

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

Wednesday, February 24, 2021 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

EQT PRODUCTION COMPANY 625 LIBERTY AVE., SUITE 1700

PITTSBURGH, PA 15222

Re: Permit Modification Approval for SIZEMORE 13H 47-103-03350-00-00

Extended Lateral Length

EQT PRODUCTION COMPANY

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:SIZEMORE 13HFarm Name:ANTHONY W. & KIMBERLY A. SIZEMOREU.S. WELL NUMBER:47-103-03350-00-00Horizontal 6ANew DrillDate Modification Issued:2/24/2021

Promoting a healthy environment.

OPERATOR WELL NO. <u>13H</u> Well Pad Name: <u>Sizemore</u>

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

1) Well Operator: EQT Product	ion Company	306686	Wetzel	Center	Littleton
	<u> </u>	Operator ID	County	District	Quadrangle
2) Operator's Well Number: 13H		Well Pad	Name: Sizen	nore	
3) Farm Name/Surface Owner: <u>A</u>	nthony W. Size	more Public Roa	d Access: CR	7/16	
4) Elevation, current ground: <u>1</u>	148' (built) El	evation, proposed	post-constructi	on: <u>1148' (</u>	(built)
5) Well Type (a) Gas X Other	Oil	Unde	erground Storag	ge	
(b)If Gas Shall Horiz	ow <u>X</u> zontal X	Deep			
6) Existing Pad: Yes or No Yes				DMA	12/21/20
7) Proposed Target Formation(s), Marcellus, 7,379', 50', 2,620 psi		ipated Thickness a	nd Expected P	ressure(s):	
8) Proposed Total Vertical Depth:	7,379'				
9) Formation at Total Vertical De					
10) Proposed Total Measured Dep	oth: 22,669'				
11) Proposed Horizontal Leg Len	gth: 14,600'				
12) Approximate Fresh Water Str	ata Depths:	176', 682', 717'			
13) Method to Determine Fresh W14) Approximate Saltwater Depth		Offset Wells: 47-10	03-02120, 47-1	03-02121,	47-103-02580
15) Approximate Coal Seam Dept	ths: 527'-531',	754.5'-761', 888'-8	391'		
16) Approximate Depth to Possib					
17) Does Proposed well location of directly overlying or adjacent to a		ms Yes	No	X	Office of Oil and Gas
(a) If Yes, provide Mine Info:	Name:				WV Department of Environmental Protection
	Depth:				
	Seam:				
	Owner:				

API NO. 47-103 - 03350

OPERATOR WELL NO. <u>13H</u> Well Pad Name: <u>Sizemore</u>

WW-6B (04/15)

18)

CASING AND TUBING PROGRAM

ТҮРЕ	<u>Size</u> (in)	<u>New</u> or Used	Grade	<u>Weight per ft.</u> (lb/ft)	<u>FOOTAGE: For</u> <u>Drilling (ft)</u>	INTERVALS: Left in Well (ft)	<u>CEMENT:</u> <u>Fill-up</u> (Cu. Ft.)/CTS
Conductor	26	New	A-500	85.6	40	40	101 ft^3 / CTS
Fresh Water	13 3/8	New	J-55	54.5	1160	1160	1095 ft^3 / CTS
Coal							
Intermediate	9 5/8	New	P-110	40	2490	2490	983 ft^3 / CTS
Production	5 1/2	New	P-110	20	22669	22669	500' above intermediate casing
Tubing							
Liners							

DMH 12/21/20

ТҮРЕ	Size (in)	<u>Wellbore</u> Diameter (in)	<u>Wall</u> <u>Thickness</u> <u>(in)</u>	<u>Burst Pressure</u> (psi)	<u>Anticipated</u> <u>Max. Internal</u> <u>Pressure (psi)</u>	<u>Cement</u> <u>Type</u>	<u>Cement</u> <u>Yield</u> (cu. ft./k)
Conductor	26	30	0.312	1050	18	Class A	1.18
Fresh Water	13 3/8	17 1/2	0.380	2730	2184	Class A ₊	1.13
Coal							
Intermediate	9 5/8	12 3/8	0.395	7900	6320	Class A	1.18
Production	5 1/2	8 1/2	0.361	14360	11488	Class A/H	1.04 - 2.098
Tubing							
Liners							

PACKERS

Kind:		
Sizes:	 	
Depths Set:		

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

This well has been topset. EQT will continue drilling the curve. Drill the lateral in the Marcellus. Cement casing.

