

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-017-06259 County Doddridge District Grant
Quad Smithburg 7.5' Pad Name RJ Smith Pad Field/Pool Name _____
Farm name Smith, Robert J. Well Number Mishka Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,357,420m Easting 523,017m
Landing Point of Curve Northing 4,357,349.56m Easting 523,261.94m
Bottom Hole Northing 4,354,409m Easting 524,453m

Elevation (ft) 998' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Air- Foam & 4% KCL
Mud- Polymer

Date permit issued 07/03/2013 Date drilling commenced 01/31/2014 Date drilling ceased 04/28/2014
Date completion activities began 05/21/2014 Date completion activities ceased 08/24/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 231' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1344' Void(s) encountered (Y/N) depths None
Coal depth(s) ft None Identified Coal(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

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Reviewed by: JK
10/23/2015
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API 47-017 - 06259 Farm name Smith, Robert J. Well number Mishka Unit 1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	40'	New	133#; J-55	N/A	Yes
Surface	17 1/2"	13 3/8"	490'	New	48#; H-40	N/A	Yes
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,572'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	14,520'	New	23#; P-110	N/A	Yes
Tubing		2 3/8"	7,130'		4.7#; N-80	N/A	
Packer type and depth set		N/A					

Comment Details SIDETRACK: Fish in hole from 14,520' to 17,832'. Unable to POOH, sidetracked at 10,720'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	100 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	576 sx	15.6	1.18	340	0'	8 Hrs.
Coal							
Intermediate 1	Class A	949 sx	15.6	1.18	806	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,014 sx (Lead); 1,207 sx (Tail)	14.5 (Lead); 15.2 (Tail)	1.3 (Lead); 1.86 (Tail)	2,852	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17,932' MD, 6,831' TVD (BHL); 6,893' TVD (Deepest Point Drilled) Loggers TD (ft) 17,884'
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6,251'

**This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Duff Unit 2H, API #47-017-06247). Please reference the wireline logs submitted with Form WR-35 for the Duff Unit 2H. A Cement Bond Log has been included with this submittal.

Check all wireline logs run **
 caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor- 0
 Surface- 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
 Intermediate- 1 above float joint, 1 above float collar, 1 every 4th joint to surface
 Production- 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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API 47- 017 - 06259 Farm name Smith, Robert J. Well number Mishka Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6,830' (top) TVD	7,205' (top) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 3,550 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs
 OPEN FLOW Gas 7,946 mcfpd Oil 1 bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	0		0		
* PLEASE SEE ATTACHED EXHIBIT 3					

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP
 Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Cased Hole Solutions
 Address 100 Arentzen Blvd. City Charleroi State PA Zip 15022

Cementing Company Nabors Completion & Production Services, Co.
 Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Baker Hughes
 Address 837 Phillippi Pike City Clarksburg State WV Zip 26601

Please insert additional pages as applicable.

Completed by Megan Darling Telephone 303-357-7230
 Signature Megan C. Darling Title Permitting Agent Date 08/07/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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API 47-017-06259 Farm Name Smith, Robert J. Well Number Mishka Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	21-May-14	14,246	14,418	60	Marcellus
2	5-Aug-14	14,042	14,214	60	Marcellus
3	5-Aug-14	13,837	14,010	60	Marcellus
4	5-Aug-14	13,633	13,805	60	Marcellus
5	6-Aug-14	13,429	13,601	60	Marcellus
6	6-Aug-14	13,225	13,397	60	Marcellus
7	6-Aug-14	13,020	13,193	60	Marcellus
8	6-Aug-14	12,816	12,988	60	Marcellus
9	7-Aug-14	12,612	12,784	60	Marcellus
10	7-Aug-14	12,408	12,580	60	Marcellus
11	7-Aug-14	12,203	12,376	60	Marcellus
12	8-Aug-14	11,999	12,171	60	Marcellus
13	8-Aug-14	11,795	11,967	60	Marcellus
14	8-Aug-14	11,591	11,763	60	Marcellus
15	8-Aug-14	11,386	11,559	60	Marcellus
16	9-Aug-14	11,182	11,354	60	Marcellus
17	9-Aug-14	10,978	11,150	60	Marcellus
18	9-Aug-14	10,463	10,633	60	Marcellus
19	9-Aug-14	10,262	10,432	60	Marcellus
20	9-Aug-14	10,061	10,231	60	Marcellus
21	9-Aug-14	9,860	10,029	60	Marcellus
22	10-Aug-14	9,659	9,828	60	Marcellus
23	10-Aug-14	9,457	9,627	60	Marcellus
24	10-Aug-14	9,256	9,426	60	Marcellus
25	10-Aug-14	9,055	9,225	60	Marcellus
26	11-Aug-14	8,854	9,024	60	Marcellus
27	11-Aug-14	8,653	8,822	60	Marcellus
28	11-Aug-14	8,452	8,621	60	Marcellus
29	11-Aug-14	8,250	8,420	60	Marcellus
30	12-Aug-14	8,049	8,219	60	Marcellus
31	12-Aug-14	7,848	8,018	60	Marcellus
32	12-Aug-14	7,647	7,816	60	Marcellus
33	15-Aug-14	7,446	7,615	60	Marcellus
34	15-Aug-14	7,244	7,414	60	Marcellus

