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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

October 26, 2016
PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET

DENVER, CO 80202

Re: Permit Modification Approval for AUBIE UNIT 2H
47-085-10194-00-00

Modifying well bore azimuth and 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: AUBIE UNIT 2H
Farm Name: EDDY D. WAGGONER ET AL
U.S. WELL NUMBER: 47-085-10194-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: October 26, 2016

PERMIT MODIFICATION API# 47-085-10194

WW-6B
(04/15)

API NO. 47- 085 - 10194 MOD
OPERATOR WELL NO. Aubie Unit 2H
Well Pad Name: Kelly Pad

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

1) Well Operator: Antero Resources Corp. | 494507062 (Operator ID) | 085 - Ritchie (County) | Clay (District) | Pennsboro 7.5' (Quadrangle)

2) Operator's Well Number: Aubie Unit 2H Well Pad Name: Kelly Pad

3) Farm Name/Surface Owner: Eddy D. Waggoner, et al Public Road Access: CR 74

4) Elevation, current ground: 1127' Elevation, proposed post-construction: 1145'

5) Well Type (a) Gas X Oil _____ Underground Storage _____
Other _____
(b)If Gas Shallow X Deep _____
Horizontal X

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 6800' TVD, Anticipated Thickness 75 feet, Associated Pressure 2800#

8) Proposed Total Vertical Depth: 6800'

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 18,100'

11) Proposed Horizontal Leg Length: 9967'

12) Approximate Fresh Water Strata Depths: 303', 380'

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

14) Approximate Saltwater Depths: 533', 1567', 1802'

15) Approximate Coal Seam Depths: None identified

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

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

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

18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
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#	430' *see #19	430' *see #19	CTS, 597 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2550'	2550'	CTS, 1038 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	20#	18,100'	18,100'	4554 Cu. Ft.
Tubing	2-3/8"	New	N-80	4.7#		7100'	
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	1.18
Fresh Water	13-3/8"	17-1/2"	0.38"/0.33"	2730/1730	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"	0.361"	12630	2500	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			

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WW-6B
(10/14)

API NO. 47- 085 - 10194 MOD
OPERATOR WELL NO. Aubie Unit 2H
Well Pad Name: Kelly 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 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."

Max Pressure - 9300 lbs
Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.11 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.57 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 + 0.5% C51.
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 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.

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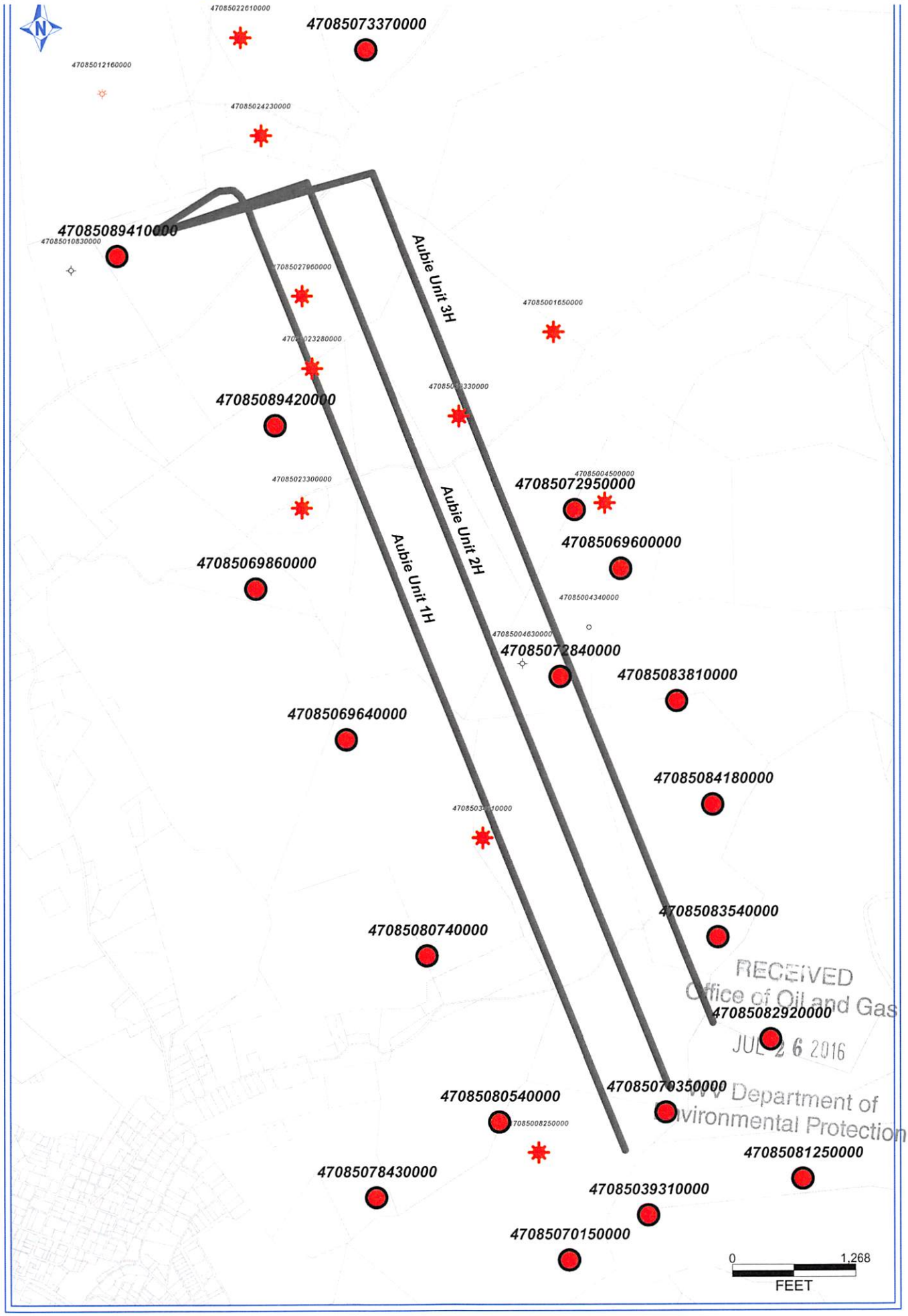
*Note: Attach additional sheets as needed.

