITY**

changing the name of the corporation to

EXCO RESOURCES (WV), INC.

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of
Environmental Protection



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
December 2, 2009*

Natalie E. Tennant

Secretary of State

FORM WW-6A1
EXHIBIT 4

State of West Virginia



Certificate

I, Natalie E. Tennant, Secretary of State of the State of West Virginia, hereby certify that

EXCO RESOURCES (WV), INC.
(A Delaware Corporation)

filed Articles of Conversion in my office as required by the provisions of the West Virginia Code and was found to conform to law.

Therefore, I issue this

CERTIFICATE OF CONVERSION

Converting the corporation to:

EXCO RESOURCES (WV), LLC
(A Delaware Limited Liability Company)

RECEIVED
Office of Oil and Gas
SEP 25 2018

WV Department of
Environmental Protection

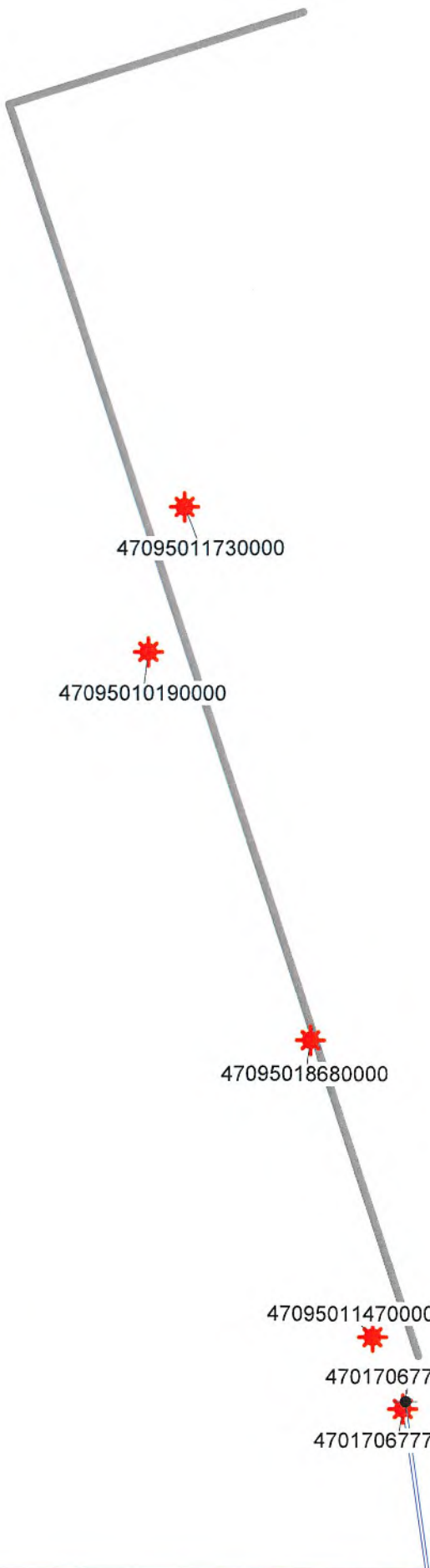
*Given under my hand and the
Great Seal of the State of
West Virginia on*

July 7, 2010

Natalie E. Tennant

Secretary of State





HORST UNIT 2H

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of
Environmental Protection



Antero Resources Corporation

Horst Unit 2H - AOR



- WELL SYMBOLS
- Gas Well (Red starburst symbol)
 - Plugged and Abandoned (Black symbol with a dot)

Horst Unit 2H - Permit Modification (API# 47-095-02516)

UWI (API#)	Well Name	Well Number	Operator	Hist Oper	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Produced Formation(s) not perf'd
47095011730000	WASHBURN LELIA ET AL	2	TRIAD HUNTER LLC	APPALACHIAN ENGY DEV	5,600	4547-5262	Riley, Benson, Alexander	Big Injun, Speechley, Balltown, Bradford
47095010190000	GATRELL HEIRS	1-742	ENERGY CORP OF AMER	J & J ENTERPRISES	5,295	4475-4878	Riley, Benson	Big Injun, Speechley, Balltown, Bradford
47095018680000	CAIN	9	ANTERO RESOURCES CORPORATION	IN COAST ENERGY E INC	5,560	4570-5297	Riley, Benson, Alexander	Big Injun, Speechley, Balltown, Bradford
47095011470000	PRATT AUSTIN E HEIRS ET AL	JK-1257	ANTERO RESOURCES CORPORATION	EQT PRODUCTION CO	5,504	4610-5312	Riley, Alexander	Big Injun, Speechley, Balltown, Bradford
4701706770000	MOSSOR UNIT	1H	ANTERO RESOURCES CORPORATION	ANTERO RESOURCES CORPORATION	14,480	6818-14376	Marcellus	
4701706770100	MOSSOR UNIT	1H	ANTERO RESOURCES CORPORATION	ANTERO RESOURCES CORPORATION	14,476	N/A	Marcellus	

