

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

Harold D. Ward, Cabinet Secretary www.dep.wv.gov

Monday, July 15, 2024 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION 1615 WYNKOOP STREET

DENVER, CO 80202

Re:

Permit Modification Approval for Dodrill Unit 1H

47-017-06979-00-00

Extended 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.

Operator's Well Number: Dodrill Unit 1H

Farm Name: Shawn A Glaspell

U.S. WELL NUMBER: 47-017-06979-00-00

Horizontal 6A New Drill

Date Modification Issued: 7/15/2024

Promoting a healthy environment.

WW-6B (04/15) API NO. 47-017 OPERATOR WELL NO. Dodrill Unit 1H MOD
Well Pad Name: Crimson Pad

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

) Well Operator: Antero Reso	ources Corpora	494507062	017-Doddrig	McLellan	Center Point 7.5'
		Operator ID	County	District	Quadrangle
2) Operator's Well Number: Do	drill Unit 1H MOI	Well Pad	Name: Crimso	on Pad	
3) Farm Name/Surface Owner:	Shawn A. Glaspe	ell Public Roa	d Access: Rigg	jins Run	
4) Elevation, current ground:	1249' Ele	evation, proposed	post-construction	n: 1222'	
5) Well Type (a) Gas X	Oil	Unde	erground Storag	е	
Other					
(b)If Gas Sha	llow X	Deep			
Hor	rizontal X				
6) Existing Pad: Yes or No Yes	,		<u>-</u> :		
 Proposed Target Formation(s) Marcellus Shale: 7700' TVD, A 					
8) Proposed Total Vertical Dept					
9) Formation at Total Vertical D					
10) Proposed Total Measured De	epth: 21400' M	D			
11) Proposed Horizontal Leg Le	ngth: 12069.3'				
12) Approximate Fresh Water S	trata Depths:	303', 953'			
13) Method to Determine Fresh	Water Depths: 4	17-017-00483			
14) Approximate Saltwater Dep	ths: 2123'				
15) Approximate Coal Seam De	pths: None Iden	tified			
16) Approximate Depth to Possi	ble Void (coal mi	ine, karst, other):	None Anticipat	ted	
17) Does Proposed well location directly overlying or adjacent to		ms Yes	No		RECEIVED
(a) If Yes, provide Mine Info:	Name:				ice of Oil and Gas
	Depth:				IUL 12 2024
	Seam:			w	Department of
	Owner:			Enviror	mental Protection

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Page 1 of 3

WW-6B (04/15)

API NO. 47-_017__-

OPERATOR WELL NO. Dodrill Unit 1H MOD

Well Pad Name: Crimson Pad

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	<u>Grade</u>	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#	100	100	CTS, 89 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	1003	1003	CTS, 1045 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#	21400	21400	4465 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
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/L	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A/L	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A/L	~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	Office of Oil and Gas
Sizes:	N/A	JUL 1 2 2024
Depths Set:	N/A	WV Department of Environmental Protection

Junery Hat 7-10-24 Page 2 of 3

WW-6B (10/14) 4701706979

API NO. 47-<u>017</u>-_

OPERATOR WELL NO. Dodrill Unit 1H MOD

Well Pad Name: Crimson Pad

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill a new horizontal shallow well into the Marcellus Shale.

*Antero will be air drilling the freshwater 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 freshwater 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): 36.89 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 14.46 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/L cement.

Surface: Class A/L cement with 2-3% calcium chloride and 1/4 lb of flake Intermediate: Class A/L 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 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.

*Note: Attach additional sheets as needed.