85-10194MOD

AUBIE UNIT 1H, 2H & 3H (KELLY PAD) - DATA COLLECTED ON OFFSET WELLS



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AUBIE UNIT 1H, 2H & 3H (KELLY PAD) - DATA COLLECTED ON OFFSET WELLS

UWI (APINum)	Well Name	Well Number	Operator	Hist Oper	TD	ELEV_GR	TD (SSTVD)	Perfs (shallowest, deepest)
47085070150000	HENDERSHOT J ET AL	WK-353	ALLIANCE PETR CORP	KEPCO INCORPORATED	5999	1200	-4799	Riley (4634-4649), Rhinestreet Sh (5877-5978)
47085072840000	HUFF LOUIS B	WK-385	ALLIANCE PETR CORP	KEPCO INCORPORATED	5999	1155	-4844	Riley (4620-4641), Rhinestreet Sh (5859-5957)
47085039310000	WILSON BEN	1060	EQT PRODUCTION CO	CARNEGIE NAT GAS CRP	5999	986	-5013	No perf data available
47085070350000	MASSENGALE HATTIE ET AL	WK-384	ALLIANCE PETR CORP	KEPCO INCORPORATED	5997	1171	-4826	Riley (4624-4638), Rhinestreet Sh (5872-5922)
47085069860000	COLLINS CARTHA	WK-347	ALLIANCE PETR CORP	KEPCO INCORPORATED	5995	1163	-4832	Riley (4665-4687), Rhinestreet Sh (5900-5996)
47085072950000	HUFF LOUIS B	WK-519	EQUITABLE PROD CO	KEPCO INCORPORATED	5995	1236	-4759	No perf data available
47085069600000	MASSENGALE H ET AL	WK-383	ALLIANCE PETR CORP	KEPCO INCORPORATED	5995	983	-5012	Riley (4428-4451), Rhinestreet (5674-5773)
47085069640000	SLEVIN JOHN M	WK-380	ALLIANCE PETR CORP	KEPCO INCORPORATED	5995	1153	-4842	Riley (4622-4641), Rhinestreet (5848-5899)
47085073370000	SPENCER RUTH & HARLEY E	WK-342	ALLIANCE PETR CORP	KEPCO INCORPORATED	5835	855	-4980	Riley (4377-4400), Rhinestreet (5611-5714)
47085078430000	HOMER RICHARD	3	MCCULLOUGH RICHARD F	DEVONIAN APPALACHIAN	5521	1202	-4319	Riley (4685-4697), Benson/Alexander (4872-5334)
47085080540000	HENDERSHOT JOHNNIE ETAL	KEYSTONE1	ENERGY CORP OF AMER	EASTERN AMERICAN ENE	5490	1120	-4370	Riley (4603-4624), Alexander (5245-5252)
47085083810000	JONES M H HEIRS	1	KEY OIL COMPANY	KEY OIL INCORPORATED	5469	1200	-4269	Riley (4678-4696), Alexander (5324-5332)
47085083540000	MOSSOR WILLIAM ETAL	4	KEY OIL COMPANY	KEY OIL INCORPORATED	5408	1169	-4239	Riley (4627-4646), Alexander (5280-5282)
47085084180000	MASSENGALE HATTIE ET AL	1	ENERGY CORP OF AMER	EASTERN AMERICAN ENE	5406	1159	-4247	Riley (4644-4676), Alexander (5293-5304)
47085089410000	JOHNSON	1	KEY OIL COMPANY	KEY OIL COMPANY	5310	1035	-4275	Riley (4532-4551), Benson (4892-4895)
47085089420000	JOHNSON	2	KEY OIL COMPANY	KEY OIL COMPANY	5250	975	-4275	Riley (4480-4501), Alexander (5118-5120)
47085081250000	WILSON BEN HEIRS ETAL	BWILSON1	MURVIN&MEIER OIL CO	MURVIN OIL COMPANY	5234	943	-4291	Riley (4451-4463), Alexander (5098-5108)
47085082920000	BOYCE HEIRS	2	KEY OIL COMPANY	KEY OIL INCORPORATED	5210	975	-4235	Riley (4446-4456), Alexander (5095-5098)
47085080740000	SLEVIN JOHN M ETAL	KEYSTONE/SLEV2	ENERGY CORP OF AMER	EASTERN AMERICAN ENE	5190	916	-4274	Riley (4370-4392), Benson (4729-5020)
47085034110000	J M WILSON	2	PENN RESOURCES INC	PENN RESOURCES INC	2650	1107	-1543	
47085010830000	G A SMITH & J W WHALEY	1	COLLINS C I	COLLINS C I	2295	1085	-1210	
47085027960000	DORIS L WESTFALL	1	PERKINS PROD CO	STONE F C OIL & GAS	2222	998	-1224	
47085004500000	MARTHA J CHIPPS 1	1498	EQT PRODUCTION CO	CARNEGIE NAT GAS CRP	2124	1108	-1016	
47085008250000	J M MCDOUGAL	1	COLLINS C I	COLLINS C I	2109	1064	-1045	
47085022610000	W & D BRADFORD	1	PERKINS PROD CO	L & M PETROLEUM	2069	933	-1136	
47085004630000	B C HAMMOND	2	MCCALL DRILLING	MCCALL DRILLING	2065	1005	-1060	
47085023280000	MABEL HEFLIN	1	PERKINS PROD CO	STONE F C OIL & GAS	2064	1065	-999	
47085023300000	MABLE HEFLIN	2	PERKINS PROD CO	STONE F C OIL & GAS	2034	963	-1071	
47085001650000	M H JONES 3	1481	EQT PRODUCTION CO	CARNEGIE NAT GAS CRP	2027	1010	-1017	
47085004340000	B C HAMMOND	1	MCCALL DRILLING	MCCALL DRILLING	2001	920	-1081	
47085024230000	W H & D M BRAFORD	2	PERKINS PROD CO	L & M OIL & GAS	1996	879	-1117	
47085012160000	J W WHALEY & G A SMITH	1	MILLER GUS	MILLER GUS	1990	903	-1087	
47085039330000	JONES M H	1253	EQT PRODUCTION CO	CARNEGIE NAT GAS CRP	1988	959	-1029	