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EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	4-Aug-14	79.3	7,495	6,092	4,968	274,429	7,024	N/A
2	5-Aug-14	79.4	7,534	5,994	4,713	274,868	6,988	N/A
3	5-Aug-14	78.2	7,544	5,998	5,421	273,853	7,007	N/A
4	5-Aug-14	63.5	6,619	N/A	5,585	203,720	7,516	N/A
5	5-Aug-14	77.8	7,548	5,950	5,006	273,995	6,987	N/A
6	6-Aug-14	77.9	7,407	5,903	4,719	222,225	6,196	N/A
7	6-Aug-14	73.0	7,336	5,749	4,831	272,995	6,893	N/A
8	6-Aug-14	78.8	7,290	6,333	5,802	273,782	6,927	N/A
9	7-Aug-14	79.0	7,417	5,816	5,025	278,804	6,903	N/A
10	7-Aug-14	79.0	7,442	5,758	5,026	273,421	6,854	N/A
11	7-Aug-14	79.1	7,168	5,529	4,588	273,788	6,777	N/A
12	8-Aug-14	78.2	7,508	5,667	5,142	273,172	6,791	N/A
13	8-Aug-14	79.1	7,334	5,810	4,866	275,098	6,812	N/A
14	8-Aug-14	75.3	7,279	5,854	5,070	275,335	6,895	N/A
15	8-Aug-14	78.8	7,111	6,100	5,871	273,819	6,697	N/A
16	9-Aug-14	79.3	7,176	5,791	4,358	274,986	6,696	N/A
17	9-Aug-14	78.0	7,029	5,940	5,245	272,486	6,646	N/A
18	9-Aug-14	76.4	7,123	5,820	4,585	274,605	6,762	N/A
19	9-Aug-14	73.6	7,222	6,165	4,535	271,836	6,723	N/A
20	9-Aug-14	76.0	7,262	5,963	4,148	275,492	6,681	N/A
21	9-Aug-14	79.0	7,248	6,011	4,130	482,737	6,684	N/A
22	10-Aug-14	79.2	7,100	5,960	4,284	484,676	6,732	N/A
23	10-Aug-14	75.8	7,469	N/A	5,279	218,692	7,093	N/A
24	10-Aug-14	75.4	7,266	6,046	5,641	221,981	6,981	N/A
25	10-Aug-14	77.7	7,310	N/A	4,476	273,347	6,645	N/A
26	11-Aug-14	75.6	7,344	N/A	5,099	253,815	7,138	N/A
27	11-Aug-14	73.9	7,758	6,139	5,466	170,143	7,161	N/A
28	11-Aug-14	76.6	6,948	5,995	4,489	274,851	6,665	N/A
29	11-Aug-14	78.0	6,825	5,755	5,177	273,886	6,640	N/A
30	12-Aug-14	77.9	6,806	5,781	4,533	270,188	6,555	N/A
31	12-Aug-14	76.6	6,798	5,612	5,505	272,712	6,609	N/A
32	12-Aug-14	77.3	6,753	5,935	5,683	262,972	6,533	N/A
33	15-Aug-14	77.1	6,707	5,502	5,454	278,638	6,723	N/A
34	15-Aug-14	79.3	6,318	6,205	4,184	297,545	6,876	N/A
AVG=		77.0	7,191	5,906	4,968	9,398,892	231,810	TOTAL

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Fresh Water	231'	N/A	231'	N/A
Sandstone/ Siltstone	0	591	0	591
Sandy Shale/ Dolostone	Est. 591	691	Est. 591	691
Sandstone/ Siltstone	Est. 691	871	Est. 691	871
Silty Shale	Est. 871	1,021	Est. 871	1,021
Sandstone/ Siltstone	Est. 1021	1,101	Est. 1021	1,101
Sandstone/ Trace Coal	Est. 1101	1,191	Est. 1101	1,191
Sandstone/ Siltstone	Est. 1191	1,641	Est. 1191	1,641
Limestone/ Sandstone	Est. 1641	1,701	Est. 1641	1,701
Sandstone/ Trace Coal	Est. 1701	1,731	Est. 1701	1,731
Sandy Shale	Est. 1731	1,861	Est. 1731	1,861
Sandstone/ Siltstone	Est. 1861	1,941	Est. 1861	1,941
Limestone/ Sandstone	Est. 1941	1,966	Est. 1941	1,966
Big Lime	1,966	2,125	1,966	2,125
Big Injun	2,125	2,516	2,125	2,516
Gantz Sand	2,516	2,654	2,516	2,654
Fifty Foot Sandstone	2,654	2,732	2,654	2,732
Gordon	2,732	3,090	2,732	3,090
Fifth Sandstone	3,090	3,100	3,090	3,100
Bayard	3,100	3,461	3,100	3,461
Warren	3,461	3,852	3,461	3,852
Speechley	3,852	4,102	3,852	4,103
Baltown	4,102	4,575	4,103	4,579
Bradford	4,575	5,073	4,579	5,077
Benson	5,073	5,338	5,077	5,342
Alexander	5,338	5,528	5,342	5,532
Elk	5,528	6,050	5,532	6,055
Rhinestreet	6,050	6,415	6,055	6,429
Sycamore	6,415	6,599	6,429	6,679
Middlesex	6,599	6,742	6,679	6,989
Burkett	6,742	6,770	6,989	7,051
Tully	6,770	6,830	7,051	7,205
Marcellus	6,830	NA	7,205	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (please reference Wireline Logs submitted for the Duff Unit 2H, API # 47-017-06247). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Azimuths to Grid North
 True North: -0.17°
 Magnetic North: -8.68°
 Magnetic Field
 Strength: 52362.8nT
 Dip Angle: 66.89°
 Date: 3/6/2014
 Model: IGRF2010

To convert Magnetic North to Grid, Subtract 8.68°
 To convert True North to Grid, Subtract 0.17°



Mishka Unit 1H
 Doddridge County WV
 Northing: 14295251.95
 Easting: 1715884.57
 ST1 As Drilled



Mishka Unit 1H GL 990' + 19' RKB @ 1015 Oust
 Gr: 996 0

WELL DETAILS

Mishka Unit 1H	
Ground Level:	996 0
+N/-S	0.0
+E/-W	0.0
Northing	14295251.95
Easting	1715884.57
Latitude	37° 57' 04.8" N
Longitude	80° 43' 58.734" W

LEGEND

- Mishka Unit 1H, Original Wellpath, As Drilled VO
- Mishka Unit 1H, ST1 Mishka Unit 1H, ST 1 Plan 2 VO
- ST1 As Drilled

SITE DETAILS: Costlow/Duff/Mishka

Site Centre Northing:	14295223.06
Easting:	1715891.05
Positional Uncertainty:	0.0
Convergence:	0.17
Local North:	Grid