LEGEND 4701706979 • Proposed gas well * Existing Well, as noted Digitized Well, as noted GRID NORTH 500' Buffer The orientation of this survey is Grid North, and its coordinate base is the West 47-017 Virginia Coordinate System -30466 of 1927, North Zone 47-017 -03996 47-017 -01016 47-01<u>7</u> -05155 47-017 -03106 Office RECEIVED Of Oil and Gas JUL 12 2024 Environmental Protection Bridgeport Office 172 Thompson Drive Phone: (304) 848-5035 Bridgeport, WV 26330 Fax: (304) 848-5037 PARTY CHIEF: C. Lynch DRAWN BY J. Smith 4000' PREPARED: October 9, 2023 RESEARCH J. Miller SURVEYED Dec. 2016 PROJECT NO 259-30-M-23 Scale: 1 inch = 2000 feet Dodrill 1H AOR FIELD CREW: C.L., K.M Sheet 1 of 1 DRAWING NO

4
7
0
-
7
0
0
9
7
9

1 man /a mint	Well Name	Well Number	Operator	Historical Operator	TD	Perforated Interval (shallowest, deepest)	Perforated Formation(s)	Producible Formation(s) not perf d
UWI (APINum)				PETROLEUM DEV CORP	5,239	2014 - 5074	Big Injun, Benson	Weir, Alexander
	JOHNSON WILLIAM R ET AL		DITENSITIES THE STATE OF THE ST	I Shari California and California an	2,116	2027 3077	Maxon, Big Injun	Weir, Benson, Alexander
47017010160000	W B & GERTIE SWIGER		TAPO ENERGY INC	PENN & WAYNE		4504 2072	Maxton, Big Injun, Gordon	Weir, Benson, Alexander
47017051550000	DEPI	7199	DIVERSIFIED PRODUCTION LLC	DOMINION EXPL&PROD	4,830	1684-2872		Weir, Alexander
47017031060000	HOSKINSON EVANS	5-413-1	R & R OIL & GAS LLC	SCOTT JAMES F	5,500	5230 - 5389	Benson	
	D N DOAK 1/HRBRT CARROLL	371	CARNEGIE NATURAL GAS	CARNEGIE NATURAL GAS	2,943		Big Injun, Gordon	Weir, Alexander

RECEIVED
Office of Oil and Gas

JUL 1 2 2024

WV Department of Environmental Protection

Operator's Well Number

Dodrill Unit 1H 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
A: Minda Allen Lease Minda Allen W. B. Allen South Penn Oil Company Pennzoil Company Pennzoil Products Company	W. B. Allen South Penn Oil Company Pennzoil Company Pennzoil Products Company Pennzoil Exploration and Production Company	1/8 Assignment Name Change Deed Deed	7/357 7/359 WVSOS 203/621 239/355
Pennzoil Exploration and Production Company Pennz Energy Exploration and Production LLC	Pennz Energy Exploration and Production LLC Devon Energy Production Company LP	Deed Merger	240/702 244/399
Devon Energy Production Company LP East Resources, Inc HG Energy, LLC American Energy Marcellus LLC Ascent Resources- Marcellus LLC Tribune Resources, LLC	East Resources, Inc HG Energy, LLC American Energy Marcellus LLC Ascent Resources- Marcellus LLC Tribune Resources, LLC Antero Resources Corporation	Assignment Assignment Assignment Name Change Merger Assignment	247/337 253/31 361/1 36/455 431/260 530/325
B: Morris Mountaineer Oil & Gas LLC Lease Morris Mountaineer Oil & Gas LLC	Antero Resources Corporation	1/8+	510/376
C: Shawn Glaspell Lease Shawn Glaspell	Antero Resources Corporation	1/8+	525/225
D: Johnnie Huy Rominger Lease Johnnie Huy Rominger	Antero Resources Corporation	Office of Oil and JUN 2 7 2024	520/249
E: CNX Gas Company Lease CNX Gas Company LLC	Antero Resources Corporation	1/8+ WV Department of Environmental Protect	
F: Acropolis, Inc. Lease Acropolis, Inc.	Antero Resources Corporation	1/8+	517/403
G: AMP IV, LP Lease AMP IV, LP	Antero Resources Corporation	1/8+	532/108
I: Brian A. Moreno & Diane P. Blanchette Lease Brian A. Moreno & Diane P. Blanchette	Antero Resources Corporation	1/8+	518/506
J: Clyde M. Ford III Lease Clyde M. Ford III	Antero Resources Corporation	1/8+	526/693

WW-6A1

Operator's Well Number

Dodrill Unit 1H MOD

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Grantor, lessor, etc. Grantee, lessee, etc. Royalty Book/Page

L: Burnetta C. Hoskinson Lease
Burnetta C. Hoskinson Antero Resources Corporation 1/8+ 471/159

*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.