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85-10194

WW-6A1

Operator's Well Number Aubie Unit 2H
PERMIT MODIFICATION API# 47-085-10194 MOD

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
Betty Johnson Lease			
Betty Johnson	Key Oil Company	1/8	0233/0947
Key Oil Company	Antero Resources Appalachian Corporation	Assignment	0253/0758
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Mable Heflin, et al Lease			
Mable Heflin, et al	Anthen Oil and Gas	1/8	0097/0397
Anthen Oil and Gas	Fred C. Stone & Floyd W. Stone	Assignment	0201/0693
Fred C. Stone & Floyd W. Stone	Johnson Enterprises	Assignment	0201/0720
Johnson Enterprises	Clay M. & Deryl L. Perkins	Assignment	0231/0443
Clay M. & Deryl L. Perkins	Perkins Production Co., LLC	Assignment	0232/0213
Perkins Production Co., LLC	Antero Resources Appalachian Corporation	Assignment	0264/1045
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
M.H. Jones, et ux Lease			
M.H. Jones, et ux	P.G. McKeon	1/8	0032/0025
P.G. McKeon	Carnegie Natural Gas	Assignment	0041/0357
Carnegie Natural Gas	Carnegie Production Company	Assignment	0228/0859
Carnegie Production Company	EQT Production Company	Certificate of Registration of Trade Name	Exhibit 3
EQT Production Company	**Antero Resources Corporation**	***Partial Assignment**	**0282/0175**
Lewis B. Huff, et ux Lease			
Lewis B. Huff, et ux	Robert P. Jackson	1/8	0155/0442
Robert P. Jackson	Kepco, Inc.	Assignment	0168/0595
Kepco, Inc.	Eastern Kentucky Production Company	Name Change	Exhibit 2
Eastern Kentucky Production Company	Kepco Resources, Inc.	Assignment	0188/0061
Kepco Resources, Inc.	Union Drilling, Inc.	Merger	CRB 0004/0322
Union Drilling, Inc.	Equitable Resources Exploration, Inc.	Merger	DB 0227/0201
Equitable Resources Exploration, Inc.	Equitable Resources Energy Company	Merger	DB 0230/0047
Equitable Resources Energy Company	Enervest East Limited Partnership	Assignment	0222/0273
Enervest East Limited Partnership	The Houston Exploration Company	Assignment	0234/0890
The Houston Exploration Company	Seneca-Upshur Petroleum, Inc.	Assignment	0236/0650
Seneca-Upshur Petroleum, Inc.	Seneca-Upshur Petroleum, LLC	Assignment	DB 0311/0863
Seneca-Upshur Petroleum, LLC	Alliance Petroleum Corporation	Assignment	0269/0062
Alliance Petroleum Corporation	Antero Resources Appalachian Corporation	*Partial Assignment	0256/0001
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.**