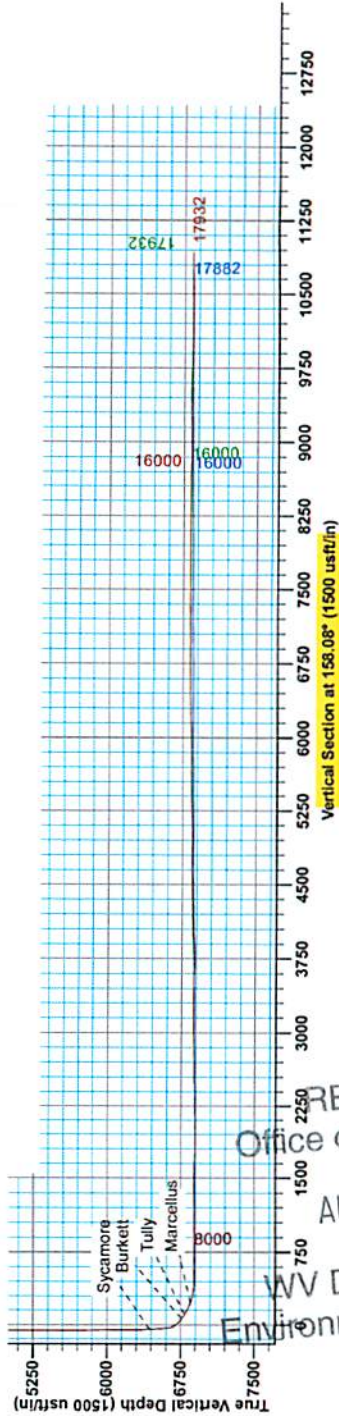
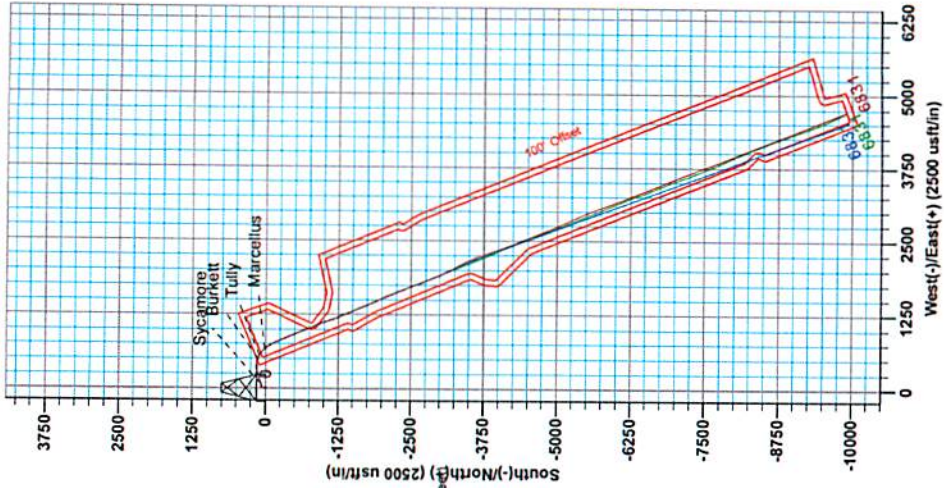
Gene Lightfoot
 11/11, April 29 2014
 Scientific Drilling
 421 South Eagle Lane
 Oklahoma City, OK 73128

PROJECT DETAILS: Doddridge County WV

Geodetic System:	Universal Transverse Mercator (US Survey Feet)
Datum:	NAD 1983 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	Zone 17N (84 W to 78 W)
System Datum:	Mean Sea Level

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	TVD
SHL Mishka Unit 1H	0.0	0.0	14295251.95	1715884.57	37° 57' 04.8" N	80° 43' 58.734" W	0.0
Actual BHL Mishka Unit 1H ST	-9878.4	4709.814285373.54	1720584.359	207 19 234.80	42° 59' 13.9" W		6630.9
Actual BHL Mishka Unit 1H OH	-9885.9	4697.114285366.06	1720581.609	207 19 160.80	42° 59' 30.1" W		6631.2



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Antero Resources

Doddridge County WV
Costlow/Duff/Mishka
Mishka Unit 1H
ST1 Mishka Unit 1H

Design: ST1 As Drilled

EOW Completion Report

28 April, 2014



Scientific Drilling

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Mishka Unit 1H
Project:	Doddridge County WV	TVD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Site:	Costlow/Duff/Mishka	MD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Well:	Mishka Unit 1H	North Reference:	Grid
Wellbore:	ST1 Mishka Unit 1H	Survey Calculation Method:	Minimum Curvature
Design:	ST1 As Drilled	Database:	Oklahoma District

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Costlow/Duff/Mishka				
Site Position:	Northing:	14,295,223.06 usft	Latitude:	39° 21' 56.762 N	
From: Map	Easting:	1,715,891.05 usft	Longitude:	80° 43' 58.652 W	
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.17 °

Well	Mishka Unit 1H					
Well Position	+N/-S	0.0 usft	Northing:	14,295,251.95 usft	Latitude:	39° 21' 57.048 N
	+E/-W	0.0 usft	Easting:	1,715,884.57 usft	Longitude:	80° 43' 58.734 W
Position Uncertainty		2.8 usft	Wellhead Elevation:	1,015.0 usft	Ground Level:	996.0 usft

Wellbore	ST1 Mishka Unit 1H					
Magnetics	Mode	Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
		GRF2010	3/6/2014	-8.51	66.89	52,363

Design	ST1 As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	10,561.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	158.08	

Survey Program	Date 4/28/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	6,158.9	Survey #6 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
6,205.0	10,561.0	Survey #7 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	
10,611.0	17,932.0	Survey #1 SDI MWD (ST1 Mishka Unit 1H)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)		TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
0.0	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00
100.0	0.21	256.91		100.0	0.0	-0.2	0.0	0.21	
200.0	0.07	240.23		200.0	-0.1	-0.4	0.0	0.14	
300.0	0.03	192.61		300.0	-0.2	-0.5	0.0	0.05	
400.0	0.21	213.42		400.0	-0.3	-0.6	0.1	0.18	
500.0	0.21	217.26		500.0	-0.6	-0.8	0.3	0.01	
600.0	0.19	200.38		600.0	-0.9	-1.0	0.5	0.06	
700.0	0.21	189.62		700.0	-1.3	-1.0	0.8	0.04	
800.0	0.37	188.96		800.0	-1.8	-1.1	0.9	0.16	
900.0	0.29	174.35		900.0	-2.4	-1.2	1.8	0.12	