*Cotenancy Utilization - Antero is utilizing the Co-tenancy Modernization and Majority Protection Act to proceed with development of certain royalty owners' interests in this tract.

**Pooling/Unitization — Antero has filed a horizontal well unitization application with the West Virginia Oil and Gas Conservation Commission that seeks to pool certain owners in this tract

Office of Oil and Gas

JUN 2 7 2024

WV Department of Environmental Protection WW-6A1 (5/13)

Operator's Well No.	Dodrill Unit 1H MOD

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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
M: Ollie M. Ford, et al Lease	Ollie M/ Ford, et al James F. Scott Emax Oil Company	James F. Scott Emax Oil Company Antero Resources Corporation	1/8 Assignment Assignment	99/732 317/210 342/346

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

Office of Oil and Gas

JUN 2 7 2024

WV Department of Environmental Protection

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:

Max Green

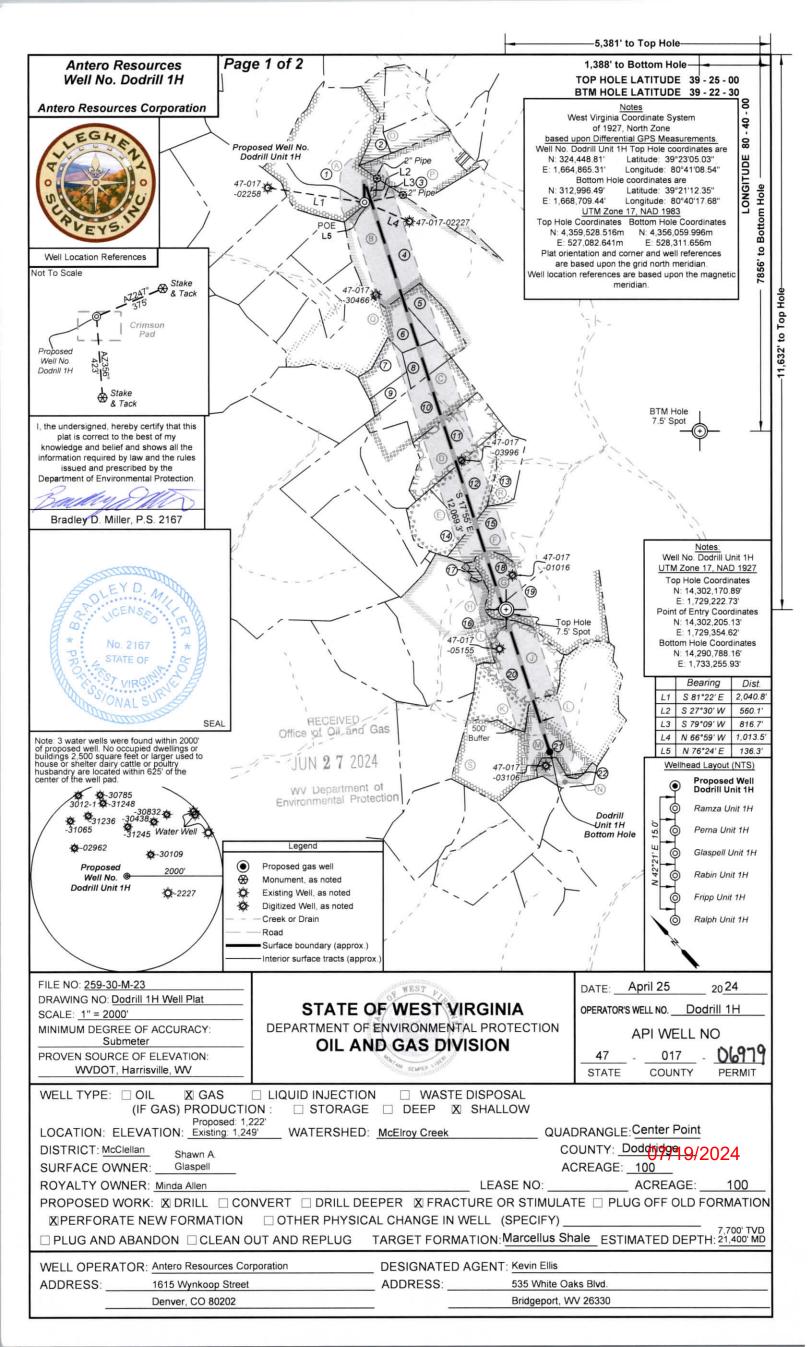
Its:

Vice President of Land

Page 1 of 1

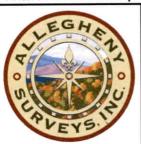
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Antero Resources Well No. Dodrill 1H Page 2 of 2

Antero Resources Corporation



	Leases
Α	Minda Allen
В	Morris Mountaineer Oil & Gas LLC
С	Shawn Glaspell
D	Johnnie Huy Rominger
E	CNX Gas Company, LLC
F	Acropolis, Inc.
G	AMP IV, LP
Н	Cliff Wllson & Opal Willson
1	Brian A. Moreno & Diane P. Blanchette
J	Clyde Ford, III
K	Romona L. Clauson
L	Burnetta C. Hoskinson
M	Ollie M. Ford, et al
Ν	Roy Hoskinson & Faye Hoskinson
0	Peter Ash
Р	Antero Minerals, LLC
Q	Arthur G. Doak, et ux
R	R. Clyde Roberts, et al
S	Mary A. Murphy Simons

ID	TM-Par	Owner	Bk/Pg	Acres
1	17-3.3	Shawn A. Glaspell	283/601	100.00
2	17-3.6	Shawn A. Glaspell	283/601	13.05
3	17-10	Kathryn Renee Blessing, et al	W39/506	48.50
4	17-3.2	Shawn A. Glaspell	283/601	135.00
5	17-3.4	Shawn A. Glaspell	283/601	17.50
6	17-18	Faith L. Fry	238/167	80.14
7	17-19	Shawn A. Glaspell	372/215	13.82
8	17-20	Shawn A. Glaspell	372/215	12.07
9	17-25	Shawn A. Glaspell	372/215	7.89
10	17-21	Patrick M. MacMillan	379/615	30.69
11	22-2	Timothy C. Pitts	W100/240	45.13
12	22-3	Timothy C. Pitts	W100/240	29.89
13	22-4	Debra Mellott	249/417	17.50
14	22-3.1	George D. Payton & Donald V. Sandstrom	236/354	24.11
15	23-8	Steven R. Chipps & Nathaniel Hoskinson	432/200	40.99
16	6-16	Brian A. Moreno & Diane P. Blanchette	389/382	104.80
17	22-6	Robert F. & Deborah C. Fetty	304/421	1.30
18	22-5	Jerry W. Harman	282/436	27.00
19	23-12	Jerry W. Harman	282/436	73.00
20	6-17	Clyde M. Ford III	234/474	65.6
21	7-1	Steven M. & Mary Ellen Perna	286/506	132.54
22	7-5	David A. Hoskinson	168/787	10.23

RECEIVED
Office of Oil and Gas

JUN 2 7 2024

WV Department of Environmental Protection

FILE NO: 259-30-M-23 DRAWING NO: Dodrill 1H Well Plat SCALE: 1" = 2000' MINIMUM DEGREE OF ACCURACY: Submeter PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV	STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION OIL AND GAS DIVISION	DATE:April 25 20 24 OPERATOR'S WELL NODodrill 1H API WELL NO 47 017 017 D6979 STATE COUNTY PERMIT
(IF GAS) PRODUCTION Proposed: 1,24 LOCATION: ELEVATION: Existing: 1,24 DISTRICT: McClellan Shawn A. SURFACE OWNER: Glaspell ROYALTY OWNER: Minda Allen PROPOSED WORK: DRILL CO MERITAL CO	WATERSHED: McElroy Creek QUA	COUNTY: Doddrie pro/2024 ACREAGE: 100 ACREAGE: 100 ATE PLUG OFF OLD FORMATION
WELL OPERATOR: Antero Resources Co ADDRESS: 1615 Wynkoop Street Denver, CO 80202		