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****CONTINUED ON NEXT PAGE****

WW-6A1
(5/13)

Operator's Well No. Aubie 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
J.M. Wilson, et ux Lease	J.M. Wilson, et ux	Carnegie Natural Gas Company	1/8	0032/0157
	Carnegie Natural Gas Company	Ferrell Drilling Company	Assignment	0116/0543
	Ferrell Drilling Company	Seco Oil & Gas, Inc.	Assignment	0165/0701
	Seco Oil & Gas, Inc.	Antero Resources Appalachian Corp.	*Partial Assignment of Oil and Gas Leases	0259/0693
	Antero Resources Appalachian Corp.	**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 VP of Production

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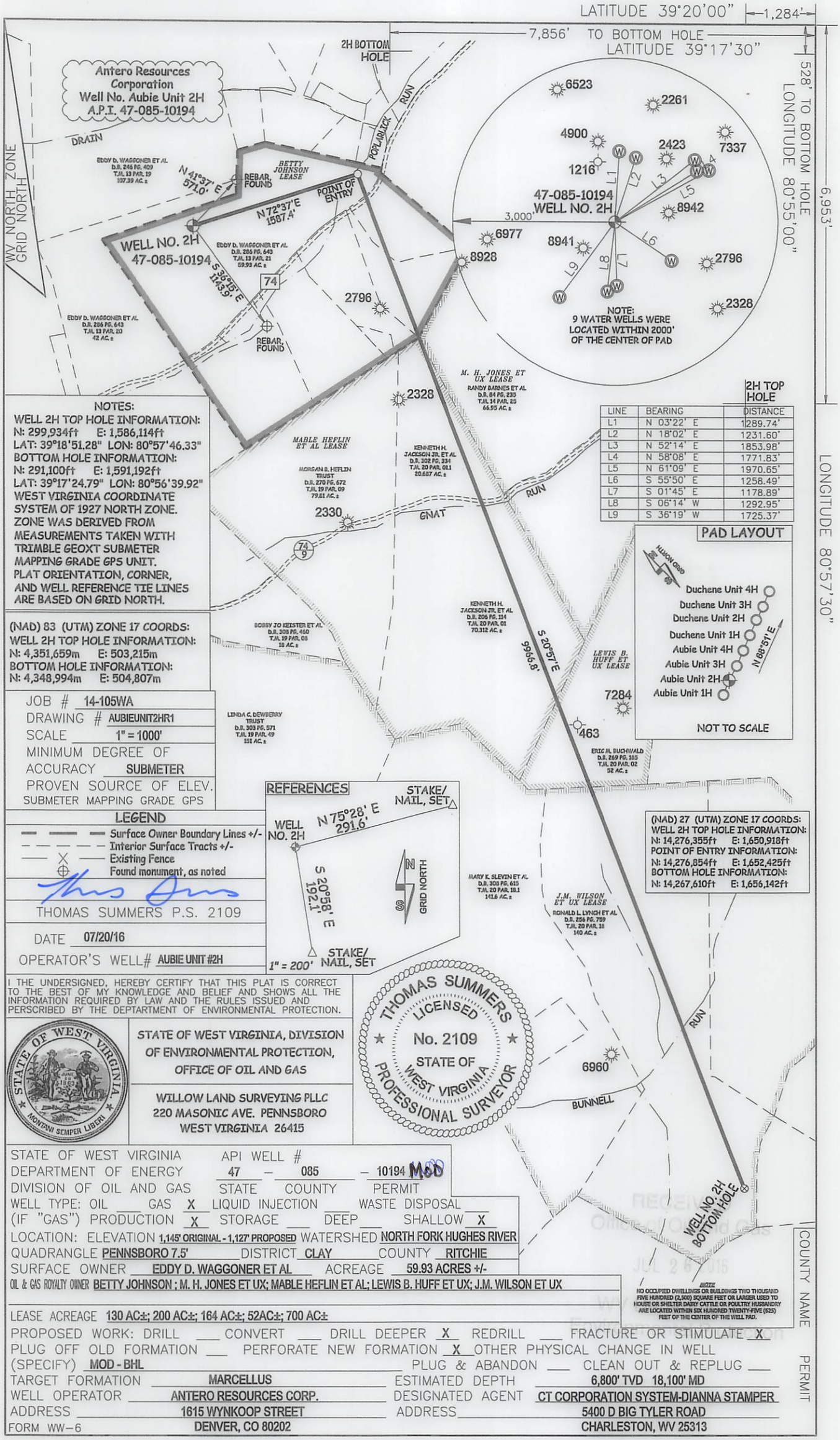