DMH 12/21/20

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.1%) of chemicals (including 15% Hydrochloric acid, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated internal casing pressure is expected to be approximately 10,000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 350,000 gallons of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000-600,000 pounds of proppant per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): N/A - Site built

22) Area to be disturbed for well pad only, less access road (acres): N/A - Site built

23) Describe centralizer placement for each casing string:

Surface: Bow spring centralizers – One centralizer at the shoe and one spaced every 500'.

Intermediate: Bow spring centralizers

One centralizer at the shoe and one spaced every 500'.

Production: One solid body centralizer spaced every joint from production casing shoe to KOP

24) Describe all cement additives associated with each cement type:

Conductor: Class A no additives RECEIVED Surface: Calcium Chloride. Used to speed the setting of cement slurries Office of Oil and Gas Intermediate: Calcium Chloride. Used to speed the setting of cement slurries. Production: Calcium Carbonate, Fluid Loss, Extender, Dispersent, Viscosifier, Defoamer, POZ, Bonding Agent Anti-Settling/Suspension Agent WV Department of

25) Proposed borehole conditioning procedures:

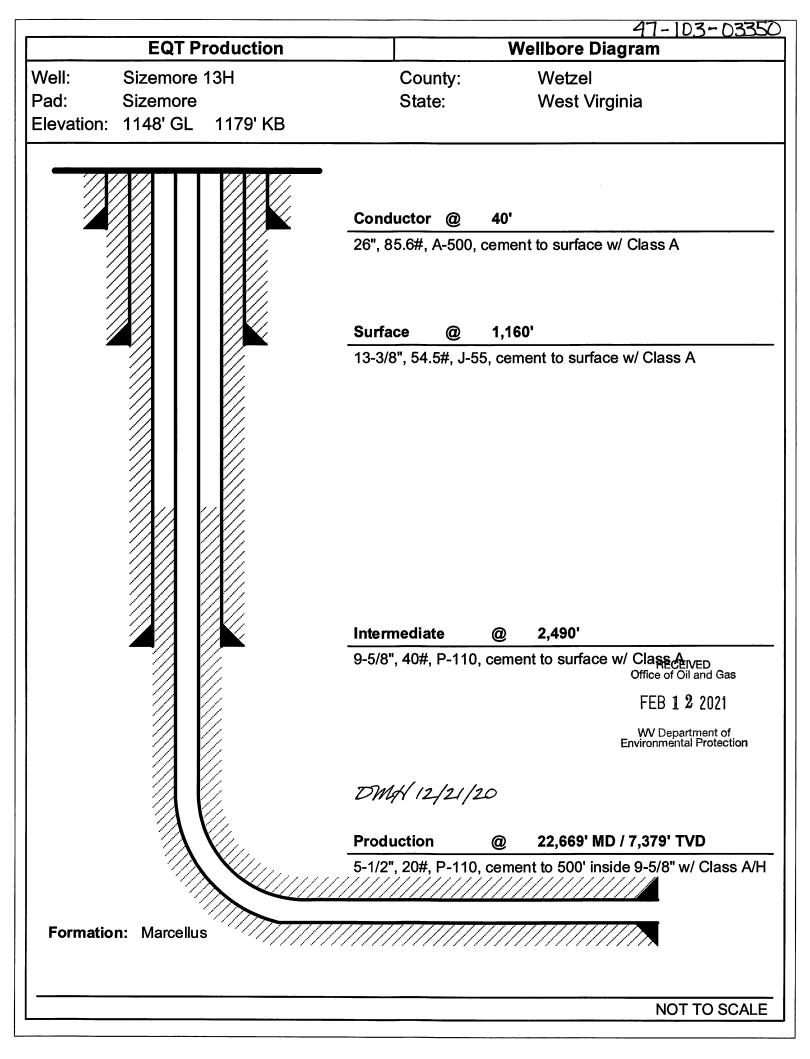
Surface: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.