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Mishka Unit 1H
Project:	Doddridge County WV	TVD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Site:	Costlow/Duff/Mishka	MD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Well:	Mishka Unit 1H	North Reference:	Grid
Wellbore:	ST1 Mishka Unit 1H	Survey Calculation Method:	Minimum Curvature
Design:	ST1 As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
1,000.0	0.28	187.43	1,000.0	-2.8	-1.2	2.2	0.07	
1,100.0	0.37	192.22	1,100.0	-3.4	-1.3	2.7	0.09	
1,200.0	0.26	177.91	1,200.0	-3.9	-1.3	3.2	0.13	
1,300.0	0.24	172.19	1,300.0	-4.4	-1.3	3.6	0.03	
1,400.0	0.18	160.86	1,400.0	-4.7	-1.2	3.9	0.07	
1,500.0	0.23	148.77	1,500.0	-5.1	-1.0	4.3	0.07	
1,600.0	0.26	138.90	1,600.0	-5.4	-0.8	4.7	0.05	
1,700.0	0.33	144.80	1,700.0	-5.8	-0.5	5.2	0.08	
1,800.0	0.38	155.81	1,800.0	-6.3	-0.2	5.8	0.08	
1,900.0	0.36	125.23	1,900.0	-6.8	0.2	6.4	0.20	
2,000.0	0.53	136.01	2,000.0	-7.3	0.8	7.1	0.19	
2,100.0	0.39	141.00	2,100.0	-7.9	1.3	7.9	0.15	
2,200.0	0.35	147.80	2,200.0	-8.5	1.7	8.5	0.06	
2,300.0	0.38	146.51	2,300.0	-9.0	2.1	9.1	0.03	
2,400.0	0.21	128.50	2,400.0	-9.4	2.4	9.6	0.19	
2,500.0	0.35	150.79	2,500.0	-9.8	2.7	10.1	0.17	
2,600.0	0.16	140.00	2,600.0	-10.1	2.9	10.5	0.20	
2,700.0	0.12	231.41	2,700.0	-10.3	2.9	10.7	0.20	
2,800.0	0.14	263.35	2,800.0	-10.4	2.7	10.7	0.07	
2,900.0	0.13	238.07	2,900.0	-10.5	2.5	10.6	0.06	
3,000.0	0.32	216.00	3,000.0	-10.8	2.2	10.8	0.21	
3,100.0	0.26	202.53	3,100.0	-11.2	2.0	11.1	0.09	
3,200.0	0.24	217.93	3,200.0	-11.6	1.8	11.4	0.07	
3,300.0	0.25	233.02	3,300.0	-11.9	1.5	11.6	0.07	
3,400.0	0.40	217.52	3,400.0	-12.3	1.1	11.8	0.17	
3,500.0	0.42	209.86	3,500.0	-12.9	0.7	12.2	0.06	
3,600.0	0.30	271.20	3,600.0	-13.2	0.2	12.3	0.38	
3,700.0	0.31	238.96	3,700.0	-13.3	-0.3	12.3	0.17	
3,800.0	1.88	15.93	3,799.9	-11.9	0.0	11.0	2.12	
3,900.0	4.01	17.92	3,899.8	-7.0	1.5	7.0	2.13	
4,000.0	5.81	13.55	3,999.4	1.3	3.8	0.2	1.84	
4,100.0	5.96	12.97	4,098.9	11.3	6.1	-8.2	0.16	
4,200.0	6.79	11.61	4,198.3	22.1	8.5	-17.4	0.84	
4,300.0	6.88	12.42	4,297.6	33.7	10.9	-27.2	0.13	
4,400.0	6.53	8.95	4,396.9	45.2	13.1	-37.1	0.54	
4,500.0	5.81	9.36	4,496.3	55.8	14.8	-46.3	0.72	
4,600.0	3.16	13.55	4,596.0	63.5	16.3	-52.8	2.67	
4,700.0	1.90	13.42	4,695.9	67.8	17.3	-56.4	1.26	
4,800.0	1.11	15.03	4,795.9	70.3	18.0	-58.6	0.79	
4,900.0	0.62	26.73	4,895.8	71.8	18.4	-59.7	0.52	
5,000.0	0.52	33.87	4,995.8	72.6	18.9	-60.3	0.12	
5,100.0	0.30	16.50	5,095.8	73.2	19.3	-60.8	0.25	
5,200.0	0.25	30.30	5,195.8	73.7	19.5	-61.1	0.08	
5,300.0	0.20	34.14	5,295.8	74.0	19.7	-61.3	0.05	
5,400.0	0.16	56.06	5,395.8	74.2	19.9	-61.5	0.08	

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Mishka Unit 1H
Project:	Doddridge County WV	TVD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Site:	Costlow/Duf/Mishka	MD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Well:	Mishka Unit 1H	North Reference:	Grid
Wellbore:	ST1 Mishka Unit 1H	Survey Calculation Method:	Minimum Curvature
Design:	ST1 As Drilled	Database:	Oklahoma District

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
5,500.0	0.44	127.58	5,495.8	74.1	20.3	-61.2	0.42	
5,600.0	0.55	130.64	5,595.8	73.5	21.0	-60.4	0.11	
5,700.0	0.64	130.40	5,695.8	72.9	21.8	-59.5	0.09	
5,800.0	0.81	143.62	5,795.8	71.9	22.6	-58.3	0.24	
5,900.0	0.69	144.09	5,895.8	70.9	23.4	-57.0	0.12	
6,000.0	0.56	148.48	5,995.8	70.0	24.0	-56.0	0.14	
6,100.0	0.57	185.48	6,095.8	69.1	24.2	-55.0	0.36	
6,158.9	0.47	156.40	6,154.7	68.5	24.3	-54.5	0.47	
6,205.0	0.59	134.06	6,200.8	68.2	24.5	-54.1	0.51	
6,251.0	5.28	76.00	6,246.7	68.6	26.7	-53.6	10.85	
6,295.0	10.48	69.64	6,290.3	70.4	32.5	-53.2	11.97	
6,341.0	16.05	70.92	6,335.1	74.0	42.4	-52.8	12.12	
6,385.0	20.44	75.77	6,376.8	77.9	55.6	-51.5	10.55	
6,431.0	25.14	76.19	6,419.2	82.2	72.9	-49.0	10.22	
6,474.0	29.86	74.30	6,457.4	87.2	92.1	-46.6	11.16	
6,520.0	35.55	73.41	6,496.1	94.2	115.9	-44.1	12.41	
6,564.0	40.58	72.39	6,530.7	102.2	141.8	-41.8	11.52	
6,610.0	46.15	72.35	6,564.1	111.7	171.9	-39.5	12.11	
6,654.0	51.55	71.80	6,593.1	121.9	203.4	-37.2	12.31	
6,699.0	57.50	71.20	6,619.2	133.5	238.2	-35.0	13.27	
6,743.0	62.95	71.99	6,641.0	145.6	274.4	-32.6	12.48	
6,789.0	63.50	79.61	6,661.7	155.7	314.2	-27.1	14.84	
6,833.0	64.30	86.51	6,681.1	160.4	353.4	-16.9	14.20	
6,879.0	63.27	93.41	6,701.5	160.5	394.6	-1.5	13.64	
6,923.0	62.56	100.76	6,721.5	155.6	433.4	17.4	14.96	
6,968.0	63.00	107.59	6,742.1	145.8	472.2	41.0	13.53	
7,012.0	62.26	113.73	6,762.4	132.1	508.7	67.4	12.50	
7,058.0	62.47	119.52	6,783.7	113.8	545.1	97.9	11.16	
7,102.0	64.69	125.82	6,803.3	92.5	578.3	130.0	13.78	
7,148.0	66.98	130.21	6,822.1	66.7	611.3	166.3	10.03	
7,191.0	68.89	134.47	6,838.3	39.9	640.8	202.2	10.20	
7,237.0	71.59	139.35	6,853.9	8.2	670.3	242.6	11.58	
7,281.0	75.96	144.77	6,866.2	-25.1	696.3	283.2	15.44	
7,327.0	79.68	148.71	6,875.9	-62.7	720.9	327.2	11.64	
7,371.0	82.97	151.08	6,882.5	-100.3	742.7	370.3	9.18	
7,424.0	88.22	153.69	6,886.6	-147.1	767.2	422.8	11.05	
7,514.0	90.77	159.04	6,887.4	-229.5	803.2	512.8	6.58	
7,604.0	90.00	157.37	6,886.8	-313.1	836.7	602.8	2.04	
7,693.0	89.60	155.44	6,887.1	-394.6	872.3	691.7	2.21	
7,783.0	89.33	157.56	6,887.9	-477.1	908.2	781.7	2.37	
7,872.0	89.09	159.61	6,889.1	-560.0	940.7	870.7	2.32	
7,962.0	90.67	159.02	6,889.3	-644.2	972.4	960.6	1.87	
8,052.0	90.17	157.54	6,888.7	-727.8	1,005.8	1,050.6	1.74	
8,141.0	90.37	157.24	6,888.3	-809.9	1,040.0	1,139.6	0.41	