RECEIVED
Office of Oil and Gas
SEP 25 2018
WV Department of
Environmental Protection

LATITUDE 39°22'30"

10,375'

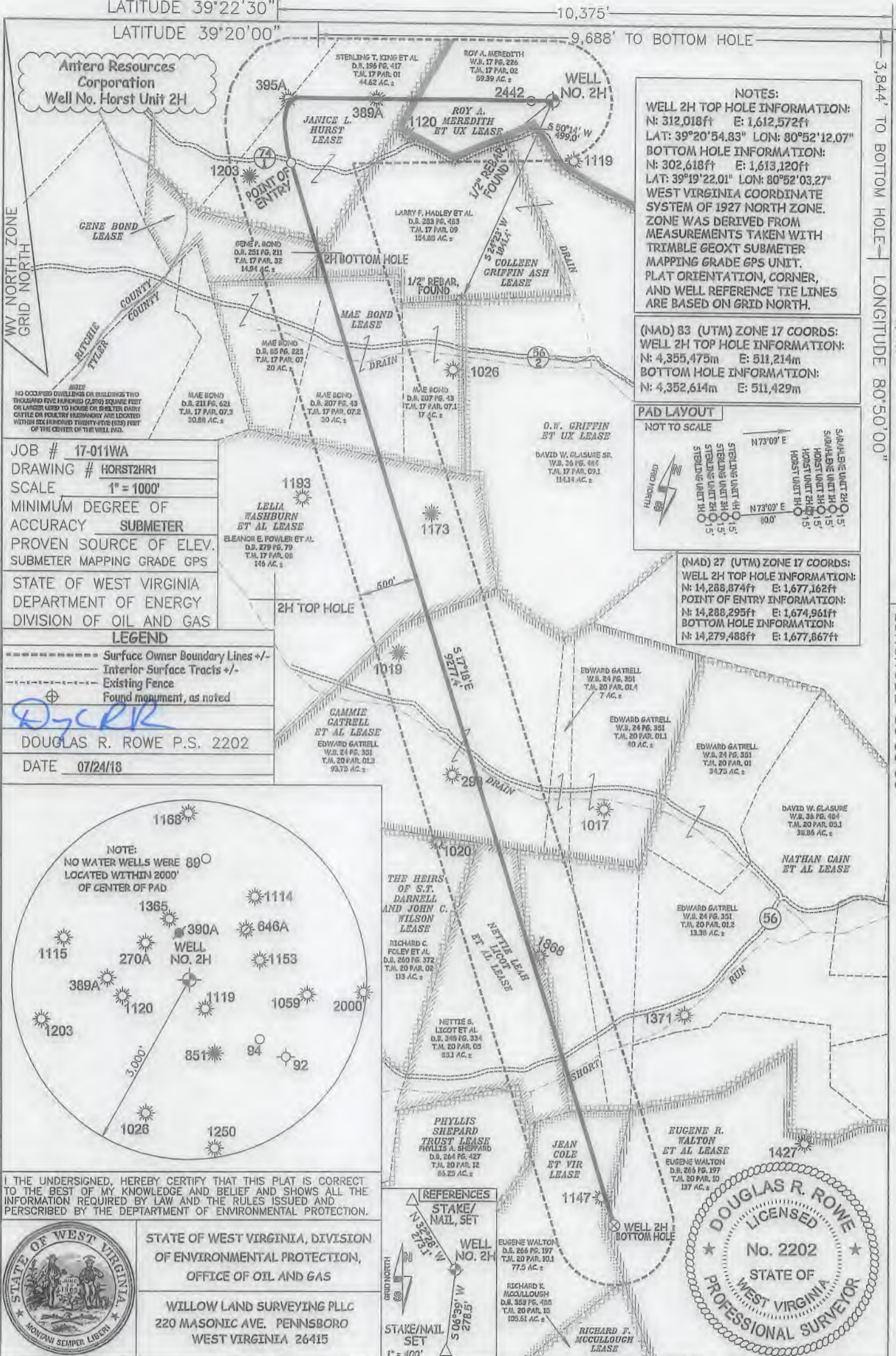
LATITUDE 39°20'00"

9,688' TO BOTTOM HOLE

3,844' TO BOTTOM HOLE

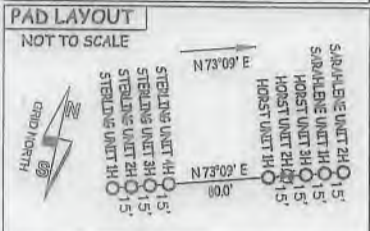
9,629'

LONGITUDE 80°50'00"