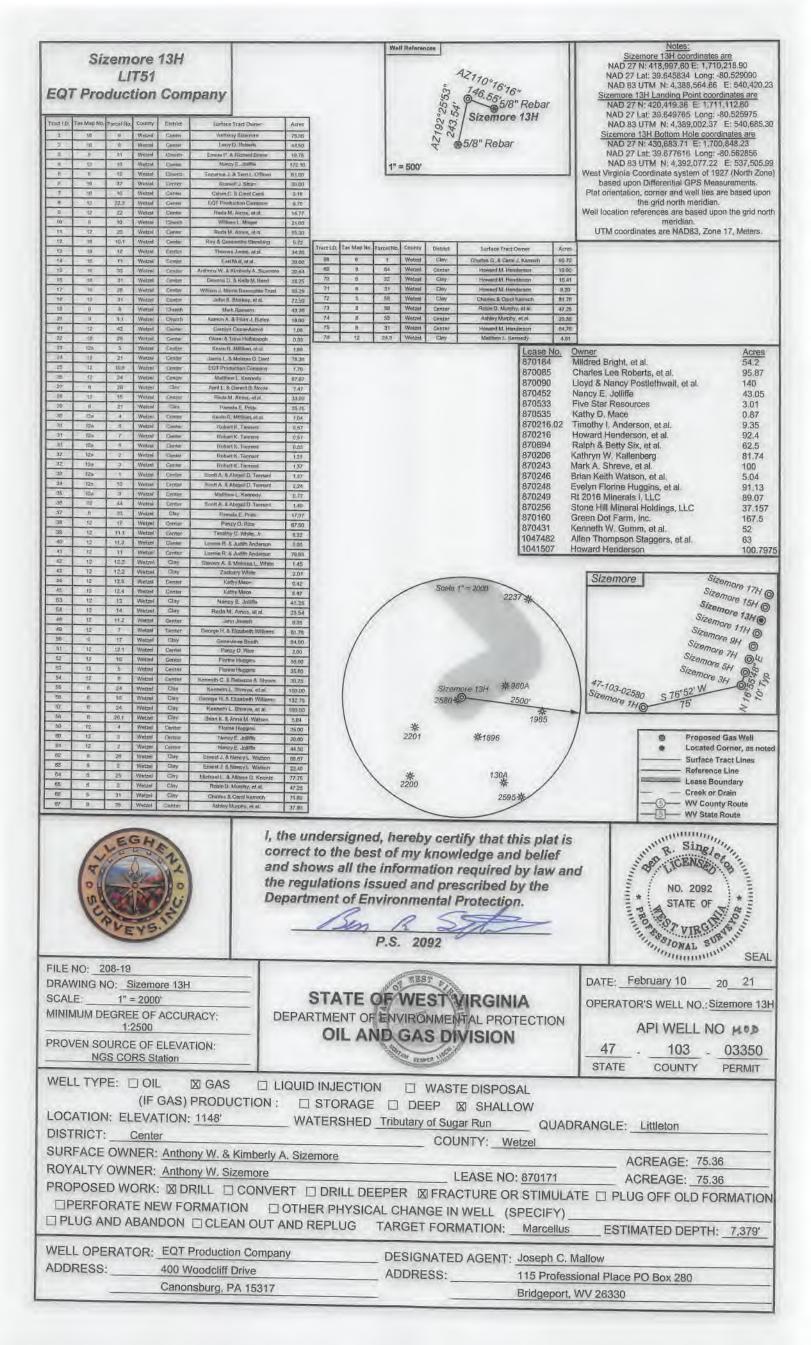
Intermediate: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.