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Mishka Unit 1H
Project:	Doddridge County WV	TVD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Site:	Costlow/Duff/Mishka	MD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Well:	Mishka Unit 1H	North Reference:	Grid
Wellbore:	ST1 Mishka Unit 1H	Survey Calculation Method:	Minimum Curvature
Design:	ST1 As Drilled	Database:	Oklahoma District

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
8,231.0	90.20	156.58	6,887.8	-892.7	1,075.3	1,229.6	0.76
8,321.0	90.07	161.39	6,887.6	-976.7	1,107.5	1,319.6	5.35
8,410.0	90.07	161.61	6,887.5	-1,061.1	1,135.8	1,408.4	0.25
8,500.0	89.77	159.59	6,887.6	-1,146.0	1,165.7	1,498.3	2.27
8,589.0	89.43	159.86	6,888.2	-1,229.5	1,196.5	1,587.3	0.49
8,679.0	88.59	156.37	6,889.8	-1,313.0	1,230.0	1,677.2	3.99
8,769.0	88.32	155.63	6,892.2	-1,395.2	1,266.6	1,767.1	0.87
8,858.0	90.10	158.41	6,893.4	-1,477.1	1,301.4	1,856.1	3.71
8,948.0	91.51	160.50	6,892.2	-1,561.3	1,332.9	1,946.1	2.80
9,037.0	89.73	156.10	6,891.2	-1,644.0	1,365.8	2,035.0	5.33
9,127.0	91.41	157.78	6,890.3	-1,726.8	1,401.1	2,125.0	2.64
9,217.0	91.44	157.28	6,888.1	-1,809.9	1,435.5	2,215.0	0.56
9,306.0	90.54	155.32	6,886.5	-1,891.4	1,471.2	2,303.9	2.42
9,396.0	90.34	154.28	6,885.9	-1,972.9	1,509.6	2,393.8	1.18
9,486.0	92.59	158.53	6,883.5	-2,055.3	1,545.6	2,483.7	5.34
9,575.0	90.74	158.45	6,881.0	-2,138.0	1,578.2	2,572.6	2.08
9,665.0	90.44	156.95	6,880.0	-2,221.3	1,612.3	2,662.6	1.70
9,754.0	91.28	159.95	6,878.7	-2,304.1	1,645.0	2,751.6	3.50
9,844.0	90.87	158.19	6,877.0	-2,388.1	1,677.2	2,841.6	2.01
9,934.0	89.77	157.11	6,876.5	-2,471.3	1,711.4	2,931.6	1.71
10,023.0	90.50	160.27	6,876.3	-2,554.2	1,743.7	3,020.5	3.64
10,113.0	90.40	159.81	6,875.6	-2,638.8	1,774.4	3,110.5	0.52
10,202.0	89.03	158.22	6,876.0	-2,721.9	1,806.3	3,199.5	2.36
10,292.0	91.01	159.06	6,876.0	-2,805.7	1,839.1	3,289.5	2.39
10,382.0	90.67	157.47	6,874.7	-2,889.3	1,872.4	3,379.4	1.81
10,471.0	90.94	157.24	6,873.4	-2,971.5	1,906.7	3,468.4	0.40
10,561.0	89.80	157.57	6,872.9	-3,054.5	1,941.3	3,558.4	1.32
10,611.0	85.12	159.37	6,875.1	-3,101.0	1,959.6	3,608.4	10.03
10,655.0	84.69	155.28	6,879.0	-3,141.4	1,976.5	3,652.2	9.31
10,745.0	88.90	150.23	6,884.0	-3,221.3	2,017.6	3,741.6	7.30
10,833.0	91.61	149.48	6,883.6	-3,297.4	2,061.8	3,828.7	3.20
10,922.0	94.27	150.99	6,879.1	-3,374.5	2,105.9	3,916.7	3.44
11,012.0	95.08	153.40	6,871.7	-3,453.8	2,147.7	4,005.9	2.82
11,102.0	92.99	159.82	6,865.4	-3,536.2	2,183.4	4,095.6	7.48
11,191.0	92.02	159.22	6,861.5	-3,619.5	2,214.5	4,184.5	1.28
11,281.0	91.68	158.54	6,858.6	-3,703.4	2,246.9	4,274.5	0.84
11,371.0	92.69	161.30	6,855.2	-3,787.9	2,277.8	4,364.3	3.26
11,460.0	91.65	161.95	6,851.8	-3,872.3	2,305.8	4,453.1	1.38
11,550.0	90.87	160.73	6,849.8	-3,957.5	2,334.6	4,542.9	1.61
11,640.0	90.81	163.18	6,848.5	-4,043.1	2,362.5	4,632.7	2.72
11,729.0	89.43	159.64	6,848.3	-4,127.4	2,390.8	4,721.5	4.27
11,824.0	90.54	158.96	6,848.3	-4,216.3	2,424.4	4,816.5	1.37
11,919.0	88.82	157.59	6,848.9	-4,304.5	2,459.6	4,911.5	2.31
12,014.0	89.70	155.80	6,850.1	-4,391.8	2,497.1	5,006.5	2.10