LINE	BEARING	DISTANCE
L1	N 03°22' E	1289.74'
L2	N 18°02' E	1231.60'
L3	N 52°14' E	1853.98'
L4	N 58°08' E	1771.83'
L5	N 61°09' E	1970.65'
L6	S 55°50' E	1258.49'
L7	S 01°45' E	1178.89'
L8	S 06°14' W	1292.95'
L9	S 36°19' W	1725.37'

2H TOP HOLE

NOTES:

WELL 2H TOP HOLE INFORMATION:
N: 299,934ft E: 1,586,114ft
LAT: 39°18'51.28" LON: 80°57'46.33"
BOTTOM HOLE INFORMATION:
N: 291,100ft E: 1,591,192ft
LAT: 39°17'24.79" LON: 80°56'39.92"
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: 4,351,659m E: 503,215m
BOTTOM HOLE INFORMATION:
N: 4,348,994m E: 504,807m

JOB # 14-105WA
DRAWING # AUBIEUNIT2HR1
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

PAD LAYOUT

HUNON GRID
Duchene Unit 4H
Duchene Unit 3H
Duchene Unit 2H
Duchene Unit 1H
Aubie Unit 4H
Aubie Unit 3H
Aubie Unit 2H
Aubie Unit 1H
N 68°51' E
NOT TO SCALE

LEGEND

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

REFERENCES

WELL NO. 2H
N 75°28' E 291.6'
STAKE/ NAIL, SET
S 20°58' E 192.1'
STAKE/ NAIL, SET
GRID NORTH
1" = 200'

(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 14,276,355ft E: 1,650,918ft
POINT OF ENTRY INFORMATION:
N: 14,276,854ft E: 1,652,425ft
BOTTOM HOLE INFORMATION:
N: 14,267,610ft E: 1,656,142ft

THOMAS SUMMERS P.S. 2109

DATE 07/20/16
OPERATOR'S WELL# AUBIE UNIT #2H

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 DEPTARTMENT OF ENVIRONMENTAL PROTECTION.

THOMAS SUMMERS LICENSED No. 2109 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415

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

API WELL # 47 – 085 – 10194 MOD
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,145' ORIGINAL - 1,127' PROPOSED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER EDDY D. WAGGONER ET AL ACREAGE 59.93 ACRES +/-
OIL & GAS ROYALTY OWNER BETTY JOHNSON ; M. H. JONES ET UX; MABLE HEFLIN ET AL; LEWIS B. HUFF ET UX; J.M. WILSON ET UX

LEASE ACREAGE 130 AC±; 200 AC±; 164 AC±; 52AC±; 700 AC±

NOTE
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER X REDRILL ___ FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) MOD - BHL PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,800' TVD 18,100' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

MODIFICATION

MODIFICATION

FORM WW-6	DENVER, CO 80202		CHARLESTON, WV 25313
ADDRESS	1515 WYNKOOP STREET	ADDRESS	2400 D BIG TYLER ROAD
WELL OPERATOR	ANTERO RESOURCES CORP.	DESIGNATED AGENT	CT CORPORATION SYSTEM-DIANNA STAMPER
TARGET FORMATION	MARCELLUS	ESTIMATED DEPTH	8,800' TVD 18,100' MD
(SPECIFY)	MOD - BHL	PLUG & ABANDON ___	CLEAN OUT & REPLUG ___
PLUG OFF OLD FORMATION ___	PERFORATE NEW FORMATION X	OTHER PHYSICAL CHANGE IN WELL	PERMIT
PROPOSED WORK: DRILL ___	CONVERT ___	DRILL DEEPER X	REDRILL ___ FRACTURE OR STIMULATE X
LEASE ACREAGE 430 ACR; 500 ACR; 164 ACR; 25ACR; 100 ACR			
OIL & GAS ROYALTY OWNER BETTY JOHNSON; M. H. JONES ET UX; MARIE HERLIN ET AL; LEWIS B. HUFF ET UX; J.M. WILSON ET UX			
SURFACE OWNER EDDY D. MASCONERI ET AL	ACREAGE 25.25 ACRES +/-		
QUADRANGLE PENNSBORO 7.5'	DISTRICT CLAY	COUNTY RITCHIE	
LOCATION: ELEVATION 1,146 ORIGINAL - 1,151 PROPOSED	WATERSHED NORTH FORK HUGHES RIVER		
(IF "GAS") PRODUCTION X	STORAGE ___	DEEP ___	SHALLOW X
WELL TYPE: OIL ___	GAS X	LIQUID INJECTION ___	WASTE DISPOSAL ___
DIVISION OF OIL AND GAS	STATE	COUNTY	PERMIT
DEPARTMENT OF ENERGY	47	085	10101 MOD
STATE OF WEST VIRGINIA	API WELL #		

STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING LLC
550 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415

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 PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

LICENSED PROFESSIONAL SURVEYOR
THOMAS SUMMERS
STATE OF WEST VIRGINIA
NO. 6015

OPERATOR'S WELL # MARIE UNIT #5H

DATE 01/20/16

THOMAS SUMMERS P.S. 2105

LEGEND

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

REFERENCES

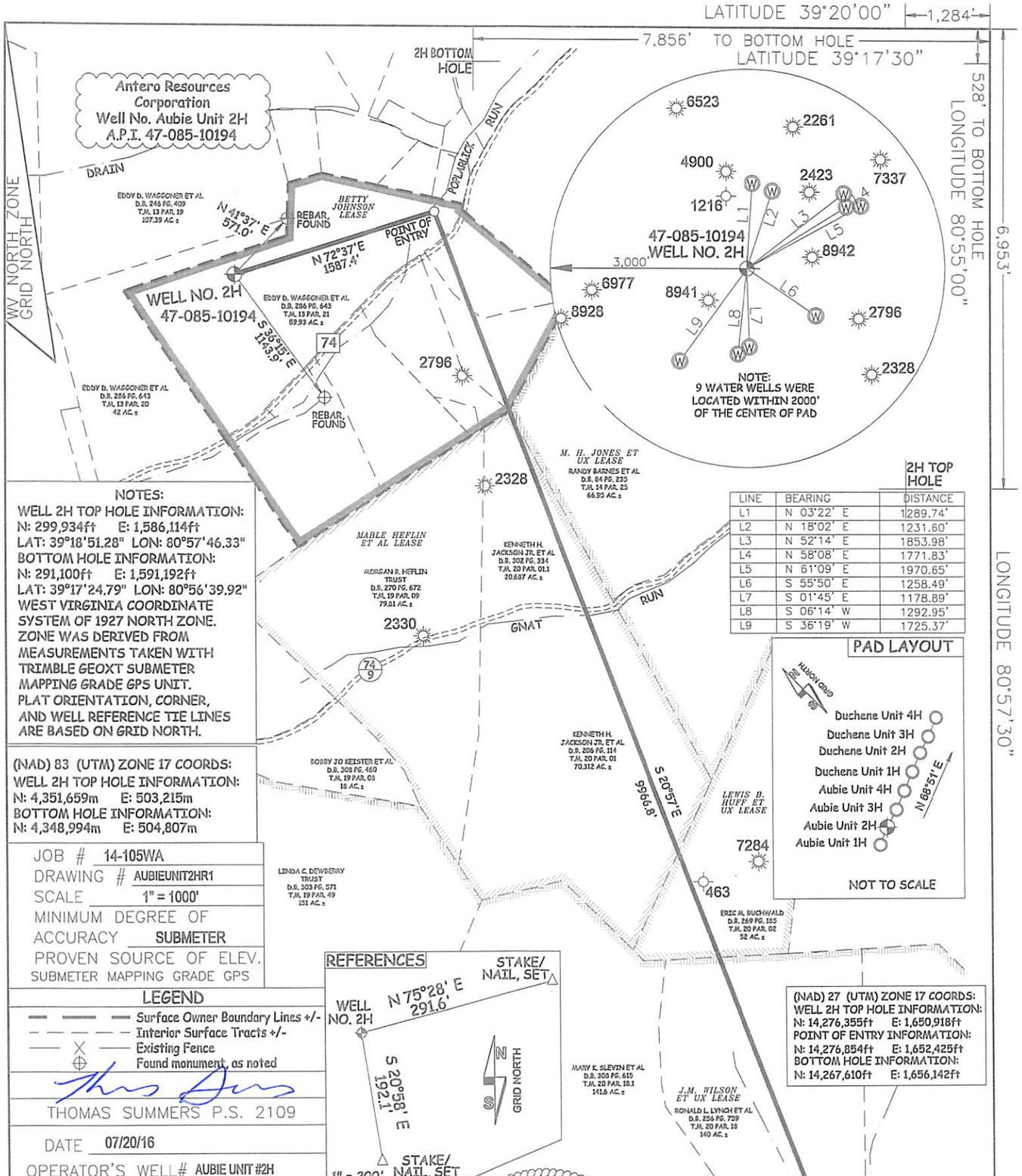
STAKE\ MAG. SET
N 17°58' E
WELL NO. 5H
S 50°28' E
1,695'±
HERON DIRG
1" = 500' MAG. SET STAKE\