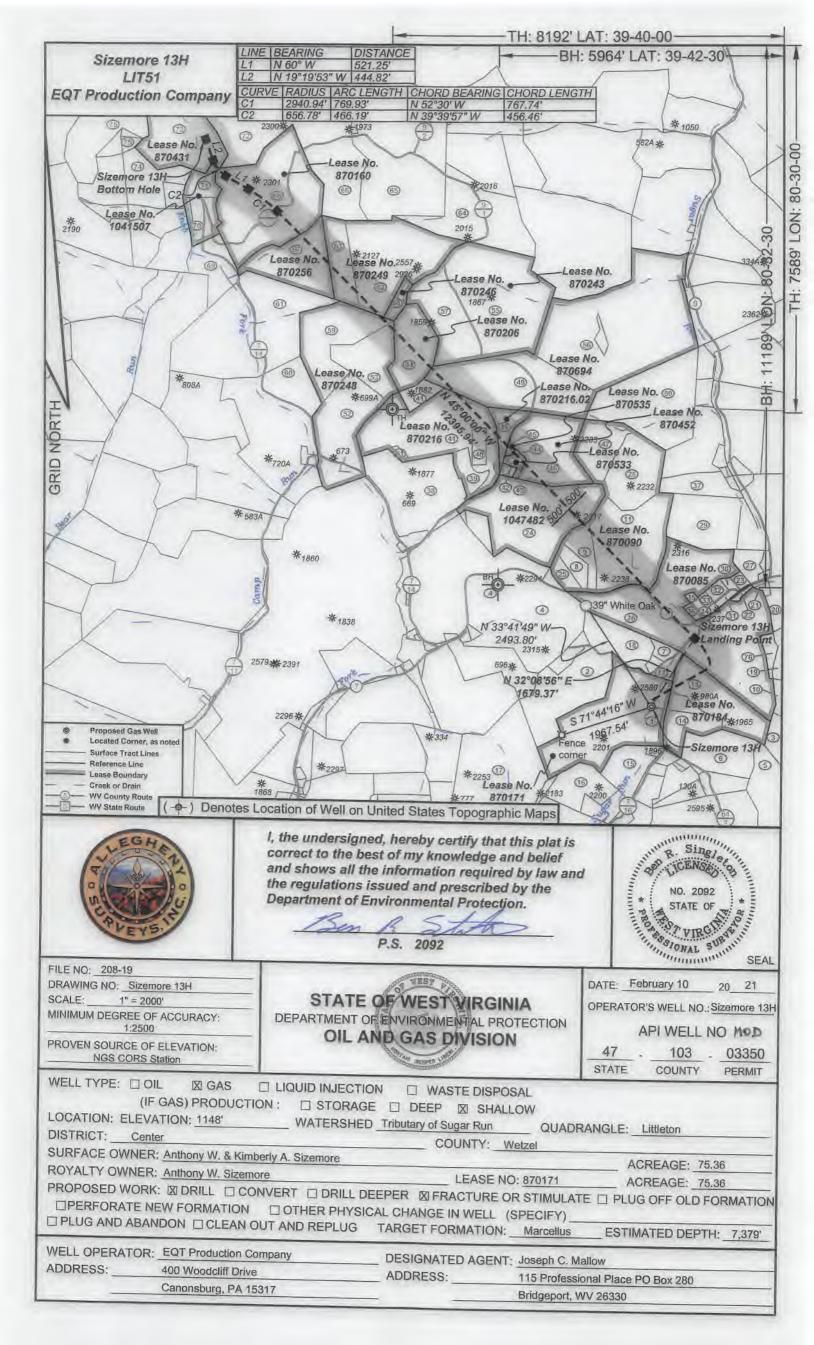
Production: Perform a cleanup cycle by pumping 3-8 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

*Note: Attach additional sheets as needed.

Environmental Protection







WW-6A1 (5/13) Operator's Well No. Sizemore 13H

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

See Attached

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:	EQT Production Company
By:	John Zavatchan John F Zavatchan Jr.
Its:	Project Specialist - Permitting

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WW-6A1 attachment		Operator's Well No.		Sizemore 13H		
Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page		
<u>870171</u>	Anthony W. Sizemore		"at least 1/8th per WV Code 22-6-8"			
	James Sizemore and Donna Sizemore	Drilling Appalachian Corporation		OG 84A-516		
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538		
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54		
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1		
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707		
<u>870184</u>	Mildred Bright, et al.		"at least 1/8th per WV Code 22-6-8"			
	Mildred Bright	Drilling Appalachian Corporation		OG 111A/407		
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538		
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54		
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1		
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707		
<u>870085</u>	<u>Charles Lee Roberts, et al.</u>		"at least 1/8th per WV Code 22-6-8"			
	Charles Lee Roberts and Shirley E. Roberts, h/w	Drilling Appalachian Corporation		OG 84A/452		
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538		
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54		
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1		
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707		
<u>870090</u>	Lloyd & Nancy Postlethwait, et al.		"at least 1/8th per WV Code 22-6-8"			
	Lloyd Postlethwait and Nancy Postlethwait	Drilling Appalachian Corporation		OG 85A/667		
A	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538		
FI	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54		
FEB	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1		
of OIL a	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707		
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	<u>870452</u>	Nancy E. Jolliffe		"at least 1/8th per WV Code 22-6-8"	
		Joe B. Jolliffe	Drilling Appalachian Corporation		OG 102A/769
		Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 106A/11 & 135A/344
		Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
		Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
		Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
	<u>870533</u>	Five Star Resources		"at least 1/8th per WV Code 22-6-8"	
		Five Star Resources, a Texas Company	EQT Production Company		OG 245A/160
	<u>870535</u>	Kathy D. Mace		"at least 1/8th per WV Code 22-6-8"	
		Kathy D. Mace, a single woman	EQT Production Company		OG 225A/217
	<u>870216.02</u>	Timothy I. Anderson, et al.		"at least 1/8th per WV Code 22-6-8"	-
		Timothy I. Anderson and Beverly M. Butts, with ROS	Drilling Appalachian Corporation		OG 103A/413
		Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 106A/11 & 135A/344
		Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
		Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
		Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
	<u>870694</u>	Ralph & Betty Six, et al.		"at least 1/8th per WV Code 22-6-8"	
		Ralph Six and Betty Jo Six, JTROS	Drilling Appalachian Corporation		OG 86A/616
		Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
		Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
		Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
		Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
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<u>870243</u>	<u>Mark A. Shreve, et al.</u>		"at least 1/8th per WV Code 22-6-8"	
	Kenneth L. Shreve and Sondra L. Shreve, h/w	Drilling Appalachian Corporation		OG 80A/55
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
<u>870246</u>	Brian Keith Watson, et al.		"at least 1/8th per WV Code 22-6-8"	
	Brian Keith Watson and Anna Marie Watson	Drilling Appalachian Corporation		OG 104A/130
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 106A/11 & 135A/344 & 136A/480
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
<u>870206</u>	Kathryn W. Kallenberg		"at least 1/8th per WV Code 22-6-8"	
	Kathryn W. Kallenberg, a married woman dealing in her sole & separate property	Drilling Appalachian Corporation		OG 109A/800
	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 110A/821 & 135A/356
	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
070040	<u>Evelyn Florine Huggins, et al.</u>		"at least 1/8th per WV Code 22-6-8"	
<u>870248</u>				