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Company:	Antero Resources	Local Co-ordinate Reference:	Well Mishka Unit 1H
Project:	Doddridge County WV	TVD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Site:	Costlow/Duff/Mishka	MD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Well:	Mishka Unit 1H	North Reference:	Grid
Wellbore:	ST1 Mishka Unit 1H	Survey Calculation Method:	Minimum Curvature
Design:	ST1 As Drilled	Database:	Oklahoma District

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
12,108.0	91.58	158.87	6,849.0	-4,478.5	2,533.4	5,100.4	3.83
12,203.0	92.32	158.64	6,845.8	-4,567.0	2,567.8	5,195.4	0.82
12,298.0	92.76	159.02	6,841.6	-4,655.5	2,602.0	5,290.3	0.61
12,393.0	90.34	157.34	6,839.0	-4,743.6	2,637.3	5,385.2	3.10
12,488.0	90.17	157.71	6,838.6	-4,831.4	2,673.6	5,480.2	0.43
12,582.0	90.20	158.32	6,838.3	-4,918.6	2,708.8	5,574.2	0.65
12,677.0	89.90	156.15	6,838.2	-5,006.2	2,745.6	5,669.2	2.31
12,772.0	88.96	154.55	6,839.2	-5,092.5	2,785.2	5,764.1	1.95
12,866.0	90.57	155.42	6,839.5	-5,177.7	2,825.0	5,857.9	1.95
12,956.0	91.24	157.60	6,838.1	-5,260.2	2,860.8	5,947.9	2.53
13,045.0	90.24	154.57	6,837.0	-5,341.5	2,896.9	6,036.8	3.58
13,135.0	92.25	157.49	6,835.0	-5,423.7	2,933.4	6,126.7	3.94
13,224.0	92.82	157.83	6,831.1	-5,506.0	2,967.2	6,215.6	0.75
13,314.0	91.01	158.53	6,828.1	-5,589.5	3,000.7	6,305.6	2.16
13,404.0	91.34	159.10	6,826.2	-5,673.4	3,033.2	6,395.6	0.73
13,493.0	90.64	160.24	6,824.7	-5,756.8	3,064.1	6,484.5	1.50
13,583.0	89.78	159.45	6,824.4	-5,841.3	3,095.1	6,574.5	1.30
13,673.0	90.71	160.31	6,824.0	-5,925.8	3,126.1	6,664.4	1.41
13,762.0	89.19	158.24	6,824.0	-6,009.1	3,157.6	6,753.4	2.89
13,852.0	89.03	158.79	6,825.4	-6,092.8	3,190.5	6,843.4	0.64
13,942.0	89.26	158.52	6,826.8	-6,176.6	3,223.3	6,933.4	0.39
14,031.0	91.24	159.34	6,826.4	-6,259.6	3,255.3	7,022.3	2.41
14,121.0	90.67	158.09	6,824.9	-6,343.5	3,287.9	7,112.3	1.53
14,211.0	89.76	157.70	6,824.6	-6,426.9	3,321.8	7,202.3	1.10
14,300.0	91.07	156.84	6,823.9	-6,509.0	3,356.2	7,291.3	1.76
14,390.0	91.07	155.64	6,822.2	-6,591.3	3,392.4	7,381.2	1.33
14,480.0	91.98	157.71	6,819.8	-6,673.9	3,428.1	7,471.2	2.51
14,569.0	90.20	159.64	6,818.1	-6,756.8	3,460.4	7,560.2	2.95
14,659.0	90.07	157.43	6,817.9	-6,840.6	3,493.4	7,650.1	2.46
14,749.0	90.13	156.80	6,817.8	-6,923.5	3,528.4	7,740.1	0.70
14,838.0	90.20	155.97	6,817.5	-7,005.0	3,564.0	7,829.1	0.94
14,928.0	91.04	159.37	6,816.5	-7,088.3	3,598.2	7,919.1	3.89
15,017.0	89.73	160.19	6,816.0	-7,171.8	3,629.0	8,008.0	1.74
15,107.0	89.06	158.93	6,816.9	-7,256.1	3,660.4	8,098.0	1.59
15,197.0	89.16	158.54	6,818.3	-7,340.0	3,693.0	8,188.0	0.45
15,286.0	89.56	159.58	6,819.3	-7,423.1	3,724.8	8,276.9	1.25
15,376.0	90.13	158.10	6,819.5	-7,507.0	3,757.3	8,366.9	1.76
15,466.0	90.34	159.44	6,819.2	-7,590.9	3,789.9	8,456.9	1.51
15,555.0	90.70	160.72	6,818.4	-7,674.6	3,820.2	8,545.9	1.49
15,645.0	88.02	159.23	6,819.4	-7,759.1	3,851.0	8,635.8	3.41
15,735.0	87.55	157.66	6,822.8	-7,842.7	3,884.0	8,725.7	1.82
15,824.0	89.53	158.35	6,825.1	-7,925.2	3,917.4	8,814.7	2.36
15,914.0	90.10	158.02	6,825.4	-8,008.8	3,950.8	8,904.7	0.73
16,004.0	90.13	156.34	6,825.2	-8,091.7	3,985.7	8,994.7	1.87

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EOW Completion Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Mishka Unit 1H
Project:	Doddridge County WV	TVD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Site:	Costlow/Duff/Mishka	MD Reference:	Mishka Unit 1H GL 996' + 19' RKB @ 1015.0usft
Well:	Mishka Unit 1H	North Reference:	Grid
Wellbore:	ST1 Mishka Unit 1H	Survey Calculation Method:	Minimum Curvature
Design:	ST1 As Drilled	Database:	Oklahoma District