NOTES:
 WELL 2H TOP HOLE INFORMATION:
 N: 312,018ft E: 1,612,572ft
 LAT: 39°20'54.83" LON: 80°52'12.07"
 BOTTOM HOLE INFORMATION:
 N: 302,618ft E: 1,613,120ft
 LAT: 39°19'22.01" LON: 80°52'03.27"
 WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
 WELL 2H TOP HOLE INFORMATION:
 N: 4,355,475m E: 511,214m
 BOTTOM HOLE INFORMATION:
 N: 4,352,614m E: 511,429m

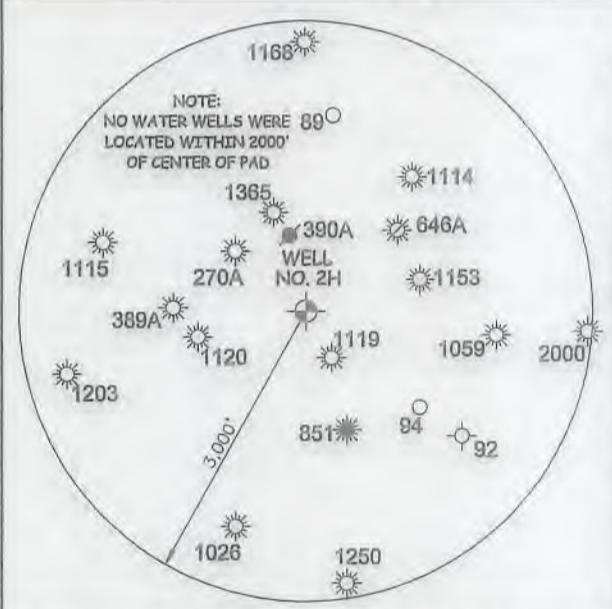


(NAD) 27 (UTM) ZONE 17 COORDS:
 WELL 2H TOP HOLE INFORMATION:
 N: 14,288,874ft E: 1,677,162ft
 POINT OF ENTRY INFORMATION:
 N: 14,288,295ft E: 1,674,961ft
 BOTTOM HOLE INFORMATION:
 N: 14,279,488ft E: 1,677,867ft

JOB # 17-011WA
 DRAWING # HORST2HR1
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY SUBMETER
 PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
 STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND
 - - - - - Surface Owner Boundary Lines +/-
 - - - - - Interior Surface Tracts +/-
 - - - - - Existing Fence
 ⊕ Found monument, as noted

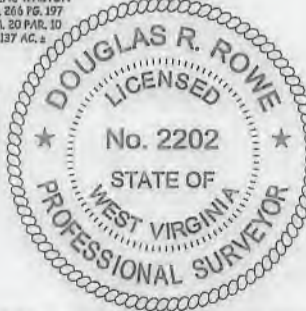
D. Rowe
 DOUGLAS R. ROWE P.S. 2202
 DATE 07/24/18



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 RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
 WILLOW LAND SURVEYING PLLC
 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415



WELL TYPE: OIL <input type="checkbox"/> GAS <input checked="" type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/>	OPERATOR'S WELL#	HORST UNIT #2H
(IF "GAS") PRODUCTION <input checked="" type="checkbox"/> STORAGE <input type="checkbox"/> DEEP <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	47 - 085	02517M00
LOCATION: ELEVATION 1,117' - ORIGINAL 1,114' - PROPOSED WATERSHED HEADWATERS MIDDLE ISLAND CREEK	STATE	COUNTY
QUADRANGLE WEST UNION 7.5	DISTRICT CENTERTVILLE	COUNTY TYLER
SURFACE OWNER ROY A. MEREDITH	ACREAGE 59.39 ACRES +/-	
OIL & GAS ROYALTY OWNER ROY A. MEREDITH ET UX; JANICE L. HURST; GENE BOND; COLEEN GRIFFIN ASH; MAE BOND;	LEASE ACREAGE 80 AC±; 97.83 AC±; 14.44 AC±; 41.187 AC±; 87 AC±	
LELIA WASHBURN ET AL; CAMMIE GATRELL ET AL; NETTIE LEAH LICOT ET AL; NATHAN CAIN ET AL; JEAN COLE ET VIR; EUGENE R. WALTON ET AL	150 AC±; 139.5 AC±; 43 AC±; 278 AC±; 77.5 AC±; 137 AC±	
PROPOSED WORK: DRILL <input type="checkbox"/> CONVERT <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/>	PLUG & ABANDON <input type="checkbox"/> CLEAN OUT & REPLUG <input type="checkbox"/>	
PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input checked="" type="checkbox"/> OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-BHL	ESTIMATED DEPTH 7,000' TVD 18,700' MD	
TARGET FORMATION MARCELLUS		
WELL OPERATOR ANTERO RESOURCES CORP.	DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM	
ADDRESS 1615 WYNKOOP ST. DENVER, CO 80202	ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313	