	<u>870249</u>	<u>Rt 2016 Minerals I, LLC</u>		"at least 1/8th per WV Code 22-6-8"	
		Ernest Jack Watson and Nancy Lee Watson	Drilling Appalachian Corporation		OG 84A/531
		Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
		Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
		Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
		Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
				"at least 1/8th per	
	<u>870256</u>	Stone Hill Mineral Holdings, LLC		WV Code 22-6-8"	
		Harlin Blaine Yeager	Drilling Appalachian Corporation		OG 102A/696
		Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
		Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
		Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
		Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
	<u>870160</u>	<u>Green Dot Farm, Inc.</u>		"at least 1/8th per WV Code 22-6-8"	
		Green Dot Farm, Inc.	Drilling Appalachian Corporation		OG 90A/172
		Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
		Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
		Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
		Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
	<u>870431</u>	Kenneth W. Gumm, et al.		"at least 1/8th per WV Code 22-6-8"	
		Kenneth W. Gumm and Judith M. Gumm, h/w	EQT Production Company		OG 238A/485
	<u>870216</u>	<u>Howard Henderson, et al.</u>		"at least 1/8th per WV Code 22-6-8"	
		Maxine Henderson	Drilling Appalachian Corporation		OG 81A/254
	<u> </u>	Drilling Appalachian Corporation	Grenadier Energy Partners, LLC		OG 124A/9 & 136A/538
Ш	1 To	Drilling Appalachian Corporation	Statoil USA Onshore Properties Inc.		OG 138A/54
FEB	й от	Grenadier Energy Partners, LLC	Statoil USA Onshore Properties Inc.		OG 138A/1
jamest A. A.	<u><u></u></u>	Statoil USA Onshore Properties Inc.	EQT Production Company		OG 175A/707
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<u>1047482</u>	<u>Allen Thompson Staggers, et al.</u>		1/8th per e 22-6-8"
	Enix Anderson and Mary P. Anderson, his wife	South Penn Oil Co.	DB 39/520
	South Penn Oil Company	Hope Natural Gas Company	OG 9A/230
	Hope Natural Gas Company	Consolidated Gas Supply Corporation	DB 233/387
	Consolidated Gas Supply Corporation	Consolidated Gas Transmission Corporation	OG 66A/69
	Consolidated Gas Transmission Corporation	CNG Development Company	OG 67A/453
	CNG Development Company	CNG Producing Company	Unrecorded agreement
	CNG Producing Company	Dominion Exploration & Production, Inc.	WV SOS
	Dominion Exploration & Production, Inc.	Consol Gas Company	Corp. Book 13/108
	Consol Gas Company	CNX Gas Company LLC	Misc. Book 96/307
	CNX Gas Company LLC	Drilling Appalachian Corporation	OG 157A/654
	Drilling Appalachian Corporation	EQT Production Company	OG 253A/205
<u>1041507</u>	Howard Henderson		1/8th per le 22-6-8"
	Howard M. Henderson and Linda S. Henderson, husband and wife	Antero Resources Corporation	OG 206A/870
	Antero Resources Corporation	EQT Production Company	OG 231A/98

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