SUBMETER MAPPING GRADE GPS
PROVEN SOURCE OF ELEV.
ACCURACY SUBMETER
MINIMUM DEGREE OF
SCALE 1" = 1000'
DRAWING # MARIENUNIT5H
JOB # 14-109WV

NOTES:
WELL 5H TOP HOLE INFORMATION:
LAT: 39°16'18.21"58" LON: 80°27'44.44"33"
N: 225,223.44ft E: 1,288,114.44ft
BOTTOM HOLE INFORMATION:
N: 225,100.44ft E: 1,229,195.44ft
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. LAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORD:
WELL 5H TOP HOLE INFORMATION:
N: 4,321,029m E: 503,515m
BOTTOM HOLE INFORMATION:
N: 4,318,866m E: 504,708m

(NAD) 27 (UTM) ZONE 17 COORD:
WELL 5H TOP HOLE INFORMATION:
N: 4,319,322m E: 1,620,191ft
POINT TO ENTER INFORMATION:
N: 4,319,884ft E: 1,625,452ft
BOTTOM HOLE INFORMATION:
N: 4,315,101ft E: 1,626,451ft



NOTES:
WELL 2H TOP HOLE INFORMATION:
N: 299,934ft E: 1,586,114ft
LAT: 39°18'51.28" LON: 80°57'46.33"
BOTTOM HOLE INFORMATION:
N: 291,100ft E: 1,591,192ft
LAT: 39°17'24.79" LON: 80°56'39.92"
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: 4,351,659m E: 503,215m
BOTTOM HOLE INFORMATION:
N: 4,348,994m E: 504,807m

2H TOP HOLE

LINE	BEARING	DISTANCE
L1	N 03°22' E	1289.74'
L2	N 18°02' E	1231.60'
L3	N 52°14' E	1853.98'
L4	N 58°08' E	1771.83'
L5	N 61°09' E	1970.65'
L6	S 55°50' E	1258.49'
L7	S 01°45' E	1178.89'
L8	S 06°14' W	1292.95'
L9	S 36°19' W	1725.37'

PAD LAYOUT

NOT TO SCALE

JOB # 14-105WA
DRAWING # AUBIEUNIT2HR1
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

THOMAS SUMMERS P.S. 2109

DATE 07/20/16
OPERATOR'S WELL# AUBIE UNIT #2H

REFERENCES

(NAD) 27 (UTM) ZONE 17 COORDS:
WELL 2H TOP HOLE INFORMATION:
N: 14,276,355ft E: 1,650,918ft
POINT OF ENTRY INFORMATION:
N: 14,276,854ft E: 1,652,425ft
BOTTOM HOLE INFORMATION:
N: 14,267,610ft E: 1,656,142ft

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 DEPTARTMENT 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

THOMAS SUMMERS LICENSED No. 2109 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS
API WELL # 47 – 085 – 10194 MOD
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,145' ORIGINAL - 1,127' PROPOSED WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE PENNSBORO 7.5' DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER EDDY D. WAGGONER ET AL ACREAGE 59.93 ACRES +/-
OIL & GAS ROYALTY OWNER BETTY JOHNSON ; M. H. JONES ET UX; MABLE HEFLIN ET AL; LEWIS B. HUFF ET UX; J.M. WILSON ET UX
LEASE ACREAGE 130 AC±; 200 AC±; 164 AC±; 52AC±; 700 AC±

NOTE
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER X REDRILL ___ FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) MOD - BHL PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,800' TVD 18,100' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT CT CORPORATION SYSTEM-DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

85-10194 MON

FORM WW-6A1
EXHIBIT 1

FILED
JUN 10 2013
IN THE OFFICE OF SECRETARY OF STATE

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

Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
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

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 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 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) 357-7310
   Contact Name — Phone Number

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

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

*Important Legal Notice Regarding Signature: Per West Virginia Code §31D-1-129, 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.

RECEIVED
Office of Oil and Gas
JUL 26 2016
WV Department of Environmental Protection

FORM WW-6A1
EXHIBIT 2

85-10194 MOD

Commonwealth of Kentucky

OFFICE OF
SECRETARY OF STATE

DREXELL R. DAVIS
Secretary

FRANKFORT,
KENTUCKY

CERTIFICATE OF AMENDMENT TO ARTICLES OF INCORPORATION

I, DREXELL R. DAVIS, Secretary of State of the Commonwealth of Kentucky, do hereby certify that Amended Articles of Incorporation of

KEPCO, INC.