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
16,093.0	90.74	158.31	6,824.5	-8,173.9	4,020.0	9,083.7	2.32
16,183.0	89.23	159.14	6,824.6	-8,257.7	4,052.7	9,173.7	1.91
16,273.0	89.33	158.15	6,825.7	-8,341.5	4,085.5	9,263.6	1.11
16,362.0	89.66	158.20	6,826.5	-8,424.2	4,118.6	9,352.6	0.38
16,452.0	90.07	157.85	6,826.7	-8,507.6	4,152.2	9,442.6	0.60
16,541.0	88.99	157.78	6,827.4	-8,590.0	4,185.8	9,531.6	1.22
16,629.0	89.25	158.22	6,828.8	-8,671.6	4,218.8	9,619.6	0.58
16,718.0	89.03	158.13	6,830.1	-8,754.2	4,251.9	9,708.6	0.27
16,808.0	89.16	158.60	6,831.5	-8,837.9	4,285.1	9,798.6	0.54
16,897.0	89.93	158.10	6,832.2	-8,920.6	4,317.9	9,887.6	1.03
16,986.0	89.76	157.97	6,832.5	-9,003.1	4,351.2	9,976.6	0.24
17,074.0	89.53	158.19	6,833.0	-9,084.8	4,384.0	10,064.6	0.36
17,164.0	89.23	157.65	6,834.0	-9,168.1	4,417.9	10,154.6	0.69
17,254.0	89.73	158.06	6,834.8	-9,251.5	4,451.8	10,244.6	0.72
17,343.0	89.80	157.24	6,835.2	-9,333.8	4,485.6	10,333.6	0.92
17,432.0	90.00	156.18	6,835.3	-9,415.6	4,520.8	10,422.6	1.21
17,522.0	89.43	157.87	6,835.8	-9,498.4	4,556.0	10,512.5	1.98
17,612.0	90.03	158.29	6,836.2	-9,581.9	4,589.6	10,602.5	0.81
17,701.0	90.84	158.43	6,835.5	-9,664.6	4,622.4	10,691.5	0.92
17,791.0	90.91	157.78	6,834.2	-9,748.1	4,655.9	10,781.5	0.73
17,881.0	91.54	157.43	6,832.2	-9,831.3	4,690.2	10,871.5	0.80
17,932.0	91.54	157.43	6,830.9	-9,878.4	4,709.8	10,922.5	0.00

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/4/2014
Job End Date:	8/15/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06259-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Mishka Unit 1H
Longitude:	-80.73298100
Latitude:	39.36584700
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,893
Total Base Water Volume (gal):	10,070,508
Total Base Non Water Volume:	0



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Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Operator	Carrier					
			Water	7732-18-5	100.00000	89.98280	
Sand, White, 40/70	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		5.76606	
Sand, White, 20/40	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		2.94645	
Sand, White, 100 mesh	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.81484	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.23253	SmartCare Product
GW-3LDF	Baker Hughes	Gelling Agent					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.08713	SmartCare Product
FRW-18	Baker Hughes	Friction Reducer					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.05541	SmartCare Product
Scaletrol 720	Baker Hughes	Scale Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01733	SmartCare Product

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Alpha 1427	Baker Hughes	Biocide					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01322	SmartCare Product
Enzyme G-NE	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01210	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00149	SmartCare Product
CI-14	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00033	SmartCare Product
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Ingredients in Additive (s) (MSDS and non- MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	9.51992	
			Water	7732-18-5	95.00000	0.24846	
			Mineral Oil	8042-47-5	70.00000	0.06094	
			Guar Gum	9000-30-0	60.00000	0.05224	
			Hydrochloric Acid	7647-01-0	15.00000	0.03486	
			Paraffinic Petroleum Distillate	64742-55-8	30.00000	0.02612	
			Poly (acrylamide-co-acrylic acid) partial sodium salt	62649-23-4	30.00000	0.01661	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.01661	
			Ethylene Glycol	107-21-1	45.00000	0.00779	
			Isotridecanol, ethoxylated	9043-30-5	5.00000	0.00435	
			1-butoxy-2-propanol	5131-66-8	5.00000	0.00435	
			Crystalline Silica: Quartz	14808-60-7	5.00000	0.00435	
			Glutaraldehyde	111-30-8	30.00000	0.00396	
			2-Propenoic, Polymer with Sodium Phosphinate, Sodium Salt	71050-62-9	20.00000	0.00346	
			Sodium Chloride	7647-14-5	5.00000	0.00294	
			Ammonium Chloride	12125-02-9	3.00000	0.00166	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	10.00000	0.00132	
			Oleamide DEA	93-83-4	2.00000	0.00111	
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00111	
			Citric Acid	77-92-9	60.00000	0.00089	
			Calcium Chloride	10043-52-4	5.00000	0.00087	
			Quaternary Ammonium Compound	68424-85-1	5.00000	0.00066	
			Ethanol	64-17-5	5.00000	0.00066	
			Hemicellulase Enzyme Concentrate	9025-56-3	5.00000	0.00060	
			Methanol	67-56-1	100.00000	0.00033	
			Polyoxyethylene Sorbitan Monooleate	9005-65-6	0.50000	0.00028	
			Sorbitan Monooleate	1338-43-8	0.50000	0.00028	
			Potassium Chloride	7447-40-7	1.00000	0.00017	

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	Polyoxyalkylenes	89851-67-7	30.00000	0.00010
	2-butoxy-1-propanol	15821-83-7	0.10000	0.00009
	Fatty Acids	81790-12-3	10.00000	0.00003
	Modified Thiourea Polymer	88527-49-1	7.00000	0.00002
	Olefin	84743-02-8	5.00000	0.00002
	Propargyl Alcohol	107-19-7	5.00000	0.00002
	Formaldehyde	50-00-0	1.00000	0.00000