CHANGING NAME TO EASTERN KENTUCKY PRODUCTION COMPANY

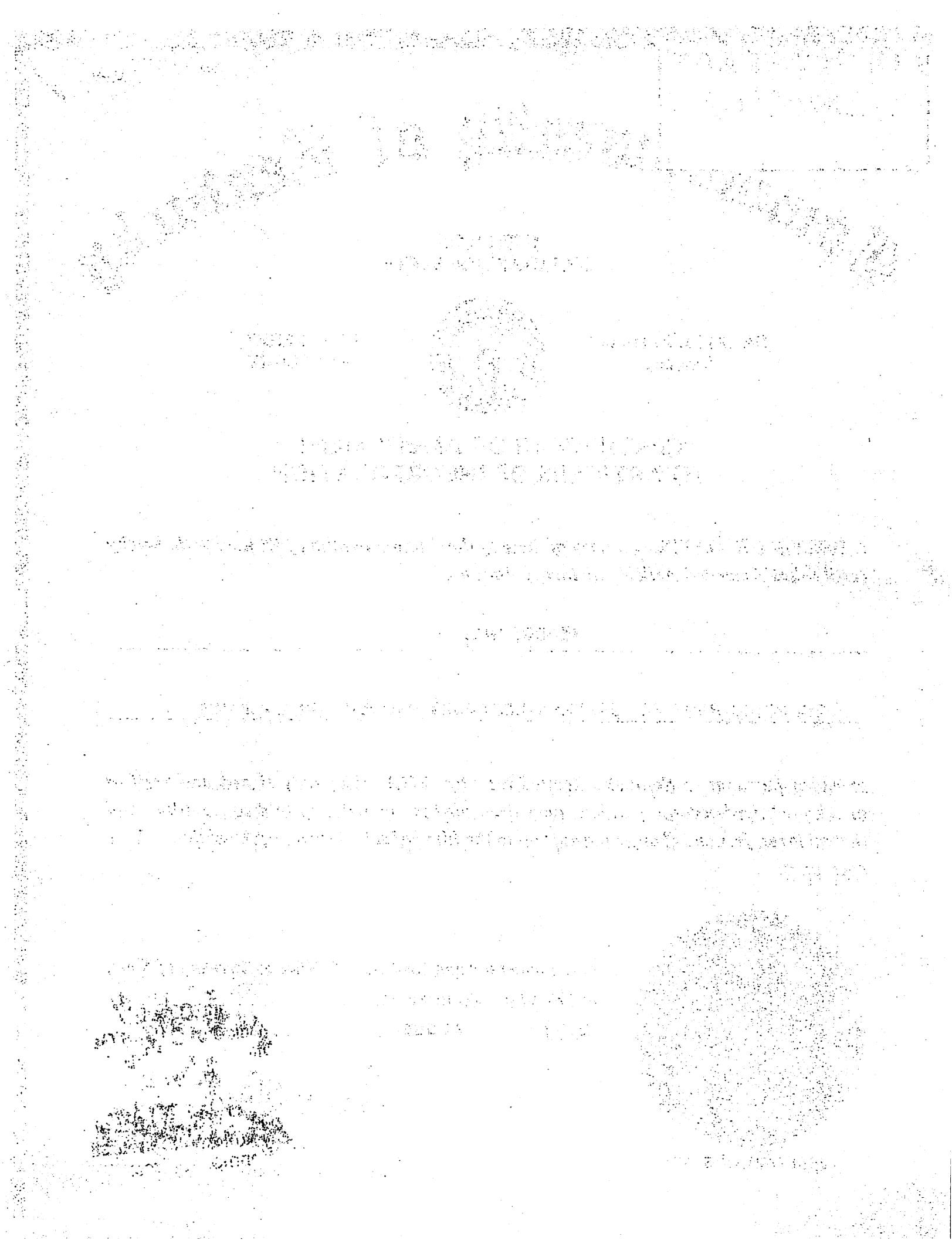
amended pursuant to Kentucky Revised Statutes, 271A, (XXI) duly signed and verified or acknowledged according to law, have been filed in my office by said corporation, and that all taxes, fees and charges payable upon the filing of said Articles of Amendment have been paid.

Given under my hand and seal of Office as Secretary of State, at Frankfort, Kentucky, this 15TH *day of* AUGUST, 19 85.

Drexell R. Davis
SECRETARY OF STATE

SECRETARY OF STATE

ASSISTANT SECRETARY OF STATE



FORM WW-6A1
EXHIBIT 3

85-10194 HOD AC

State of West Virginia

Certificate

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

EQT PRODUCTION COMPANY

has filed a "Certificate of Registration of Trade Name" in my office according to the provisions of Chapter 47 of the West Virginia Code and was found to conform to law.

Therefore, I hereby issue this

CERTIFICATE OF REGISTRATION OF TRADE NAME

authorizing it to transact business in West Virginia under the assumed name of

CARNEGIE PRODUCTION COMPANY

Given under my hand and the Great Seal of the State of West Virginia on this day of April 9, 2009

Natalie E Tennant

Secretary of State

[redacted]