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
 ** Information is based on the maximum potential for concentration and thus the total may be over 100%
 Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
 Ingredient information for chemicals subject to 29 CFR 1910.1200(f) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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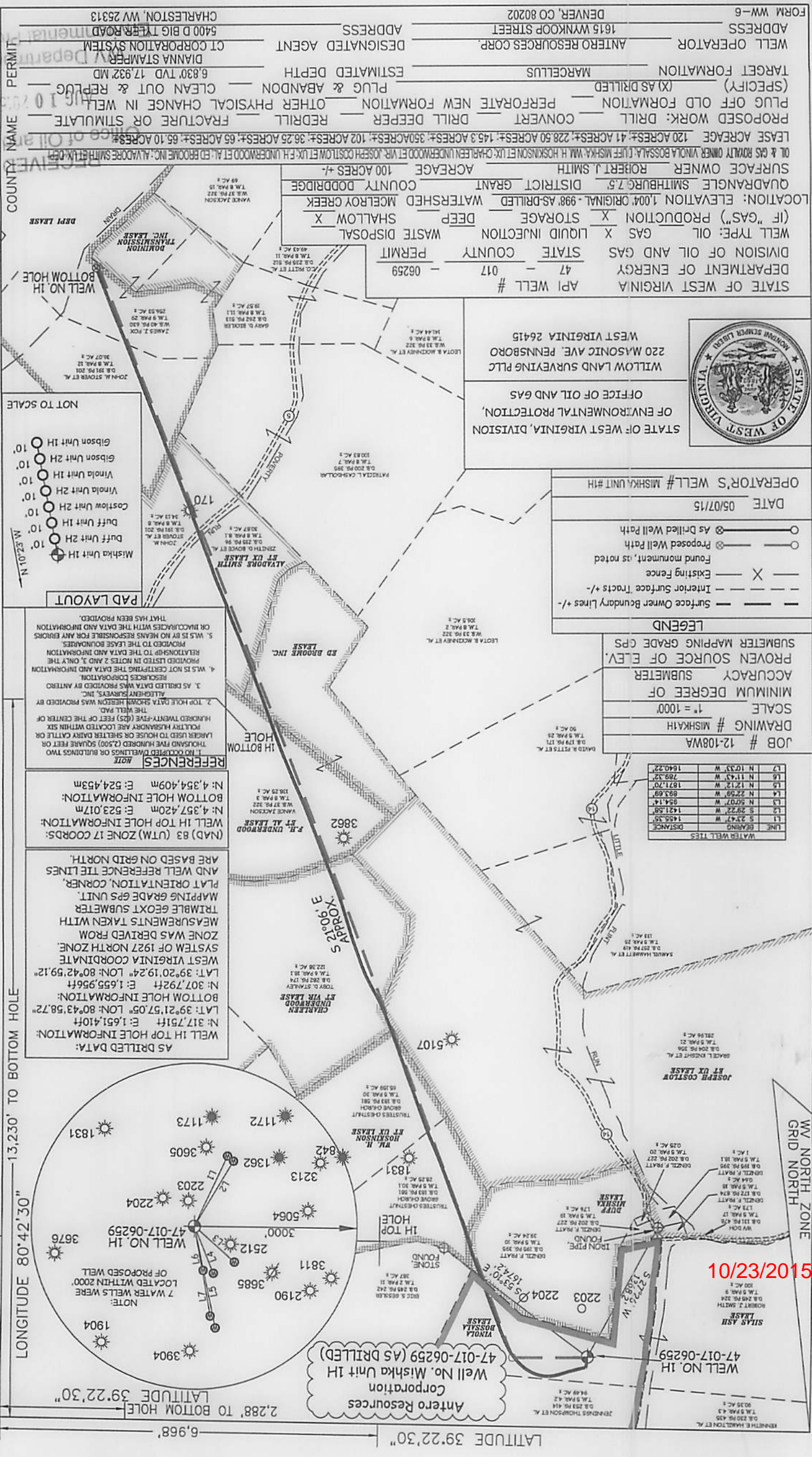
10/23/2015



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

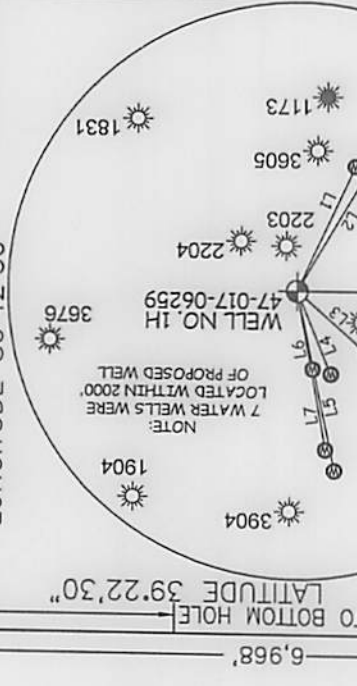
DATE 05/07/15
OPERATOR'S WELL # MISHKA UNIT 1H
JOB # 12-108WA
DRAWING # MISHKA1H
SCALE 1" = 100'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Existing Fence
Found monument, as noted
Proposed Well Path
As Drilled Well Path

LINE	BEARING	DISTANCE
L1	S 29°22' W	1455.38
L2	S 29°22' W	1455.38
L3	N 50°07' W	554.14
L4	N 22°58' W	693.69
L5	N 12°12' W	1671.70
L6	N 11°43' W	289.32
L7	N 10°33' W	1640.22



REFERENCES
1. 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.
2. TOP HOLE DATA SPECIFICATION WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
4. WAS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
5. WAS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
LAT: 39°21'57.05" LON: 80°43'58.72"
N: 317.751ft E: 1,651.410ft
WELL 1H TOP HOLE COORDS:
(NAD) 83 (UTM) ZONE 17
WELL 1H TOP HOLE INFORMATION:
N: 4,357.420m E: 523.017m
BOTTOM HOLE INFORMATION:
N: 4,354.409m E: 524.453m



Antero Resources Corporation
Well No. Mishka Unit 1H
47-017-06259 (AS DRILLED)

10/23/2015

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
API WELL # 47-017-06259
DIVISION OF OIL AND GAS
STATE COUNTY PERMIT
WASTE DISPOSAL DEEP SHALLOW X
WELL TYPE: OIL GAS X LIQUID INJECTION
(IF "GAS") PRODUCTION X STORAGE
LOCATION: ELEVATION 1,004 ORIGINAL - 998 AS-DRILLED WATERSHED METROV CREEK QUADRANGLE SMITHBURG 7.5 DISTRICT GRANT
SURFACE OWNER ROBERT J SMITH ACREAGE 100 ACRES +/-
OIL & GAS ROYALTY OWNER VINOLA BOSSALA; LUFF MISHKA; WMA H HOSKINSON ET UX; CHARLEEN UNDERWOOD ET UX; F.H. UNDERWOOD ET AL; ED BROOME INC.; ALYDORIS SMITH ET UX, DUFF

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,830' TVD 17,932' MD
DESIGNATED AGENT ANTERO RESOURCES CORP.
ADDRESS 1615 WYNNCOOP STREET DENVER, CO 80202
WELL OPERATOR FORM WW-6

LEASE ACREAGE 120 ACRES +/- 41 ACRES +/- 228.50 ACRES +/- 145.3 ACRES +/- 350 ACRES +/- 102 ACRES +/- 36.25 ACRES +/- 65 ACRES +/- 65.10 ACRES +/-
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